

# **WILDLAND FIRE MANAGEMENT PLAN**

**Steigerwald Lake National Wildlife Refuge  
Franz Lake National Wildlife Refuge  
Pierce National Wildlife Refuge**

**Clark and Skamania Counties, WA**



**2004**

# **WILDLAND FIRE MANAGEMENT PLAN**

## **STEIGERWALD LAKE NATIONAL WILDLIFE REFUGE FRANZ LAKE NATIONAL WILDLIFE REFUGE PIERCE NATIONAL WILDLIFE REFUGE**

**2004**

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## **EXECUTIVE SUMMARY**

When approved, this document will become the Fire Management Plan for Steigerwald Lake, Franz Lake, and Pierce National Wildlife Refuges (Gorge Refuges). Major components include:

- Updated policy for prescribed fires at the Gorge Refuges.
- Documentation of habitat management needs as described in the Gorge Refuges Comprehensive Conservation Plan
- Format changes under the direction of the U.S. Fish and Wildlife Service Fire Management Handbook.
- Establishment of a Fire Program, including suppression and prescribed fire, to manage critical habitat, reduce the risk of fuels buildup, control invasive vegetation, and manage for specific wetland, grassland and forested habitats, such as emergent wetlands, oak savannas, and riparian forests.

This plan is written to provide guidelines for appropriate suppression and prescribed fire programs at the Gorge Refuges. Prescribed fires may be used to reduce hazard fuels, restore the natural processes and vitality of ecosystems, improve wildlife habitat, remove or reduce non-native species, and/or conduct research.

## INTRODUCTION

This document will establish a Fire Management Plan for the Gorge Refuges. The Gorge Refuges Comprehensive Conservation Plan serves as an umbrella document for the Fire Management Plan and dictates the direction for prescribed burning on the refuges. This plan will meet the requirements of the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA) and the National Historic Preservation Act (NHPA).

This plan is written as an operational guide for managing the refuges' wildland fire and prescribed fire programs. It defines levels of protection needed to ensure safety, protect facilities and resources, and restore and perpetuate natural processes, given current understanding of the complex relationships in natural ecosystems. It is written to comply with a service-wide requirement that refuges with burnable vegetation develop a fire management plan (620 DM 1).

This plan outlines both wildland fire suppression and prescribed fire activities on the Gorge Refuges. Full suppression is the norm for all wildland fires to protect property, structures, and resource values. Prescribed fire may be utilized to enhance native plant communities, improve wildlife habitat, reduce fuel loadings, control invasive species, and provide research opportunities.

The U.S. Fish and Wildlife Service (FWS) owns 1,049 acres within the 1,406-acre Steigerwald Lake NWR approved boundary. The Refuge was established in 1987 for the fish and wildlife mitigation purposes associated with the construction of a second powerhouse at the Bonneville Dam on the Columbia River and relocation of the town of North Bonneville. Purposes for subsequent acquisitions include: (1) protection, mitigation, and enhancement of wildlife and wildlife habitat that has been adversely affected by the construction of Federal hydroelectric dams on the Columbia River or its tributaries; (2) development, advancement, management, conservation and protection of fish and wildlife resources; (3) conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions; and (4) for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.

The FWS owns 552 acres within the 695-acre Franz Lake NWR approved boundary. The Refuge was established in 1990 for the development, advancement, management, conservation and protection of fish and wildlife resources including, but not limited to, research, development of existing facilities, and acquisition by purchase or exchange of land and water or interests therein (Fish and Wildlife Act of 1956).

The 329-acre Pierce NWR is fully acquired by the FWS. The Refuge was established in 1990 with the donation of 319 acres to the National Wildlife Refuge System. The warranty deed specified the area can only be used for "wildlife refuge, recreation or park purposes." The land donation was accepted under authority of the Migratory Bird Conservation Act of 1929. The remaining 10 acres of the Refuge were acquired under authority of the Fish and Wildlife Act of 1956.

There is not an established on-site fire management organization for the Columbia River Gorge Refuges. A lead fire contact for the Refuges has been proposed, which would be a co-lateral position assigned from the Wildland-Urban Interface group of the Regional fire organization in Portland. The position would be field-based in close proximity to the Columbia River Gorge. The Prescribed Fire Specialist position will be shared with one at Willamette Valley National Wildlife Refuge Complex.

Consistent with the National Interagency Agreement and the guiding principals of Closest Forces, the Columbia River Gorge National Scenic Area (administered by the Gifford Pinchot National Forest) will provide fire protection and initial attack fire suppression services on the three Gorge refuges. Various city fire departments will respond to structural fires on FWS lands.



## COMPLIANCE WITH USFWS POLICY

This Fire Management Plan (FMP) “steps down” from the Comprehensive Conservation Plan (CCP) and associated Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Gorge Refuges. The CCP is a strategic document that describes the desired future conditions of the Gorge Refuges and provides long-range guidance and direction for their management over the next 15 years. More specific guidance is needed to implement some of the goals and objectives in the CCP. Step-down management plans describe the specific strategies and implementation schedules the FWS will follow, “stepping down” from general goals and objectives. This Draft FMP defines the program and strategies to manage wildland fires and conduct prescribed fires on the three Gorge Refuges, and is consistent with firefighter and public safety requirements, land protection values, and natural resource and cultural resource management plans.

The National Wildlife Refuge System Improvement Act and the National Environmental Policy Act (NEPA) require the FWS to seek public involvement in environmental planning, and to consider all reasonable alternatives, including a “no action” alternative, which represents a continuation of current management practices. Management alternatives for the Gorge Refuges are described in Chapter 3 of the CCP/EA. Anticipated effects of each alternative on the physical, biological, cultural, historic and socioeconomic environment were evaluated, and alternatives adjusted as needed (Chapter 4).

This Fire Management Plan Complies with NEPA under the CCP’s Environmental Assessment and Finding of No Significant Impact (Appendix K). Compliance with Section 7 of the Endangered Species Act (ESA) was accomplished through submission of a Biological Evaluation for concurrence to the Western Washington Fish and Wildlife Office. The Biological Evaluation and Biological Opinion can be found in Appendix L. Compliance with the National Historic Preservation Act (NHPA) will be accomplished at the project level through submission of a “Request for Cultural Resource Compliance” form (Appendix D) to the Regional Archaeologist.

Authority and guidance for implementing this plan are found in the environmental laws and regulations and in FWS policy and guidance listed below. This FMP and the CCP/EA comply with these laws, regulations and policy.

- Protection Act of September 20, 1922 (42 Stat. 857; 16 U.S.C.594): authorizes the Secretary of the Interior to protect from fire, lands under the jurisdiction of the Department directly or in cooperation with other Federal agencies, states, or owners of timber.
- Economy Act of June 30, 1932: authorizes contracts for services with other Federal agencies.
- Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66, 67; 42 U.S.C. 1856, 1856a and b): authorizes reciprocal fire protection agreements with any fire organization for mutual aid with or without reimbursement and allows for emergency assistance in the vicinity of agency lands in suppressing fires when no agreement exists.
- Disaster Relief Act of May 22, 1974 (88 Stat. 143; 42 U.S.C. 5121): authorizes Federal agencies to assist state and local governments during emergency or major disaster by direction of the President.
- National Wildlife Refuge System Administrative Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd et seq.: defines the National Wildlife Refuge System as including wildlife refuges, areas for the protection and conservation of fish and wildlife which are threatened with extinction, wildlife ranges, game ranges, wildlife management areas and waterfowl production areas. It also establishes a conservation mission for the Refuge System, defines guiding principles, and directs the Secretary of the Interior to ensure that biological integrity and environmental health of the system are maintained and that growth of the system supports the mission.

- Federal Fire Prevention and Control Act of October 29, 1974 (88 Stat. 1535; 15 U.S.C.2201): provides for reimbursement to state or local fire services for costs of firefighting on federal property.
- Wildfire Suppression Assistance Act of 1989. (Pub.L. 100-428, as amended by Pub.L 101- 11, April 7, 1989).
- Departmental Manual (Interior), Part 620 DM, Chapter 1, Wildland Fire Management: General Policy and Procedures (April 10, 1998): defines Department of Interior fire management policies.
- Service Manual, Part 621, Fire Management (February 7, 2000): defines U.S. Fish and Wildlife Service fire management policies.
- Clean Air Act (42 United State Code (USO) 7401 et seq.): requires states to attain and maintain the national ambient air quality standards adopted to protect health and welfare. This encourages states to implement smoke management programs to mitigate the public health and welfare impacts of Wildland and prescribed fires managed for resource benefit.
- Endangered Species Act of 1973.
- U.S. Fish & Wildlife Service Fire Management Handbook.

The authority for funding (normal fire year programming) and all emergency fire accounts is found in the following authorities:

- Section 102 of the General Provisions of the Department of Interior's annual Appropriations Bill provides the authority under which appropriated monies can be expended or transferred to fund expenditures arising from the emergency prevention and suppression of wildland fire.
- P.L. 101-121, Department of the Interior and Related Agencies Appropriation Act of 1990, established the funding mechanism for normal year expenditures of funds for fire management purposes.
- 31 US Code 665(E)(1)(B) provides the authority to exceed appropriations due to wildland fire management activities involving the safety of human life and protection of property.

Authorities for procurement and administrative activities necessary to support wildland fire suppression missions are contained in the Interagency Fire Business Management Handbook.

## **FIRE MANAGEMENT OBJECTIVES**

The primary objectives for fire management on the Gorge Refuges are to: (1) promote a program to provide for firefighter and public safety, (2) reduce the threat of and resource impacts of human-caused fires, (3) ensure the appropriate suppression response to meet expected wildland fire complexity, and (4) increase the use of prescribed fire. Specific fire management objectives are:

- Promote a fire management program that includes both a wildland fire suppression component and a prescribed burn component.
- Provide for the protection of life, property, and resources from wildland fires at costs commensurate with resource values at risk.
- Use appropriate suppression tactics and strategies that minimize long-term impacts of suppression actions to natural resources.
- Use prescribed fire to reduce hazard fuel accumulation in forested habitats and excessive debris accumulation of invasive plant species, such as reed canarygrass. Prescribed fire will also be utilized to restore fire to fire-dependent ecological communities, such as oak habitats, and for enhancing wetland and grassland habitats.

## DESCRIPTION OF REFUGES

### GENERAL DESCRIPTION

The three National Wildlife Refuges (Steigerwald Lake, Franz Lake and Pierce) addressed in this fire management plan are part of the Ridgefield National Wildlife Complex (NWRC) in the Pacific Region (R1) of the U.S. Fish and Wildlife Service, Department of the Interior (Figure 1). They are positioned in the lower part of the Columbia River from Bonneville Dam to Portland, Oregon, a stretch of approximately 20 river miles.

Steigerwald Lake NWR, currently 1,049 acres (approved acquisition boundary totals 1,406 acres), was established as partial mitigation for habitat lost during construction of the Second Powerhouse at the North Bonneville Dam in 1987. Franz Lake NWR was established in 1990, also as partial mitigation for habitat lost during construction of the Second Powerhouse at North Bonneville, and consists of 552 acres (approved acquisition boundary totals 695 acres). Pierce NWR, established in 1990 by a land donation by the Pierce family, consists of 329 acres (all lands within the approved acquisition boundary).

### CLIMATE

The predominant climate of western Washington is mild and rainy. During the fall through early spring, the prevailing winds bring warm, moist, marine air into western Washington. The Cascade Mountain Range separates western from eastern Washington, where a colder and drier continental air mass is typical. The Columbia River Gorge, however, functions as a low elevation pass through the Cascade Range, allowing air exchange between the inland and coastal areas. This produces highly variable and sometimes extreme weather. Winter winds generally blow from east to west, with funneled winds up to 80 miles per hour. At the same time, the convergence of the warm moist winds from the west and the cold, dry air to the east creates relatively heavy rainfall as the clouds from the Pacific pass over the Cascade Range. Annual precipitation is approximately 80 inches near Pierce NWR and approximately 40 inches near Steigerwald Lake NWR.

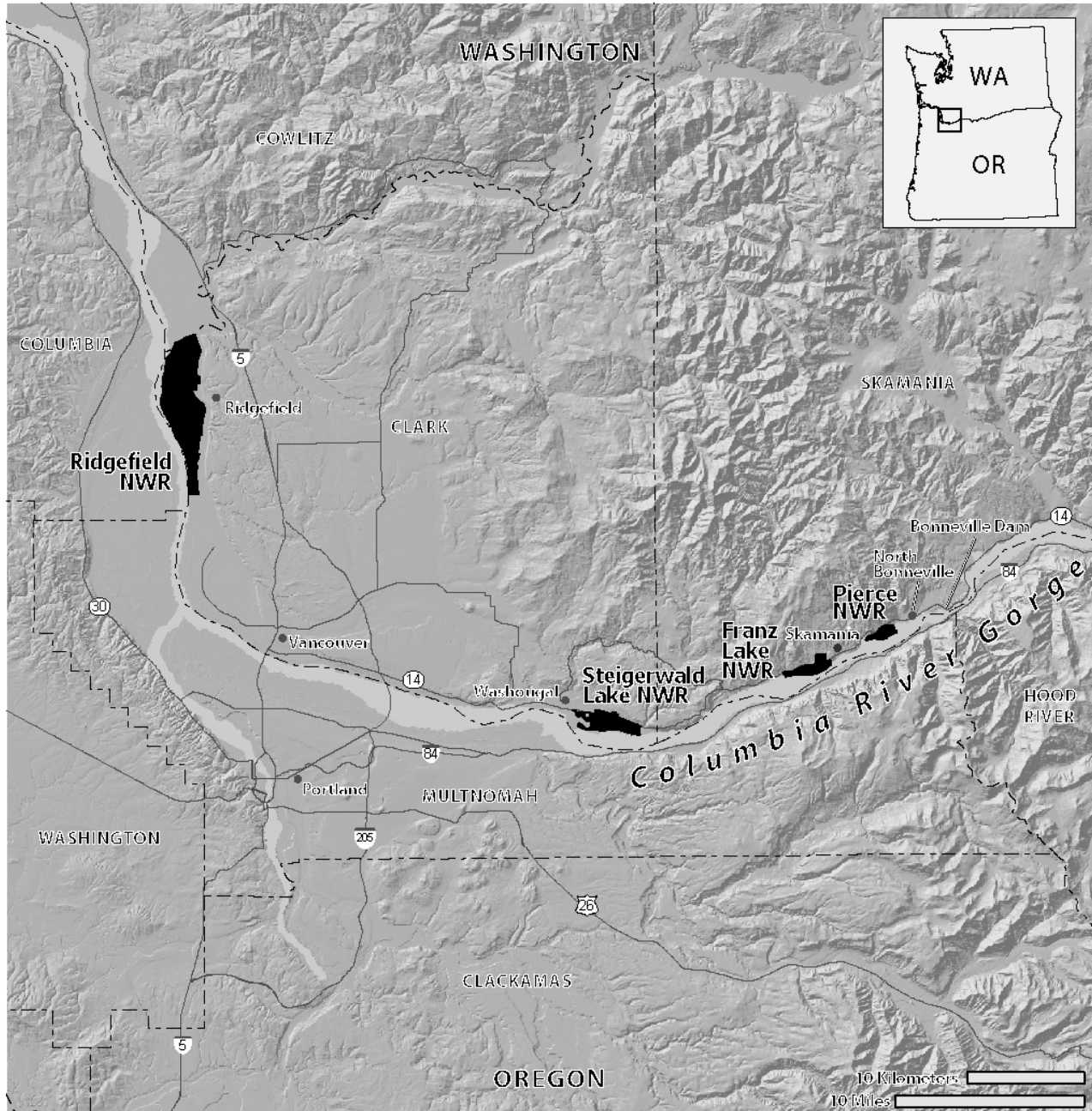
During the late spring high pressure over the Pacific Ocean brings a prevailing flow of cold and relatively dry air from the northwest, with the winds being more moderate than during the winter. As the air moves inland, it becomes warmer and drier, with a dry season from late spring to September. Summer high temperatures during July and August are generally in the mid to high 80's °F. The drier conditions result in only 20 percent of annual precipitation occurring during the summer months, with August and September typically extremely dry. Relative humidity is typically high in the winter and spring, and can reach single digits in the summer and fall months.

### VEGETATION

#### *Steigerwald Lake NWR*

A 1948 aerial photo portrays this section of the Columbia River floodplain as an exceedingly complex mosaic of open water, wetlands, sloughs, willow stands, wet meadows, cottonwood stands, upland pastures, and agricultural fields. The U.S. Army Corps of Engineers diked the refuge from the Columbia River in 1965 for flood control. After the dike was constructed, a drainage ditch was constructed in 1977 down the middle of the lake to allow farming. This was largely unsuccessful, but resulted in reduction of the lake size until the Service acquired the refuge and constructed three dikes with water control structures. During the winter the lakebed is flooded by winter rains and springs located at the east end of the lake. The lakebed is primarily composed of reed canarygrass (*Phalaris arundinacea*), although there are some pockets of native moist soil plants such as American water-plantain (*Alisma plantago-aquatica*), curly dock (*Rumex crispus*), hardstem bulrush (*Scirpus acutus*), smartweed (*Polygonum* spp.), and others. There is a stand of Pacific willow (*Salix lasiandra*) and Columbia River willow (*S. fluviatilis*) west of the elevated channel, with an understory of reed canarygrass.

Figure 1. Vicinity Map, Ridgefield National Wildlife Refuge Complex.



Upland pastures (some managed and some not) are located to the north and south of the lakebed. They consist of fescues (*Festuca* spp.), orchardgrass (*Dactylis glomerata*) and ryegrasses (*Elymus* spp.). Weeds include Himalayan blackberry (*Rubus procerus*) and Canada thistle (*Cirsium arvense*).

There is one stand of undisturbed riparian woodlands on the refuge. It is located along the Columbia River and consists of large black cottonwoods (*Populus balsamifera* var. *trichocarpa*), red alder (*Alnus rubra*), willows (*Salix* spp.) and red elderberry (*Sambucus racemosa*).

Oregon white oaks (*Quercus garryana*) are located in the northeastern corner of the refuge, with an understory of Himalayan blackberry (in open areas at the west edges of the stands) or ocean spray (*Holodiscus discolor*), oval-leaved viburnum (*Viburnum ellipticum*), beaked hazel (*Corylus cornuta*), and other native shrubs. Oak woodlands are among the most imperiled ecosystems in western Washington, and the Steigerwald Lake oaks in the northeastern corner are adjacent to a larger community named the Mount Pleasant Oaks, which has been designated by the State of Washington as the Washougal Oaks Natural Resource Conservation Area and Natural Area Preserve.

#### *Franz Lake NWR*

The refuge provides a variety of habitats, representing one of the few remaining backwater wetland areas along the Columbia River. Although the tree/shrub component varies throughout the area, the ground cover in shallow water areas is predominantly reed canarygrass. Most of the deeper portion of Franz Lake is dominated by wapato (*Sagittaria latifolia*). A healthy stand of Columbia River riparian forest vegetation dominated by black cottonwood is located at the east end of Franz Lake, with seasonal shallow-water wetlands scattered throughout. The riparian stand extends along the southern shorelines of both Franz and Arthur Lakes, decreasing in tree density toward the west. Mature willow trees and thickets occur south of the two main lakes providing a natural transitional zone into the higher elevation cottonwood-ash forest. Reed canarygrass is the predominant ground vegetation within the riparian and scrub-shrub stands. Douglas-fir (*Pseudotsuga menziesii*) and big-leaf maple (*Acer macrophyllum*) stands to the north of the lake form a transition from the lower elevation willows and cottonwoods to mid-elevation old-growth Douglas-fir and western redcedar (*Thuja plicata*), with associated native understory shrubs.

#### *Pierce NWR*

There are a variety of habitats interspersed throughout the refuge property. Wetlands include permanently flooded basins (Pierce Lake, Lena's Lake, Domestic Springs Pond), riverine wetlands (Hardy Creek, Columbia River), several seeps and springs, and numerous intermittently flooded basins.

Much of the flatter elevations of the refuge (between Hardy Creek and the Columbia River) are forested with riparian species such as black cottonwood and Oregon ash (*Fraxinus latifolia*). Land clearing and cattle grazing prior to refuge establishment significantly reduced the shrub canopy. The elimination of grazing in 1996 has since resulted in increased shrub cover. East of Pierce Lake, the riparian forest is dominated by Oregon ash with an understory of snowberry (*Symphoricarpos albus*). Himalayan blackberry can be found scattered throughout the area. Willows are limited to a few stream locations, as grazing destroyed much of the original scrub-shrub habitat. These have been supplemented by plantings by the Service in 1988 and 1993. An oak community and surrounding scattered oaks are located in the north central portion of the refuge. Most of the understory consists of pasture grasses, snowberry, or Himalayan blackberry.

Historically, grazing by the previous owner maintained pasture grass in the North Bonneville Field and in openings in the forest vegetation throughout the refuge. With the termination of the grazing program in 1996, several of the units have exhibited a significant regrowth of new trees and shrubs. However, the non-native Himalayan blackberry continues to remain a significant problem throughout the refuge. The North Bonneville Field (50 acres) was disced and replanted to pasture grass in 2000, and is managed for wintering Canada goose browse through weed control and fall mowing.

#### **FISH AND WILDLIFE**

All three refuges support a variety of wildlife, including waterfowl, waterbirds, raptors, songbirds, upland game birds, fish, amphibians, reptiles, and small mammals, coyotes, beaver and black-tailed deer. Over 185 species of birds, 27 species of mammals, and 15 species of reptiles and amphibians have been

identified on the Gorge Refuges. Detailed species lists can be found in Appendix I of the Comprehensive Conservation Plan.

**THREATENED AND ENDANGERED SPECIES**

Federally Threatened bald eagles have nested and wintered (8-10 eagles) along the banks of the Columbia River at Franz Lake NWR, and eagles and have been seen occasionally at Steigerwald Lake NWR.

The Washington Department of Fish and Wildlife has just completed its fourth year of five years of planned releases of western pond turtles at Pierce Refuge in an effort to establish a breeding population of this State Endangered species. It will also be evaluating Steigerwald Lake Refuge as a release site.

The three Gorge refuges offer both spawning and juvenile rearing habitat to three Federally Threatened species of fish – chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*O. mykiss*), and chum salmon (*O. keta*). Hardy Creek on Pierce NWR provides one of the last chum salmon runs still existing on the Lower Columbia River, and is the subject of annual winter survey activities by fisheries biologists of the Columbia River Fisheries Program office of the U.S. Fish and Wildlife Service.

Table 1. Federally Threatened and Endangered Species Found on or near the Gorge Refuges.

Common Name	Scientific Name	Status	Refuge		
			Franz	Pierce	Steigerwald
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened	X	X	X
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	Threatened	X	X	X
Chum Salmon	<i>Oncorhynchus keta</i>	Threatened	X	X	X
Steelhead Trout	<i>Oncorhynchus mykiss</i>	Threatened	X	X	X
Bull Trout	<i>Salvelinus confluentus</i>	Threatened	X	X	X
Critical Habitat (Proposed)			X	X	X
Northern Spotted Owl	<i>Strix occidentalis caurina</i>	Threatened	V	V	
Critical Habitat			V	V	
Coastal Cutthroat Trout	<i>Oncorhynchus clarki clarki</i>	SOC	V		V
Larch Mountain Salamander	<i>Plethodon larselli</i>	SOC	V		V
Pacific Lamprey	<i>Lampetra tridentate</i>	SOC		V	
Peregrine Falcon	<i>Falco peregrinus</i>	SOC		V	

**CULTURAL RESOURCES**

Native Americans have been documented to use the upstream entrance of the Columbia River Gorge for at least 10,000 years. Most recently, the Chinookan peoples inhabited the area. The estimated population of 12-14,000 in the Portland Basin in prehistoric times (Ames 1994) represented one of the highest population densities in North America. The group living closest to Steigerwald Lake was known as the

Washougally. Because of the low lying nature of the terrain and frequent flooding by the Columbia River, the area was largely unsuitable for even short term human occupations. Because Franz Lake was believed to have been formed between 1850 and 1900, there are no descriptions of Native Americans using that area. Lewis and Clark described people of the Shahala Nation living in large villages, including Wah-cl-el-lah near Beacon Rock (adjacent to Pierce NWR). When Euro-Americans moved into the region occupied by the Chinookan along the lower Columbia River, the native people were very susceptible to introduced diseases, and by the 1850s most of the native Chinook tribes had been decimated.

Early exploration began when Lieutenant William Broughton of the Vancouver Expedition in 1792 landed at a point near the east end of Steigerwald Lake. The Lewis and Clark Expedition passed by on their way to and from Astoria during 1805-1806, stopping in the spring of 1806 at a site near the west end of Steigerwald Lake to gather food resources before heading east. Settlement did not occur, however, until the early 1850s when the first Columbia Gorge land claimants settled the north shore of the Columbia River. Bottomlands on all three refuges were used to raise cattle for beef or dairy purposes during the last half of the twentieth century.

Cultural resource surveys have been completed on about 70 percent of the Steigerwald Lake acreage, with only minimal evidence of occupation and use of the area by Native Americans and Euro-Americans. Two sites have been officially recorded. Only 1 percent of the Franz Lake NWR has been surveyed, with no cultural resources located. Less than that has been surveyed at Pierce NWR, with only three historic sites being found, all from Euro-American occupation. Table 2 lists the known cultural sites at the three refuges and their National Register of Historic Places (NRHP) status.

Because of the presence of archaeological and historic sites on lands adjacent to all three refuges, it is highly likely that there are additional sites on the refuges that have not been located due to a lack of surveys.

Table 2. Known Cultural Resources Sites and NRHP Status.

Refuge	Cultural Resource Site	NRHP Status	References*
Stiegerwald	Joseph Gibbons farmstead and sawmill sites (1850-1870s)	undetermined	Minor and Beckham 1985
Stiegerwald	1920s farm buildings	not eligible	Minor and Beckham 1985
Pierce	Castle Rock Fishweel remains off shoreline	undetermined	FWS 1991b; Donaldson & Cramer 1971
Pierce	1880s and more recent buildings and foundations	undetermined	Keeler 1985; Raymond 1994
Pierce	Remains of late 19th or early 20th century railroad grade at mouth of Hardy Creek	undetermined	Keeler 1985; Raymond 1994; Bourdeau pers. comm.

\* Full references can be found in the Comprehensive Conservation Plan.

## PHYSICAL RESOURCES

All three refuges are located along the Washington shoreline of the Columbia floodplain, and historically were influenced by Columbia River flooding.



At the east end of this section of the River near Pierce NWR, large volumes of historic water flow of the Columbia had cut through the Cascade Mountain Range and formed the Columbia River Gorge. Dramatic cliffs and cascading waterfalls were formed on the Oregon side and huge landslides on the Washington side resulted in more gradual slopes and gravelly soils. Most of Pierce Refuge is relatively flat, although there are some undulations, especially in the area east and south of Pierce Lake. Much of the area south of Highway 14 in the area of Franz Lake is flat, although there are steep slopes along the northern shorelines of Franz and Arthur Lakes. The area north of the highway consists of moderate to steep slopes, with scattered flat areas throughout. At the west end of this section of the River near Steigerwald Lake NWR, the Columbia River leaves the Gorge and spreads out across the Portland Basin. Much of this area is built on sand and gravel bars left by prehistoric flooding. Most of Steigerwald Lake Refuge is located on old sand and gravel deposits, except for the northeast corner, where it rises steeply towards to the oak-covered bluffs to the north.

The geologic history of the Columbia River Gorge is complex, due primarily to volcanism, glaciation, and flooding. Pierce and Franz Lake NWRs are located along the deep dissection where the Columbia River has cut through the Cascade Range. The remaining precipitous slopes and exposed outcrops of the gorge were once the foundation to the mountains above. Over the ages slides and washes have transported soils and rock from the walls of the gorge to the valley floor. This colluvium comprises the higher terraces and steeper slopes of the Gorge Refuges. The soils of the lower elevations of the Gorge Refuges are predominantly alluvial in origin. Fine sediments transported by the river settle out along the river's margin or into the floodplain. Before the construction of mainstem dams, most of the acreage encompassed on the Refuges was subject to inundation by the seasonal freshets. Remnant channels cut by flood waters are still evident on the Gorge Refuges. Soil texture ranges from gently sloping silty soils to steep gradient gravelly soils, with loamy soils dominating. These soil textures and characteristics have been mapped and described by the Soil Conservation Service (Haagen 1990, McGee 1972).

The Gorge Refuges are located at a minimum 5 miles from the Mt. Hood Wilderness, and approximately 25 miles from the Mt. Adams Wilderness, both designated Class I Areas under the Clean Air Act. Neither of these Class I Areas should be impacted by prescribed burning in the Gorge due to the prevailing east-west winds that course up and down the Gorge. These relatively strong winds that typically represent the Gorge environment minimize the potential for reduced air quality standards on the refuges and surrounding areas. Recent concerns regarding air quality in the Columbia River Gorge National Scenic Area have prompted the placement of weather monitoring stations throughout the Gorge, including one in the northeast corner of Steigerwald Lake NWR for the period 2002-2007. The Scenic Area has been designated a Class II Area, but many environmental groups are pushing for reclassification as a Class I Area.

## **STRUCTURES AND FACILITIES**

### *Steigerwald Lake NWR*

The refuge office is located in a 2-story house constructed about 1950, approximately 1800 square feet (ft<sup>2</sup>) with a basement. This is located along the northern edge of the refuge, south of Evergreen Highway and north of State Route 14. The remnants of a dairy barn still stand just east of the office, housing what appears to be a small shop area and milking parlor. A small well house with a working pump and pressure tank is located in the northeast corner of the Stevenson Unit. Another well house is located near the site of the previous farm buildings on the Straub Unit, but the well has been capped, and there is no pump or pressure tank.

There are homes at the northeast and northwest corners of the 50-acre parcel north of Highway 14, one east and one west of the office. There is a set of farm buildings at the east end of 235 acres owned by the landowner adjacent the east boundary of the refuge. The Port of Camas-Washougal Industrial Park and

City of Washougal Sewage Treatment Plant, both with multiple buildings, are adjacent landowners to the west. Along the south central portion of the refuge is a set of unused cattle feeding/storage structures on property owned by the Port.

#### *Franz Lake NWR*

There is a double-wide mobile home located along the entrance road to the Franz Lake dike, along with a well house, small livestock corral and protection shed. The refuge maintenance worker used the mobile home until he left the Service in 2001, and the home has since been rented by a private tenant. The Service has decided that it no longer has a need for this residence, so the tenant has been informed that the Service will be disposing of the mobile home and restoring the grounds after June 2004.

There are two real estate inholdings in the northeast section of the refuge, both with buildings. The eastern one has a pole barn used as a residence and a variety of structures associated with a tree nursery. The western one has a two-story residence and log cabin located along the northern shoreline of Franz Lake. There is also a small equipment storage shed located about a quarter mile west of the western set of buildings along the entrance road.

#### *Pierce NWR*

There is a single-family, 2300-ft<sup>2</sup> residence near the entrance to the refuge, with a finished daylight basement in the lower level and an attached garage. The upper level is used as a residence and is rented by a private tenant, while U.S. Fish and Wildlife Service Regional Fire Management Staff use the lower level as an office. To the west of the residence/office is a 14' x 66' mobile home used to house temporary employees and volunteers working on refuge projects. To the south of the residence/ office is a 6' x 8' well house, a 12' x 18' storage building that is not being used, and a 1500 ft<sup>2</sup> shop/storage building that is used by Fish and Wildlife fisheries biological staff. Across the railroad tracks and south of the shop/storage building is another 13,000-ft<sup>2</sup> shop/storage building used by refuge staff.

The City of North Bonneville is adjacent to the eastern boundary of the refuge, with approximately 5 homes adjacent to refuge lands. The north boundary of the refuge is bounded by SR 14 with a house across the highway from the refuge.

#### **PUBLIC USE AND ACCESS**

The only approved public access to any of the refuges is the dike trail along the Columbia River at Steigerwald Lake NWR. None of the refuges have a history of trespass problems.

## WILDLAND FIRE MANAGEMENT SITUATION

### HISTORIC ROLE OF FIRE

In upland areas of the refuges (*e.g.*, Hoffman tract north of SR14), fire had a strong and direct influence on vegetation. Fires were caused both from lightning strikes and by Native Americans. Large catastrophic fires, consuming 500 acres to well over 10,000 acres, would result in a change in forest cover from late to early seral stages with large numbers of snags and with a greater diversity in forest structure. Legacy trees, over 600 years of age, would have been scattered throughout the watershed. More frequent (25 to 75 years), moderate severity fires would have created small areas of early and mid seral stages, adding an important component of structural diversity to the forest. Wet riparian areas, such as along Indian Mary Creek and Hardy Creek, were more likely to escape major fires and, consequently, the trees would have reached perhaps 600+ years of age.

In the lowlands, flooding and weather were the most important influences on vegetation. The composition of the flood plain would cycle; most trees would be washed away in large flood events and begin to regenerate between events. In lowland grassland and oak communities, however, aboriginal burning may have had a substantial effect on vegetation. Lewis and Clark in 1806 described several small alluvial prairies along the lower Columbia, including a prairie opposite the mouth of the Quicksand (Sandy) River (*i.e.*, modern-day Steigerwald Lake). The notable abundance of camas lily and onion that Lewis and Clark and other early observers noted in some of these prairies has been attributed to the frequent use of fire, as well as selective harvest methods by indigenous peoples (Boyd 1999). Historical descriptions of prairies located around Steigerwald Lake suggest that fires set in the lowlands may have spread upslope. Frequent, low intensity fires would have prevented the establishment and maturation of Douglas-firs within stands of Oregon white oak. While some oaks would have been killed by fire, burning would also promote oak regeneration and enhance stand structure.

### Pre-settlement Fires

Stand replacement fires in higher elevation forests are postulated to have occurred every 200+ years. Moderate severity fires would have been expected at intervals of about 25 to 75 years. Notes from early ethnographers who visited southwest Washington in the late 1800s indicate Native Americans set fire to prairies either in very early spring or fall, probably for different reasons (Boyd 1999). Burning in the fall may have been chiefly for pasture, though annuals and forbs such as strawberries and camas would benefit as well. The August burning would allow autumn regrowth of grass. Depending on the type of berry, the fields were burned every three to ten years. Smoldering fires were common around Native American habitations. Remains of fire hearths indicate that most were not banked; some probably escaped and burned as wildfires.

### Post-settlement Fire History

Burning by Native Americans probably occurred throughout the period prior to Euro-American contact, but declined rapidly with settlement. Fire suppression probably began in the 1850s with Euro-American settlement along Gibbons Creek and clearing of land for an emerging dairy industry. There is little evidence of post-settlement fire in the oak woodlands above Steigerwald Lake, either in the form of blackened stumps or from clumps of trees growing from a common base, as commonly results from high intensity fire in this community. Furthermore, trees in this stand appear to be of even age, with most of the oaks less than 24" in diameter. With the cessation of regular burning, some grasslands and oak savannas became dense woodlands, with conifers beginning to dominate the canopy in some areas.

Large fire events occurring in the early 1920-30's burned a large portion of the watersheds of Pierce NWR and Franz Lake NWR, destroying much of the late seral communities. Much of the lower, gentler aspects of these watersheds have regenerated faster than the upper watershed and now support mid-seral

conifer stands dominated by western hemlock, Douglas-fir, and western redcedar. Forest structure diversity is low and is not expected to increase until either fire is permitted to re-establish itself or some corrective management is implemented.

Small, isolated fires have occurred historically along the Burlington Northern-Santa Fe railroad since its construction in 1906. Infrequent wildfires have been started on the Gorge Refuges in more recent years. A pile of wood debris at Pierce NWR was ignited, apparently by arsonists in April 1993. The fire was contained in the wood pile. In September 2002, a fire was started on Steigerwald Lake NWR in a grassy opening in the riparian forest adjacent to Cottonwood Beach. The fire was extinguished after burning an area measuring about 100 feet by 150 feet. Evidence suggested the fire was started by a smoker walking through the tall, dead reed canary-grass.

### **Prescribed Fire History**

There have been no prescribed burns on the Gorge Refuges. The history of prescribed burning in the Columbia River Gorge National Scenic Area is unknown. The Forest Service prepared a burn plan for the Sandy River Delta but the plan has not been approved or a burn implemented at this site.

### **RESPONSIBILITIES**

The Gorge Refuges do not have a dedicated fire management organization. The Project Leader is responsible for planning and implementing the fire management program on these refuges. The Zone Fire Management Officer at the Willamette Valley National Wildlife Refuge Complex is responsible for fire management program oversight. The Project Leader will assign fire management responsibilities as collateral duties to appropriate staff who possess appropriate training, experience, and incident qualifications. Pre-suppression planning and work is accomplished by Refuge staff in accordance with national and regional fire management direction under guidance from the Zone FMO. Emergency fire management actions will be handled by Refuge staff according to training and incident qualifications. The Zone FMO will be immediately notified of all emergency actions. Additional information and direction is included in the Fire Dispatch Plan (Appendix C).

#### **Project Leader (PL)**

- Is responsible for implementation of all fire management activities within the Complex and will ensure compliance with Department and Service policies.
- Selects the appropriate management responses to wildland fire.
- Approves any Prescribed Burn Plan.

#### **Deputy Project Leader (DPL)**

- Coordinates Complex programs to ensure personnel and equipment are made available and utilized for fire management activities including fire suppression, pre-suppression projects, and fire effects monitoring.
- Ensures that Refuge Managers and Complex staff consider the fire management program team during refuge related planning and project implementation.
- Ensures that the fire management program has access to refuge and Complex resources when needed.

#### **Refuge Manager (RM)**

- Identifies pre-suppression projects and biological objectives to the Zone Fire Management Officer (FMO), notifies FMO of project constraints, and ensures that Refuge resources are available to accomplish pre-suppression projects.
- Acts as the primary Refuge Resource Management Specialist during fire management planning and operations.

- Ensures fire effects monitoring is being implemented; drafts wildland fire Burned Area Emergency Stabilization and Rehabilitation Plans for Deputy Project Leader; and is responsible for posting and enforcing fire restriction regulations.

#### **Wildlife Biologist (WB)**

- Coordinates through Refuge Managers and Deputy Project Leader to provide biological input for the fire program with the FMO or Assistant FMO.
- Assists in design and implementation of fire effects monitoring, with FMO or Assistant FMO.
- Participates, as requested, in pre-suppression projects, fire suppression, and rehabilitation according to level of training.

#### **Zone Fire Management Officer (FMO)**

- Responsible for all fire-related planning and implementation for the Complex.
- Integrates biological objectives into all fire management planning and implementation.
- Solicits program input from the PL, RM, and Biologist.
- Supervises pre-suppression project planning.
- Coordinates fire related training.
- Coordinates with cooperators to ensure adequate resources are available for fire operational needs.
- Is responsible for implementation of this Plan.
- Is responsible for preparation of fire reports following the suppression of wildland fires and for pre-suppression projects requiring such.
- Prepares an annual report detailing fire occurrences and pre-suppression activities undertaken in each calendar year. This report will serve as a post-year's fire management activities review, as well as provide documentation for development of a comprehensive fire history record for the Complex.
- Submits budget requests and monitors FIREBASE funds.
- Maintains records for all personnel involved in suppression and pre-suppression activities, detailing the individual's qualifications and certifications for such activities.
- Updates all fire qualifications for entry into the Fire Management Information System.
- Nominates personnel to receive fire-related training, as appropriate.

#### **Incident Commander (IC)**

Incident Commanders (of any level) use strategies and tactics as directed by the Project Leader and Wildland Fire Situation Analysis (WFSA) where applicable to implement selected objectives on a particular incident. A specific Limited Delegation of Authority (Appendix J) will be provided to each Incident Commander prior to assuming responsibility for an incident. Major duties of the Incident Commander are given in the National Wildfire Coordinating Group (NWCG) Fireline Handbook, including:

- Brief subordinates, direct their actions, and provide work tools.
- Ensure that safety standards identified in the Fire Orders, the Watch Out Situations, and agency policies are followed at all times.
- Personally scout and communicate with others to be knowledgeable of fire conditions, fire weather, tactical progress, safety concerns and hazards, condition of personnel, and needs for additional resources.
- Order resources to implement the management objectives for the fire.
- Inform appropriate dispatch of current situation and expected needs.
- Coordinate mobilization and demobilization with dispatch and the Collateral FMO.

- Perform administrative duties, i.e., approving work hours, completing fire reports for command period, maintaining property accountability, providing or obtaining medical treatment, and evaluating performance of subordinates.
- Assure aviation safety is maintained to the highest standards.

### **Resource Advisor (RA)**

The RA is a technical specialist appointed by the Agency Administrator (Project Leader or Refuge Manager, or designee) who reports to the Incident Commander (IC) or designee and provides guidance for natural and cultural resource protection from suppression operations. The RA provides input to the IC in the development of fire suppression strategies and tactics to minimize or mitigate the expected impacts of fire and fire suppression actions upon natural and cultural resources. The RA also provides input required for the development of rehabilitation plans. Resource Advisor responsibilities include (NWCG 1996):

- Provides analysis, information, and advice to fire managers for areas of concern, including:
  - Critical watersheds, riparian areas, fisheries, and water sources
  - Threatened or Endangered species
  - Prehistoric and historic archaeological sites and cultural landscapes
  - Fuel breaks – locations and specifications
  - Urban interface impact – structures and improvements
  - Hazardous materials
- Assists the planning function in developing fire maps and identifying areas of concern
- Determines environmental restrictions commensurate with FMP resource protection in the fire area
- Provides recommendations to fire management personnel and agency administrators for fire suppression rehabilitation needs
- Documents potential and actual suppression/fire-related resource impacts and the rationale for protection of priority areas
- Provides resource information to local initial attack ICs, dispatchers, or other fire personnel during pre-season training and planning meetings.

### **INTERAGENCY OPERATIONS**

The Pacific Region of the U.S. Fish and Wildlife Service is a member of the Master Cooperative Fire Protection Agreement for Oregon and Washington. The Gorge Refuges have entered into the Central Cascades Wildland Fire Operating Plan (CCWFOP) (Appendix F), a step-down agreement from the Master Cooperative Agreement, with various Federal, State and local agencies. The CCWFOP provides that resources of each agency are available to assist in initial attack efforts, and details payment among cooperators, list of response areas, communications frequencies. The plan has been reviewed by a contract specialist and/or solicitor.

The CCWFOP states that “consistent with the National Interagency Agreement and the guiding principals of Closest Forces, Gifford Pinchot National Forest will provide initial attack fire suppression services on lands managed by the U.S. Fish and Wildlife Service (FWS) within the Columbia River Gorge National Scenic Area (CGF). This includes; Steigerwald Lake National Wildlife Refuge, Franz Lake National Wildlife Refuge, Pierce National Wildlife Refuge.” Under this agreement, the closest stationed Federal fire forces are based at Ft. Rains, North Bonneville, Washington, with response times of approximately twenty minutes to Pierce NWR, 30 minutes to Franz Lake NWR, and 50 minutes to Steigerwald Lake NWR. The U.S. Forest Service also has a unit stationed at Cascade Locks, Oregon, with an additional 10 to 15 minutes response time to each location. The Washington State Department of Natural Resources (DNR) is also a cooperator of the CCWFOP, and the Castle Rock Unit has an engine stationed at Battle Ground, Washington, approximately 45 minutes from Steigerwald Lake NWR. Under terms of the

CCWFOP, initial and sustained fires protection services will be provided under the Closest Forces and “most qualified” components of the Incident Command System. In addition, the City of Washougal Fire Department has a Type 6 250-gallon engine stationed in Washougal for responding to wildfires, and has indicated they would provide initial attack services for Steigerwald Lake NWR; however, no official agreement exists. Washougal City Fire Department also has access to wildfire response capability in Fire Districts #1 (Washougal), #9 (Camas) and the Camas Fire Department, who they can contact through the Clark Regional Emergency Services Agency.

As agreed to by all parties of the CCWFOP, dispatch services for Columbia River Gorge Refuges will be handled by the Mt. Hood National Forest Fire Dispatch Center (MHNFFDC) located in Sandy, Oregon. MHNFFDC handles interagency dispatching for the areas surrounding the Refuges and will expedite fire reports that come in from the communities of Stevenson, Skamania, and Washougal. A copy of the Columbia River Gorge Refuges Fire Dispatch Plan will be given to MHNFFDC, the Castle Rock Unit DNR, the Columbia River Gorge National Scenic Area office in Hood River, Oregon, and the Clark Regional Services Agency. All of the listed parties will be invited to an annual on-site visit to the Refuges prior to July 1 of each year to discuss any specifics of the Columbia River Gorge Refuges Fire Dispatch Plan.

Skamania County Rural Fire District #5 will take the lead on structure protection both within and outside of Pierce and Franz Lake Refuges, while the City of North Bonneville will take the lead to protect structures along the boundary of Pierce Refuge and North Bonneville. The City of Washougal Fire Department will take the lead on structure protection within and near Steigerwald Lake Refuge, as well as protection of the state/county/city road right-of-ways within the area. Verbal concurrence has been received from each of these fire districts, with Memoranda of Understanding to be developed before the next fire season. The Fire Districts will be included in any annual visits and will be provided with a copy of the Dispatch Plan.

Under the Closest Forces concept as practiced within the Central Cascades Wildland Fire Operating Plan, any qualified resource covered under the plan may respond and take appropriate actions commensurate with their respective qualifications and experience level. The Columbia River Gorge Refuges will use the Incident Command System (ICS) as a guide for fireline organization. Qualifications for individuals are per DOI Wildland Fire Qualifications and Certification System, part of the National Interagency Incident Management System (NIIMS) and the National Wildland Fire Coordination Group (NWCG) Prescribed Fire Qualification Guide. Depending on fire complexity, some positions may be filled by the same person. The Central Cascades Wildland Fire Operating Plan is reviewed by the participating agencies every spring.

## **PROTECTION OF SENSITIVE RESOURCES**

Heavy equipment and retardant are allowed within grasslands and forested uplands. Due to the presence of both State and Federally listed anadromous fish and other significant aquatic resources, retardant drops should not occur in close proximity to wetlands, streams, and other watercourses on the Gorge Refuges. Additionally, retardant drops should be avoided in areas with known cultural resources due to the potential of resource damage by chemical reaction, staining, or impact. The use of certain fire retardants that are potentially toxic to aquatic organisms should be avoided when possible. Fire-trol<sup>®</sup> fire retardant contains cyanide and is toxic to aquatic organisms. Silv-ex<sup>®</sup> and Phos-chek<sup>®</sup> wildland fire foams are more toxic to aquatic organisms than other types of fire foams. Other fire suppressant chemicals may be utilized, if needed, on the refuges.

Known cultural resources are listed in Table 2 of the Description of Refuges section. Significant aquatic resources coupled with seasonally shallow wetland depths will preclude bucket dips from aircraft from Refuge wetlands. No portion of any of the Gorge Refuges exceeds one air mile from the Columbia River, which will likely serve as the primary dip location for aircraft buckets. Dozer lines, retardant, and foam should only be used only after careful assessment by the IC and consultation with the Resource Advisor, or if the IC determines that the fire is a threat to firefighter and/or public safety. In these instances, no further consultation is required, and the IC will make the determination on suppression tactics to be implemented. In many instances, this will not be an issue due to the interspersed of suitable anchor points, control lines, and fire breaks in the form of interspersed wetlands, abundance of transecting service roads and dikes, adjoining railways and public roads, and streams. The flat topography that typifies the flood plains of the Gorge Refuges affords opportunities to direct attack fires with engines during seasonally dry periods. Off-road engine utilization near wetlands and low wet meadow areas during the wet season should be only undertaken after careful reconnaissance and coordination with the IC and/or Resource Advisor due to the danger of rollover or becoming stuck.

The Regional Archaeologist and/or his/her staff will work with fire staff, Project Leader, and Incident Commanders to ensure that cultural resources are protected from fire and fire management activities. The Request For Cultural Resource Compliance form (RCRC) (Appendix D) will be used to inform the Regional Archaeologist of impending activities, thereby meeting the regulations and directions governing the protection of cultural resources as outlined in Departmental Manual Part 519, National Historic Preservation Act (NHPA) of 1966, Code of Federal Regulations (36CFR800), the Archaeological Resources Protection Act of 1979, as amended, and the Archaeological and Historic Preservation Act of 1974. The NHPA Section 106 clearance will be followed for any fire management activity that may affect historic properties (cultural resources listed or eligible for listing on the National Register of Historic Places).

Impacts to archaeological resources by fire resources vary. The four basic sources of damage are (1) fire intensity, (2) duration of heat, (3) heat penetration into soil, and (4) suppression actions. Of the four, the most significant threat is from equipment during line construction for prescribed fires or wildfire holding actions.

The following actions will be taken to protect cultural resources:

### *Wildland Fires*

- Minimum Impact Suppression Tactics (MIST) will be used to the fullest extent possible.
- Resource Advisors will inform fire suppression personnel of any areas with cultural resources. The Resource advisor should contact the Regional Archaeologist and/or his/her staff for more detailed information.
- Foam use will be minimized in areas known to harbor surface artifacts.



- Mechanized equipment should not be used in areas of known cultural significance.
- The location of any sites discovered as the result of fire management activities will be reported to the Regional Archaeologist.
- Rehabilitation plans will address cultural resources impacts and will be submitted to the Regional Archaeologist using the RCRC.

*Prescribed Fires*

- The Refuge Fire staff will submit a completed RCRC to the Regional Archaeologist and/or his/her staff as soon as the burn area is identified (*i.e.*, as soon as feasible).
- Upon receipt of the RCRC, the Regional Archaeologist and/or his/her staff will be responsible for consulting with the FMO and evaluating the potential for adverse impacts to cultural resources.
- When necessary, the Regional Archaeologist and/or his/her staff will coordinate with the State Historic Preservation Officer (SHPO). The SHPO has 30 days to respond. The Refuge will consider all SHPO recommendations.
- Mechanized equipment should not be used in areas of know cultural significance.
- The location of any sites discovered as the result of fire management activities will be reported to the Regional Archaeologist.

## WILDLAND FIRE ACTIVITIES

Fire program management describes the operational procedures necessary to implement fire management at the Gorge Refuges. Program management includes fire prevention, preparedness, emergency preparedness, fire behavior predictions, fire detection, fire suppression, minimum impact suppression, minimum impact rehabilitation, and documentation.

All fires not classified as prescribed fires are wildland fires and will be appropriately suppressed. Normal suppression operations for the Gorge Refuges will include initial attack resources from the U.S. Forest Service and other designated agency personnel. Under most situations, fires will be immediately suppressed utilizing the ground crews from responding agencies. Dike and road systems, the proximity of natural wetlands, and the narrow configuration of the Gorge Refuges (generally less than 1 mile wide and adjacent to the Columbia River) allow suppression activities to occur rapidly, as well as limiting the fire extent to relatively small defensible units. Helicopter water buckets can be effectively used in upland portions of these refuges due to the near proximity of the Columbia River.

The U.S. Forest Service considers the wildland fire season for the Columbia River Gorge National Scenic Area to be late-May until late-October (Rod Altig, *pers. comm.*). These parameters may vary depending on prevailing weather conditions of any given year. Fire crews would generally be fully staffed during this time frame to respond to wildland fires on the Gorge Refuges and throughout the Scenic Area.

### FIRE MANAGEMENT STRATEGIES

Although resource impacts of suppression alternatives must always be considered in selecting a fire management strategy, managing fire for resource benefit will not be the primary consideration. Appropriate suppression action will be taken to ensure firefighter safety, public safety, and protection of the resources.

Critical protection areas, such as administrative buildings, water control infrastructure, railroad right-of-ways, public roadways, and adjoining private lands will receive priority consideration in fire control planning efforts. In all cases, the primary concerns of fire suppression personnel shall be safety, and if needed, all individuals not involved in the suppression effort will be evacuated.

Suppression strategies should be applied so that the equipment and tools used to meet the desired objectives are those that inflict the least impacts upon natural and cultural resources. Minimum Impact Suppression Tactics (MIST) will be employed to protect all resources. Natural and artificial barriers will be used as much as possible for containment. When necessary, fireline construction will be conducted in such a way as to minimize long-term impacts to resources. Sites impacted by fire suppression activities or by the fire will be rehabilitated as necessary, based on an approved course of action for each incident.

Specific fire management strategies for the Gorge Refuges are:

- All wildland fires will be controlled using the appropriate suppression strategy which considers safety, property, natural and cultural resources, and economics.
- Mechanical treatment will be used to reduce hazardous fuels around structures and improvements annually.
- Prescribed fire will be utilized to restore the historic fire regime and meet the ecological needs of the Refuge.
- Known cultural resource areas will be excluded from all fire management activities including fire line location, retardant drops, and adverse fire effects.

## PREPAREDNESS

Preparedness is the work accomplished prior to fire occurrence to ensure that the appropriate response, as directed by the Fire Management Plan, can be carried out. Preparedness activities include budget planning, equipment acquisition, equipment maintenance, dispatch (initial attack, extended, and expanded), equipment inventory, personnel qualifications, and training. The preparedness objective is to have a well trained and equipped fire management organization to manage all fire situations within the refuges. Preparedness efforts are to be accomplished in the time frames outside the normal fire season dates.

## Historical Weather Analysis

The normal fire season, as established by the U.S. Forest Service Columbia Gorge National Scenic Area, runs from early May to mid-October. Depending on the specific weather of any particular year the seasons may be shorter or longer and, therefore, may start earlier or last longer.

General fire weather information can be obtained through the National Oceanic and Air Administration (NOAA) at [fire.boi.noaa.gov](http://fire.boi.noaa.gov). The Columbia Gorge Refuges are located in the area serviced by the National Weather Service (NWS) office in Portland, OR. The Portland NWS website, [www.wrh.noaa.gov/Portland/fire.html](http://www.wrh.noaa.gov/Portland/fire.html), contains zone maps and fire weather forecasts, Remote Automated Weather Station (RAWS) locations, and a request form for spot weather forecasts. The main portion of Steigerwald Lake NWR falls within Fire Weather Zone 604, but the upland parcels north of the main refuge fall within Zone 660. Franz Lake and Pierce fall entirely within Zone 660. The Northwest Area Fire Weather Operating Plan, which includes a plan for the Portland NWS office, contains contact phone numbers and procedures for obtaining fire weather and spot weather forecasts, and details the RAWS found within each Fire Weather Zone. This plan can be found at [www.wrh.noaa.gov/Portland/fwx.htm](http://www.wrh.noaa.gov/Portland/fwx.htm).

A private weather station maintained by Dan Vogel in Washougal, WA has been collecting data for 41 years. Data from the station are provided to Steigerwald NWR monthly. The station is located at 33220 SE 20<sup>th</sup> Street in Washougal, and sits at an elevation of 480 feet. Data from this station are summarized in Table 3.

Table 3. Vogel Weather Station Summary, Washougal, WA.

Month	Daily Temperature			Precipitation		Wind	
	Max. (°F)	Min. (°F)	Mean (°F)	Mean Total (in)	Mean Total Snowfall (in)	Prevailing Direction	Average Speed (mi/hr)
January	43.9	33.7	38.8	9.12	6.5	NE	12.1
February	49.0	35.7	42.4	6.60	3.0	NE	11.0
March	54.0	36.5	45.3	6.15	1.5	SW	7.8
April	58.6	38.6	48.6	4.89	0.1	SW	6.3
May	65.6	42.9	54.2	3.93	(trace)	SW	5.3
June	71.1	47.6	59.3	3.07	0.0	NE	4.8
July	77.6	50.6	64.1	1.19	0.0	W/NE	4.3
August	78.3	51.0	64.6	1.64	0.0	NE	4.5
September	73.1	48.4	60.8	2.95	0.0	NE	5.4
October	62.1	43.1	52.6	5.04	(trace)	S	6.3
November	50.5	38.7	44.6	8.98	1.4	NE	9.5
December	43.9	34.2	39.0	9.63	4.7	NE	12.6
Annual	60.6	41.8	51.2	63.19	17.2	NE	7.5

A weather station was established on the North Straub Unit of Steigerwald Lake NWR in 2003. Originally the station had been installed and funded by Washington Department of Ecology (WDOE). The primary purpose of the monitoring station was to collect information on light scattering (pollutants in the air), which is done with a nephelometer. There is also a meteorological station, which collects information on air temperature, relative humidity, and wind speed and direction. All of this information was recorded continuously and downloaded to a station at the WDOE office. However, because of budget cuts, WDOE had to divest themselves of the project. Although it was taken over the Southwest Clean Air Agency, they do not have the capability to electronically monitor the data being collected. Instead, they have to periodically download the data manually from the station. The data are currently in a raw form, and will be transformed in late 2004 or early 2005 by a contractor.

Because this station has not collected enough data to characterize historical trends, other means of determining severe fire weather conditions will be used until a historical record can be obtained. Fire danger ratings posted by the Gorge Refuges will be consistent with those posted by neighboring agencies, unless weather conditions are dramatically different than on those lands.

### **Fire Prevention**

An active fire prevention program may be conducted, as needed, in conjunction with other agencies to provide for the protection of human life and property, and prevent damage to natural and cultural resources and physical facilities.

A program of internal and external education regarding potential fire danger may be implemented. Visitor contacts, bulletin board materials, handouts and interpretive programs can be utilized to increase visitor and neighbor awareness of fire hazards.

During periods of extreme or prolonged fire danger emergency restrictions regarding refuge operations may become necessary, or area closures may be implemented. Such restrictions, when imposed, will usually be consistent with those implemented by cooperators.

### **Hazard Reduction for Structure Protection**

Hazard fuel reduction is conducted to prevent wildland fires from spreading onto structures owned by the FWS. Specific hazard reductions for structures are listed below by refuge.

***Steigerwald Lake NWR.*** The administrative office for the Gorge Refuges is located at Steigerwald NWR in the Columbia Land Trust Unit. Adjoining this office is a small dairy barn. A small yard surrounding the administrative office is maintained during the growing season and affords this facility some protection. A proposed entrance road to the southeast of the facility may serve as an additional firebreak. To the north of the office is a railway that can function as a firebreak.

A well house is located in the northeast corner of the Stevenson Unit. The grass surrounding this well house is typically mowed during the fire season. A service road to the east and railway to the north of this structure may serve as firebreaks.

A well house near the demolished Straub Barn in the northern portion still exists. No fire preventative measures occur in this location. Himalayan blackberry plants have largely overgrown the building. The well has been capped and the plumbing and pressure tanks have been removed.

Fields surrounding the weather station in the North Straub are mowed annually, often late in the fire season. The value of this mowing as a firebreak will depend upon seasonality of fire relative to pasture mowing.

***Franz Lake NWR.*** The Service owns a residence off of the Franz Lake entrance road. Structures associated with this residence include a double-wide mobile home, well house, small livestock corral and protection shed. The entrance road to the north of this residence can act as a firebreak for low intensity fires. Additionally, a small yard maintained around this residence may suppress advancing fires. However, the residence is situated within a heavily forested area where firebreaks may have little effect on high intensity fires moving through the canopy. The Service has decided that there is little need for this residence and it will be removed and the site rehabilitated in 2004.

***Pierce NWR.*** At Pierce NWR a residence and office is located off of Highway 14 near Hardy Creek. This building is bordered by service roads to the south and west. State Route 14 borders this structure to the north. A garden plot and mowed areas occur to the south of the structure. These roadways and clearings may serve as firebreaks to low intensity fires. However, this structure occurs within a heavily forested area where firebreaks may have little effect on high intensity fires moving through the canopy. There is an additional 20' wide gravel entrance road into the refuge and an adjacent 100' x 100' gravel parking lot located approximately 500' east of the building, which could serve as a firebreak in case of an understory fire.

A mobile home at Pierce NWR off of State Route 14 serves as temporary housing for volunteers. This house is set within a forested area with both a service road and State Route 14 to the north. These are the primary firebreaks for the house for ground fires.

Just above the railroad tracks at Pierce NWR is a storage building and well house. These structures are situated between a service road to both the east and north and a railway to the south, and occur in a clearing that is periodically mowed. These features may function as a firebreak to some fires.

Below the railway at Pierce NWR is a shop and storage building. A service road borders this building to the south and the railroad to the north. The building has a large concrete apron to the south that may reduce fire risk to the structure. The apron contains above-ground concrete fuel storage tanks (gasoline/diesel) that were permanently emptied in February 2004, but may contain some residual fuel that could not be pumped out. This building may be most vulnerable from fires approaching from the west, where it abuts a forested area.

## **Training**

Departmental policy requires that all personnel engaged in suppression and prescribed fire duties meet the standards set by the National Wildfire Coordinating Group (NWCG). The Gorge Refuges will conform strictly to the requirements of the wildland fire management qualification and certification system and USFWS guidelines.

Basic wildland fire training refreshers are offered annually for red-carded firefighters and records kept in a centralized database. Additional training is available from surrounding cooperating agencies in pump and engine operation, power saws, firefighter safety, fire weather and behavior, helicopter safety and prescribed fire objectives and activities. On-the-job training is encouraged and will be conducted at the field level. Whenever appropriate, the use of fire qualification task books will be used to document fire experience of trainees. The Zone Fire Management Officer will coordinate fire training needs with those of other nearby refuges, cooperating agencies, and the Regional Office.

The refuge supports the development of individual Incident Command System (ICS) overhead personnel from among qualified and experienced refuge staff for assignment to overhead teams at the local, regional, and national level.

Fire suppression is an arduous duty. On prescribed fires, personnel may be required to shift from implementation/monitoring activities to suppression. Poor physical condition of crew members can endanger safety and lives during critical situations. Personnel performing fire management duties will maintain a high level of physical fitness. This requires successful completion of a fitness pack test. Personnel must complete a three mile hike with a 45 pound pack in less than 45 minutes. Employees participating in any wildland fire activities on Fish and Wildlife Service or cooperators' lands will meet fitness requirements established in the Wildland and Prescribed Fire Qualification System Guide (PMS 310-1), except where Service-specific fitness requirements apply.

### **Supplies and Equipment**

Initial attack equipment will come from a variety of locations depending upon resource availability. Engines cooperatively staffed and funded by the Columbia River Gorge National Scenic Area (CGF) and its partners are available to respond as a reciprocal fire suppression resource to all incidents occurring on lands protected by the USDA Forest Service within the confines of the CGF. The CGF will dispatch equipment and suppression personnel through the Mount Hood National Forest. Two Type 6 engines are available from CGF for suppression activities.

There is no assigned fire equipment cache located on any of the Gorge Refuges or the Complex office at Ridgefield National Wildlife Refuge. Additionally, Complex personnel have not maintained 'red card' certification to participate in fire suppression activities. The nearest fire supply caches include Fort Rains (Washington DNR), a satellite cache at Hemlock, WA (Gifford Pinchot National Forest), and a satellite cache at Cascade Locks, OR (Columbia River Gorge National Scenic Area). The Mt. Adams Ranger District compound in Trout Lake, WA maintains a fully operational cache. Mt. Adams has a more remote fire cache in Carson, WA. Mt. Adams has 4 engines and prevention modules that meet Type 6X configuration. Equipment will also be available from the DNR Work Centers in Husum, WA and Battle Ground, WA. The DNR engine assigned to Glenwood carries 500 gallons of water. Additional equipment and supplies are available through cooperators and the interagency cache system. Requests for additional personnel, equipment and spot weather forecasts will be made through the Central Washington Incident Command Center (CWICC) in Wenatchee, WA.

### **DETECTION**

Although the possibility of a wildfire is small, smoke will probably be reported by motorists driving past the refuges on State Route 14 in Washington or Interstate 84 across the Columbia River in Oregon. It is also possible a fire could be detected by airplane, as the flight path of many aircraft from the Troutdale or Portland airports would especially enable the visibility of a fire at Steigerwald Lake Refuge, or by boats using the Columbia River in the area. If calls are made to Skamania or Clark County Dispatch, the centers can in turn contact the local fire departments and MHNFFDC at either of their two numbers. MHNFFDC will then be able to mobilize the USFS and DNR forces and call the Refuge Manager and Project Leader in Ridgefield.

The Fire Management Plan does not discriminate between human-caused and lightning-caused fire. All wildland fires will be suppressed. However, detection shall include a determination of fire cause. Moreover, human-caused fires will require an investigation and report by law enforcement personnel. For serious human-caused fires, including those involving loss of life, a qualified arson investigator will be requested.

### **COMMUNICATIONS**

The signed Central Cascades Wildland Fire Operating Plan (Appendix F) has a provision within the communications portion relating to the use of radio frequencies. Written authority for the use of licensed

radio frequencies will be provided to one another by all parties of the CCWFOP. The signing agencies include the USDA Forest Service (Columbia River Gorge National Scenic Area, Mt. Hood and Gifford Pinchot National Forests), USDOJ Bureau of Land Management (Spokane District), USDOJ Bureau of Indian Affairs (Yakama and Warm Springs Reservations), USDOJ National Park Service (Mt. Rainier National Park), Oregon Department of Forestry (The Dalles and Clackamas-Marion Units), and the Washington Department Of Natural Resources (Central, Southwest and Southeast Regions).

In addition, the Gorge Refuges, as part of the Ridgefield National Wildlife Refuge Complex, have a communications system consisting of a digital/analog radio system, cell phones, and personal computers. The radio system includes base stations at Ridgefield and Conboy Lake National Wildlife Refuges, one portable radio for the Gorge Refuges, eight portable radios at Ridgefield NWR, four portable radios at Conboy Lake NWR, and mobile radios in most vehicles. Five cellular phones are also used at Ridgefield NWR. Radio communication by the refuge radios and phones is not 100 percent reliable, with lack of communication possible because of weather or the rough topography in the Columbia River Gorge.

Immediate emergency notifications and contacts can be found in the Fire Dispatch Plan (Appendix C). During emergency fire operations, mutually agreed upon command and tactical radio channels will be used. Radio frequencies, call signs and use information are found in the CCWFOP.

#### **PRE-ATTACK PLAN**

Upon discovery of a fire, all subsequent actions will be based on the following:

- The Incident Commander (IC) will locate, size-up, and coordinate suppression actions. The IC will complete the pre-attack planning checklist.
- Provide for public safety.
- Considering the current and predicted fire conditions, the Incident Commander will assess the need for additional suppression resources and estimate the final size of the fire. The potential for spread outside of the refuge should be predicted, as well as the total suppression force required to initiate effective containment action at the beginning of each burning period.
- The Incident Commander will assess the need for law enforcement personnel for traffic control, investigations, evacuations, etc., and make the request to the FMO.
- Document decisions and complete the fire report (DI-1202).
- Should a wildland fire move into an extended attack a Delegation of Authority will be invoked. Once a Delegation of Authority has been authorized the Incident Commander will make the final decisions pertaining to the fire. A copy of Delegation of Authority is in Appendix J.

#### **FIRE MANAGEMENT UNITS**

Due to staff limitations, relatively small land management parcels, long response times, valuable resources, and values at risk on neighboring lands, this plan does not authorize managing wildland fire for resource benefits. Wildland fires will be suppressed using the appropriate suppression response. Prescribed fires may be used to reduce hazardous fuels and to meet resource management objectives.

Fire Management Units (FMUs) are areas on a refuge which have common wildland fire management objectives and strategies, are manageable units from a wildland fire standpoint, and can be based on natural or manmade fuel breaks. An FMU may coincide with a prescribed fire burn block or treatment area or unit, but this is not always the case.

There are two primary FMUs located within the Gorge Refuges (Figures 4-6, Appendix G). The Forestlands FMU represents all of the forested areas on the refuges. This FMU is comprised primarily of deciduous riparian stands of black cottonwood, Oregon ash, and native and non-native shrub species. Small blocks of scattered oak and mixed conifer-oak forests also occur on all three refuges. Some dry

upland meadow communities are interspersed within this FMU. Overall however, the terrain is quite flat and the use of burnout tactics from roadways, open areas and the edge of the meadows could be very effective. While attention should be paid to the use of minimum impact standards, there are no prevailing restrictions within this FMU regarding overall suppression tactics. However, Minimum Impact Suppression Tactics (MIST) should be used whenever it is safe and practical to do so. In general, the Forestlands FMU lies adjacent to private lands, along State Road 14, or occurs in closer overall proximity to structures.

The Grasslands FMU represents both the seasonal wetlands comprised of reed canarygrass and emergent vegetation, as well as the drier upland grass communities. It is comprised principally of seasonally wet meadows, and uplands with scattered shrubs and some small blocks of forested areas. This FMU consists of numerous subunits that are defensible at interior roadways, dikes and bodies of water. Burning out from these defensible areas with support from portable pumps and hose will usually be the safest, most practical, and cost effective tactic, and will minimize impact on grassland and wetland areas. Heavy equipment should be used only after consultation with a Resource Advisor, except in cases where the IC determines that life and/or property are imminently threatened. Foam agents and retardant may be deemed necessary based on the time of day, time of season, weather parameters, Energy Release Component, and local staffing levels. Foams and retardants will have a much lesser impact during the latter season of August through October as the grasslands and wetlands dry up and seasonal water levels are reduced or disappear altogether. Every effort should be taken by the IC to consult both with the Refuge Manager and Resource Advisor, as well as with dispatch, to convey the rationale for the actions to be taken.

### Fuel Types

The vegetation on the Gorge Refuges can be broadly classified into three categories – non-native grasslands (grazed or non-managed), emergent wetlands, and mixed deciduous-coniferous forestlands. Fuel models were determined for the refuges utilizing Hal Anderson’s *Aids to Determining Fuel Models for Estimating Fire Behavior* (1982). The upland grasslands are best described by Fuel Model 1. The emergent wetland and canarygrass areas are best described by Fuel Model 3. Fuel Models 1 and 3 account for approximately 61% of the Gorge Refuges total acreage. The forested areas of the Refuge are best described by Fuel Model 9. See Table 4 for a breakdown of the Refuge area by fuel model.

Water, roads and parking lots are the areas on the Refuge which do not contain burnable fuels. Buffer areas around the office, residences, shops and barns are mowed during the summer to reduce fuels and minimize chances that a fire could carry through the outlying fuels to the buildings.

Table 4. Fuel models at the Gorge Refuges, with represented vegetation types and acres.

Fuel Model*	Vegetation Types	SLNWR	FLNWR	PNWR
		Acres	Acres	Acres
1	Agricultural, Upland Grasslands	508	54	160
3	Wet Prairie, Sawgrass	380	84	51
9	Mixed Conifer/Hardwood with Brush Understory	120	320	165
–	Administrative Sites, Roads, Open Water	49	115	9

\* Fire Behavior Fuel Model (Anderson 1982)



## Fire Behavior

### *Grass Fuels / Grasslands FMU*

Fires in these fuel types are primarily surface fires and move rapidly through the cured grass. Seasonal changes from live to dead (cured) for the perennial and annual species are very important to potential fire behavior. Grass fuel beds transition throughout the growing seasons from green-up in the spring, curing in summer, to a fully cured stage in late-summer or fall, followed by a winter rain and snow compacting stage. These fuels respond rapidly to moisture changes and wind driven events which are common in the Columbia River Gorge. Although grass fuel models are less complex to suppress, the rates of spread and flame lengths can be deceptive if wind is present, especially when combined with even slight to moderate slopes. Fuel Model 1 best represents the grass areas in the dry upland communities found on these Refuges, as well as open grasslands under scattered oak stands. Fuel Model 3 best represents a reed canarygrass-type fuel that can carry fire even over standing water.

Fires in the grass group fuel models exhibit some of the faster rates of spread under similar weather conditions. With an effective midflame windspeed of 5 mi/hr and a moisture content of 8 percent, rates of spread for Fuel Models 1 and 3 are expected to be 78 and 104 chains/hr, respectively. Flame lengths for Fuel Models 1 and 3 are expected to be 4 and 12 feet, respectively. As windspeed increases, Fuel Model 1 will develop faster rates of spread than Fuel Model 3 due to fineness of the fuels, fuel load, and depth relations.

The commonly understood upper limit of control by direct attack by firefighters on the head of a fire is flame lengths of four feet, and eight feet for mechanized equipment (bulldozers). Although Fuel Model 3 shows flame lengths exceeding the four foot limit, engine crews are frequently successful in attacking these fires utilizing an inside/out approach where the attack is done safely from inside the black.

### *Timber Fuels / Forestlands FMU*

Fuel Model 9 best represents the cottonwood/ash overstory and shrub understory found in riparian and flood plain habitats on the Gorge Refuges. Mixed conifer/Oregon white oak stands with predominantly shrub or non-native blackberry understory also are included in this fuel model. Heavy fuel concentrations may occur in this fuel type due to the accumulation of large woody debris and non-native shrub component. During periods of severe fire weather (conditions involving high temperatures, low humidity, and high winds), these fuels can pose a much higher hazard than typically encountered. Fires may burn hotter under very dry conditions with more torching, spotting and crowning.

With an effective midflame windspeed of 5 mi/hr, dead fuel moisture content of 8 percent, and live fuel moisture of 100 percent, rate of spread and flame length in Fuel Model 9 is expected to be 7.5 chains/hr and 2.6 feet, respectively (Anderson 1982).

Table 5. Expected rates of spread and flame lengths for the fuel models found on the Gorge Refuges.

<b>Fuel Model*</b>	<b>Rate of Spread (ch/hr)</b>	<b>Flame Length (ft)</b>
<b>1</b>	78	4
<b>3</b>	104	12
<b>9</b>	7.5	2.6

\* Fire Behavior Fuel Model (Anderson 1982)

## **Fire Effects**

Wildland fires are most likely to occur near public use areas, along transportation corridors, and as a result of accidental starts from farming or maintenance activities. Public use on the Gorge Refuges is largely limited to the foot traffic along the Columbia River Dike Trail at Steigerwald Lake NWR. However, neighboring public lands to the Gorge Refuges have been developed for public use, including Sam Walker Recreation Area, Beacon Rock State Park, St. Cloud Recreation Area, Hamilton Island Recreation Area, and Captain William Clark Park. Fires initiating at these locations may spread to the adjacent Gorge Refuges. Major transportation corridors transecting the Gorge Refuges include both State Route 14 and the Burlington Northern Railroad. Fires can have a significant positive or negative impact on sensitive plants and wildlife depending on the timing and intensity of the burn. Select species may be dependent upon fire to achieve beneficial ecological functions while other species of plants and animals are not adapted to fire. The effects of wildland fires on major Refuge systems and select conservation targets are discussed below.

***Wetland Complex.*** The Gorge Refuges contain a mosaic of wetland types including riverine wetlands, wet meadow, emergent wetlands, and lacustrine wetlands. Focal conservation targets discussed within the CCP for wetland communities include western toad (breeding), red-legged frog, western pond turtle (non-breeding), waterfowl, northern harrier, and Bradshaw's lomatium. The landscape position of wetlands would preclude fire from having much effect on riverine wetlands and lacustrine wetlands. These wetland types are associated with perennial waters; therefore, fire would have limited impacts on vegetation and wildlife. Conversely, emergent wetlands and wet meadow communities require seasonal drying, making them more prone to late summer fire.

Fire may have beneficial effects on seasonal emergent wetlands and wet meadows. On the Gorge Refuges, both emergent wetland and wet meadow areas are heavily impacted by monotypic stands of reed canarygrass. These monotypic stands are typically unproductive areas for supporting diverse native fauna and flora. Fire may be an efficient tool to periodically reduce cover of invasive stands of reed canarygrass and presumably promote emergence of native vegetative communities.

Fires prior to the nesting season (before May) will reduce nesting cover and suppress local annual production of waterfowl, harriers, and select ground and shrub nesting neotropical migrants. Fires during the breeding season (May through July) will jeopardize annual recruitment of nesting avian species and may imperil molting adult waterfowl. Fires outside the breeding season should have limited negative impacts to neotropical migrants, harriers, and waterfowl due to their ability to escape. Additionally, fire may enhance nesting conditions and productivity for subsequent nesting seasons through the improvement of habitat conditions.

Western toad, red-legged frog, and western pond turtle all have varying terrestrial and aquatic active periods. Breeding ponds for western toads are utilized from May to June with juvenile toads emerging from natal ponds as late as July. Adult western toads are largely terrestrial, seeking refuge in many upland habitat types. The effects of fire to developing juvenile toads and breeding adult toads can be minimized by avoiding critical breeding seasons and locations. Western pond turtles aestivate in upland areas, including riparian corridors and oak woodlands. Western pond turtles may also range long distances. Data gathered at Pierce on distribution of western pond turtles from release sites will facilitate fire planning and minimize the potential of harm to this species.

***Columbia River Shoreline.*** Fire within the Columbia River Shoreline systems is not anticipated to be beneficial or effective. This habitat occurs along the lowest riparian zone of Pierce NWR along the Columbia River and consists of river cobble which is exposed during low summer river levels. Columbia yellowcress, a state threatened plant, is the target conservation species for this habitat type. Fire is not

likely to carry through this habitat, and presumably fire historically had little influence on this plant community.

***Other Riparian Communities.*** Fire in many riparian communities may have limited effects due to their setting within the landscape. Judicious use of low intensity fire within some riparian areas is anticipated to reduce invasive plant cover (reed canarygrass, Himalayan blackberry and Canada thistle) and expose open areas for native plant seed germination. Areas containing sufficient native shrub layers, sub-canopy layers, and sapling propagation should be excluded from fire to prevent damage to desired species. Prescribed burning should be avoided during nesting seasons for neotropical songbirds (May – July). Western toad and western pond turtle favor native shrub layers for thermal cover and protection. Fire exclusion from healthy layered riparian areas will limit the impacts of fire to terrestrial toads and turtles.

***Pastures and Grasslands.*** Pastures and grasslands of the Gorge Refuges are largely composed of various non-native pasture grasses and forbs. Historically, these areas were seeded to non-native or domesticated grass species for agricultural purposes. Pasture management (including planting to non-native pasture vegetation, grazing, and pesticide application) and the spread of non-native vegetation (especially reed canarygrass and/or Himalayan blackberry) to non-pasture grasslands have largely eliminated the presence of native grasses and forbs from Refuge grasslands. The effects of fire on grasslands are temporary and may favor native fire-dependent species. Late fall growth following fire is anticipated to create favorable goose browse conditions. Fire within grasslands is anticipated to be an additional control measure for undesired vegetation, such as Canada thistle and Himalayan blackberry, while reducing the Refuge's dependency on herbicides and mechanical control methods. As opposed to haying and grazing, fire reduces vegetation height while offering a favorable method for nutrient return back to the field. Prescribed burning should be avoided during the nesting seasons for focal conservation species including harrier and ground-nesting neotropical songbirds. In the short-term fire may reduce vertical structure within grasslands; however, burned shrubs interspersed within re-established grasslands are favorable perches for conservation targets including harriers.

***Oregon White Oak.*** Oregon white oak is typically a sub-climax species, with Douglas-fir growing 3-5 times faster than oak in shared habitats west of the Cascades (Sprague and Hansen 1946). Historically, frequent low intensity fires prevented the establishment and maturation of Douglas-firs within Oregon white oak habitat. Periodic fires likely killed some oaks; however, this process is essential to promote oak regeneration and enhance stand structure complexity. With cessation of regular burning 100-130 years ago, many grasslands and savannas became dense oak woodlands, which in turn were overtaken by conifers (Larsen and Morgan 1998). Burning within oak savannas is anticipated to reduce the encroachment of invasive species into the shrub layer and support native fire-dependent grasses and forbs. Layers of Himalayan blackberry currently dominate many oak savannas, reducing the value of these habitats for native fauna. In places, blackberry coverage is sufficiently dense to preclude fallen acorns from becoming saplings. Fire is anticipated to reduce invasive species coverage, increase sapling success, and secure the long-term viability of oak communities on the Gorge Refuges.

## **SUPPRESSION TACTICS**

Suppression involves a wide range of possible tactics from the initial attack to final control. To this end, all wildland fires will be suppressed in a safe, aggressive, and cost-effective manner to produce efficient action with minimal resource damage and to limit smoke impacts to local communities.

Typical initial attack responses will include a qualified Type 4 or 5 Incident Commander or Engine Boss from the responding agency. The IC in many cases will arrive on the first initial attack engine. The ordering of a Resource Advisor, Fire Investigator and Type 3 Safety Officer is strongly recommended for most situations during primary fire season events. While there is an agreement stating that the CGF will

provide “initial attack suppression services,” that does not preclude the IC and resources coming from a different neighboring agency. In all cases, the identity of the IC should be made known to dispatch, all fireline personnel on scene and in travel mode, and to the FWS agency representative on scene. Changes in personnel will need to be immediately announced to dispatch, all personnel on the ground, and any incoming resources.

Adjustments to these dispatch levels may be made at the discretion of the duty officer based on local conditions or initial reports. All fires will be assessed by the first on-scene incident commander and attacked using minimum impact fire suppression tactics for the Refuges. Roads and natural barriers will be used as much as possible to reduce fireline construction. Fireline and mop-up through riparian or forested areas should consider long-term damage to vegetation. Unnecessary cutting and bucking should be replaced with alternative actions whenever possible. Back-fires and burnout operations should consider head fire intensities and attempt to avoid damaging the soil or running fire into riparian areas. Where wildland fires cross roads, the burned area adjacent to the road should be mopped up and dangerous snags felled.

In addition to the consultation with the Project Leader or their representative, a Resource Advisor should be assigned to the incident from the beginning to document rehabilitation needs, and assist with on-the-ground tactical decisions.

There will be only one Incident Commander responsible through the Zone FMO to the Refuge Manager/Project Leader. The Incident Commander will designate all overhead positions on fires requiring extended attack. Reference should be made to a Delegation of Authority (Appendix J).

### **Suppression Conditions**

While there is not a recent fire history to build a plan from, there are enough indicators to help in developing an overall strategy. While the CGF has initial attack responsibilities for the Refuge, that agency may not have available resources to send off unit. For most conditions on the Gorge Refuges, that should not be a problem. These Refuges do not have a history of multiple fire starts and the Gifford Pinchot National Forest (GPF) typically does not have a high incidence of multiple starts. The Mt. Adams Ranger District, however, has had in recent years, including 2001, situations with both human- and lightning-caused fires where all of their engine resources were committed either locally or for large fire support actions elsewhere. Barring that type of episode, the most common response from either the CGF or DNR will be with an engine module with an estimated time of arrival of 20-50 minutes, depending on the refuge. Unless multiple fires occur in Skamania and Clark Counties due to lightning or an unusual human-caused event, the DNR may be on scene sooner than the Forest Service. There will be times when the DNR person-in-charge is the most qualified person on site and would therefore be the logical choice as IC. These details will be addressed annually at the Central Cascades Wildland Fire Operating Plan meeting, which takes place each spring in the Columbia River Gorge. Personnel from the Gorge Refuges (Zone FMO, Refuge Manager, and/or Resource Advisor) should attend this meeting each year to ensure the fire management program and coordination with neighboring agencies are appropriately addressed.

A full suppression alternative for all wildland fires, which requires aggressive containment and control, was selected for these Refuges. Heavy equipment use will be restricted due to potential impacts to natural resources. Consultation with the Resource Advisor is necessary to insure appropriate suppression responses are utilized. However, as stated in FWS/RF95-00209 dated September 21, 1995 from the Director of the Fish and Wildlife Service to the Regional Directors, on the subject of wildfire suppression and candidate, threatened and/or endangered species, there are some overriding principles. Of paramount importance is the safety of firefighters and the general public, and no constraints for the protection of

endangered species or their habitat will be considered if they place human life in danger. **FIREFIGHTER SAFETY COMES FIRST ON EVERY FIRE, EVERY TIME.**

When looking at the Gorge Refuges from a strategy standpoint, there are two different sets of situations which may direct decision making. First, the overall setting of these Refuges is very conducive to controlling fires in the initial phase due to the relatively flat terrain, location of a major road and the Columbia River on the periphery, generally light fuels, and the narrowness of the refuges which facilitates access. The second set of issues deals with public safety and complicates suppression efforts. These issues include the relatively small size of these Refuges, the proximity to developed areas (especially at Steigerwald Lake), and the proximity of timber off-refuge (Franz Lake and Pierce) which could be susceptible to spotting and crowning.

When suppressing fires on the Refuge, it will be important for the IC, Resource Advisor or agency representative and the firefighters on the ground to keep in mind the second set of issues at all times. Public safety concerns from the fire itself as well as from smoke will typically lead to a quick and aggressive strategy to keep fires from pushing toward the Refuge’s northern boundaries. This will need to be balanced with the preference to use MIST tactics whenever practical.

Standards and guidelines for use of heavy equipment, foam, retardant, and aircraft as described within the FMUs were developed using an interdisciplinary process. Guidelines have been developed to assist with the Gorge Refuges’ full wildfire suppression strategy and protect the refuges from unnecessary damage (Table 6). Heavy equipment and aircraft/retardant use is restricted due to cultural, wildlife, and safety concerns. Unless life or property is determined to be in imminent danger by the IC, or when there are high fire danger or staffing level concerns, consultation with the Refuge Manager or representative prior to use is necessary. At the annual CCWFOP review, issues of restrictions should be discussed with cooperators. Changes and areas of concern should be documented.

Table 6. Guidelines for use of certain suppression tactics by FMU.

<b>Suppression Tactic</b>	<b>Forestlands</b> Fire Management Unit	<b>Grasslands</b> Fire Management Unit
Foam	IC Discretion	If Life/Property Threatened; or Based on ERC* and Staffing Levels
Retardant	IC Discretion	If Life/Property Threatened; or Based on ERC* and Staffing Levels
Dozer Line	IC Discretion with Resource Advisor Consultation	If Life/Property Threatened; or with Resource Advisor Approval
Handline	IC Discretion	Wetline whenever possible
Off -road travel	IC Discretion	IC w/ Resource Advisor Direction
Bucket Drops	Approved/utilize designated dips	Approved/utilize designated dips
Use of Hoselays	Approved	Approved
Burnout from Control Pts.	Group Leader Direction w/IC	Group Leader** Direction w/IC

\* ERC = Energy Release Component

\*\* Group Leader = Crew Boss, Strike Team Leader, etc., who reports to the IC

### **Wildland Fire Situation Analysis**

For fires that cannot be contained in one burning period, a Wildland Fire Situation Analysis (WFSA) (Appendix K) must be prepared. In the case of a wildland fire, the Project Leader, in conjunction with the FMO, will prepare the WFSA. Approval of the WFSA resides with the Project Leader.

The purpose of the WFSA is to allow for a consideration of alternatives by which a fire may be controlled. Damages from the fire, suppression costs, safety, and the probable character of suppression actions are all important considerations.

Public safety will require coordination between all refuge staff and the IC. Notices should be posted to warn visitors, trails may be closed, traffic control will be necessary where smoke crosses roads, etc. Where wildland fires cross roads, the burned area adjacent to the road should be mopped up and dangerous snags felled. Every attempt will be made to utilize natural and constructed barriers, including changing fuel complexes, in the control of wildland fire. Rehabilitation efforts will concentrate on the damages done by suppression activities rather than on the burned area itself.

### **Aircraft Operations**

Aircraft may be used in all phases of fire management operations. All aircraft must be Office of Aircraft Services (OAS) or Forest Service approved. An OAS Aviation Policy Department Manual will be provided by OAS.

Helicopters may be used for reconnaissance, bucket drops and transportation of personnel and equipment. Natural helispots and parking lots are readily available in most cases. Clearing for new helispots should be avoided where possible. Improved helispots will be rehabilitated following the fire.

As in all fire management activities, safety is the primary consideration. Qualified aviation personnel will be assigned to all flight operations.

### **REHABILITATION AND RESTORATION**

There are three methods of repairing damage caused by wildland fires and wildland fire suppression activities – emergency stabilization, rehabilitation, and fire suppression activity damage repair.

### **Policy and Implementation Guidance**

Departmental policy for emergency stabilization and rehabilitation (ESR) on Service lands following wildland fire, including objectives, implementation, plan submittal, monitoring, and funding, is found in the Department Manual (620 DM 3). Service ESR supplemental policy can be found in the Service Manual (095 FW 3.9), with policy implementation guidance provided in Chapter 5 of the FWS Fire Management Handbook. More detailed guidance can be found in the Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook (2002) and Technical Reference (2002). The Service maintains an internet web site (<http://fire.fws.gov/ifcc/rehab/>) that provides access to these and several other guidance documents.

Any treatment or activity will have an approved plan developed prior to implementation. Monitoring specifications will be included in the plan for each treatment or activity. Emergency stabilization and rehabilitation treatments and activities will be written in separate plans. The Project Leader, Biologist, and FMO will review all plans. The final plans will be submitted to the Region for review prior to submission to the Washington Office.

**Compliance**

Implementation activities will be conducted in a manner that is compatible with long-term goals and approved land management plans (e.g., Comprehensive Conservation Plan, Habitat Management Plan, Fire Management Plan), in compliance with applicable law and policy, including the National Environmental Policy Act, Endangered Species Act, Clean Water Act, and National Historic Preservation Act.

**REQUIRED REPORTING**

The IC will be responsible for documenting decisions and completing the fire report (e.g., ICS-214, DI-1202). The FMO will be responsible for any additional required reports.

**FIRE INVESTIGATION**

Fire management personnel will attempt to locate and protect the probable point of origin and record pertinent information required to determine fire cause. They will be alert for possible evidence, protect the scene and report findings to the fireline supervisor.

Prompt and efficient investigation of all suspicious fires will be carried out. However, fire management personnel should not question suspects or pursue the fire investigation unless they are currently law enforcement commission qualified.

Personnel and services of other agencies may be utilized to investigate wildland fire arson or fire incidents involving structures. All fire investigations should follow the guidelines outlined in 4.1-2 of the Fire Management Handbook (2003).

## **PRESCRIBED FIRE ACTIVITIES**

### **PRESCRIBED BURN PROGRAM OBJECTIVES**

Prescribed fire can be a useful tool for restoring and maintaining natural conditions and processes at the Gorge Refuges.

The goals of the Gorge Refuges prescribed fire program are to:

- Utilize prescribed fire to enhance wetland and upland habitats by reducing encroaching invasive species such as reed canarygrass and Himalayan blackberry.
- Reduce accumulated duff layers and ladder fuels in identified forested areas.
- Restore fire into fire-dependent ecosystems and promote nutrient recycling to the soil.
- Control non-native wetland vegetation while thinning and invigorating tall emergent wetlands.
- Integrate prescribed fire with current management practices such as discing, mowing, chemical treatments, tree and shrub thinning, and water management.

Specific management needs for these refuges will be determined annually. Specific burn objectives, fire frequency rotation, firing methodology, and prescriptions will vary from year to year. Burn plans will be updated to reflect any variations. The Project Leader must approve prescribed fire plans.

There have not been any prescribed fires conducted on the Gorge Refuges since their acquisition and no known burns have been conducted by previous landowners. The prescribed fire program on the Gorge Refuges will focus on the enhancement of existing grassland, wetland and forested habitats, primarily through the reduction of invasive species. Fire has the ability to temporarily reduce dense stands of invasive species, such as reed canarygrass and Himalayan blackberry, allowing for the initiation of additional control techniques or by increasing competition by native species. Prescribed fire may also be utilized to restore or enhance fire-dependent habitats such as oak woodlands and savannas. Burns will be conducted on a periodic basis to enhance oak habitats and emergent wetlands, and to control invasive species as required for annual management plans.

Prescribed fires involve the use of fire as a tool to achieve management objectives. Research burning may also be conducted when determined to be necessary for accomplishment of research project objectives. Actions included in the prescribed burn program include the selection and prioritization of prescribed burns to be carried out during the year, preparation of prescribed burn plans, development of burn prescriptions, burning operations, documentation and reporting, and burn critiques. Measures to ensure the successful implementation of the prescribed fire program are to:

- Conduct a vigorous prescribed fire program with the highest professional and technological standards;
- Identify the prescribed burn type most appropriate to specific situations and areas;
- Efficiently accomplish resource management objectives through the application of prescribed fire;
- Continually evaluate the prescribed fire program to better meet program goals by refining prescriptions, treatments, and monitoring methods, and by integrating applicable technical and scientific advancements;
- Prepare prescribed burn plans with a review by a qualified Prescribed Fire Manager/Prescribed Burn Boss and approval by the Project Leader;
- Have an adequate number of qualified personnel to conduct the burn and mop-up.

The refuge reserves the option to utilize an interagency team approach for complex burns carried out on the boundaries and close to developed areas, or burns of large acreage. The most highly qualified and experienced personnel in the regional interagency community would be requested to serve on this team.



## **FIRE MANAGEMENT STRATEGIES**

Prescribed fire will be used to reduce hazard fuel accumulation, restore fire to fire-dependent ecological communities, improve wildlife habitat, and maintain cultural/ historic scenes where appropriate. All prescribed fire activity will comply with applicable Federal, state, and local air quality laws and regulations.

All prescribed fire projects will have a burn plan approved by the Project Leader. Each burn plan will be prepared using a systematic decision-making process, and contain measurable objectives, predetermined prescriptions, and using an approved environmental compliance document. Appropriate NEPA and ESA Section 7 documentation exists for this Fire Management Plan through the Gorge Refuge's Comprehensive Conservation Plan. Therefore, additional NEPA and ESA Section 7 documentation will be necessary only for prescribed fire projects not meeting the criteria outlined in this Plan, or if fire effects are more severe than expected.

Prescribed Fire Burn Plans must include components such as a Go/ No-Go Checklist, contingency actions to be taken in the event the prescription is exceeded, and the need for alerting neighbors and appropriate public officials to the timing and the planning of the burn. A burn plan format meeting all required needs is located in Appendix I.

Fire monitoring will be used to evaluate the degree to which burn objectives are accomplished. Monitoring can assist managers in documenting success in achieving overall programmatic objectives and limiting occurrence of undesired effects.

## **PRESCRIBED FIRE PLANNING**

### **Annual Activities**

The Zone FMO will be responsible for completing an annual fire summary report. The report will contain the number of fires by types, acres burned by fuel type, cost summary, personnel utilized, and fire effects.

The prescribed fire program, including the Fire Management Plan, will be reviewed annually by the Refuge Manager with input from the Zone FMO. Necessary updates or changes to the Fire Management Plan will be accomplished prior to the next fire season. Any additions, deletions, or changes will be reviewed by the Project Leader to determine if such alterations warrant a re-approval of the plan.

Annual activities needed to prepare for and accomplish a successful prescribed fire program include:

- Coordination with expected cooperators on the burn well in advance to share expectations and target dates.
- Examination of weather patterns, seasonal drying trends and localized fire effects on neighboring lands.
- Coordination with smoke management agencies involving predictions of smoke dispersal.
- Notification of local communities and adjoining agencies and property owners.

### **Prescribed Burn Plan**

The Prescribed Burn Boss will conduct a field reconnaissance of the proposed burn location with the Zone FMO, Prescribed Fire Specialist, Wildlife Biologist, and/or Refuge Manager to discuss objectives and special concerns, and to collect all necessary information to write the burn plan. After completing the reconnaissance, a qualified Prescribed Burn Boss will write the prescribed burn plan.

All prescribed fires will have prescribed burn plans. The prescribed burn plan is a site-specific action plan describing the purpose, objectives, prescription, and operational procedures needed to prepare and safely conduct the burn. The treatment area, objectives, constraints, and alternatives will be clearly

outlined. No burn will be conducted unless all prescriptions of the plan are met. Fires not within those parameters will be suppressed. Prescribed burn plans will follow the format contained in Appendix I. Each burn plan will be reviewed by the Refuge Manager, Biologist, Zone FMO, Prescribed Fire Specialist, and Burn Boss. The Project Leader has the authority to approve the burn plan. The term “burn unit” refers to a specific tract of land to which a prescribed burn plan applies.

### **Strategies and Personnel**

Prescribed burns will only be executed by qualified personnel. The Prescribed Burn Boss will fill all required positions to conduct the burn with qualified personnel. All personnel listed in the burn plan must be available for the duration of the burn or the burn will not be initiated.

Weather and fuel moisture conditions must be monitored closely in planned burn units to determine when the prescription criteria are met. When all prescription criteria are within the acceptable range, the Prescribed Burn Boss will select an ignition time based on current and predicted weather forecasts. A thorough briefing will be given by the Prescribed Burn Boss and specific assignments and placement of personnel will be discussed. An updated spot weather forecast will be obtained on the day of ignition and all prescription elements will be re-checked to determine if all elements are still within the approved ranges. If all prescription elements are met, a test fire will be ignited to determine on-site fire behavior conditions as affected by current weather. If conditions are not satisfactory, the test fire will be suppressed and the burn will be rescheduled. If conditions are satisfactory the burn will continue as planned.

The minimum required contingency resources outside of the assigned prescribed fire management personnel for the given burn would include two wildland fire engine modules with a Strike Team Leader within a two hour response time. A Safety Officer Type 3 or equivalent should be considered as soon as additional resources are ordered outside of the listed contingency resources.

If the prescribed burn escapes the predetermined burn area, all further ignitions will be halted except as needed for suppression efforts. Suppression efforts will be initiated as discussed in the pre-burn briefing. The FMO will be notified immediately of any control actions on a prescribed burn. If the burn exceeds the initial suppression efforts, the burn will be declared a wildland fire and suppressed using guidelines established in this plan. A WFSA will be completed and additional personnel and resources ordered as determined by the Incident Commander. If the fire continues to burn out of control, additional resources will be called from the local cooperating agencies via the servicing dispatch. A management overhead team may be requested to assume command of the fire.

### **Monitoring and Evaluation**

Monitoring of prescribed fires is intended to provide information for quantifying and predicting fire behavior and its ecological effects on refuge resources while building a historical record. Monitoring measures the parameters common to all fires – fuels, topography, weather, and fire behavior. In addition, ecological changes such as species composition and structural changes will be monitored after a fire. This information will be very useful in fine-tuning the prescribed burn program.

During prescribed burning, monitoring should include weather observations (trends in temperature, relative humidity, wind speed and direction, and cloud cover), smoke observations (amount, color, direction of travel, plume type, visibility concerns), fire behavior observations (flame length, rate of spread, intensity, indicators of extreme fire behavior), and mapping. Operational monitoring provides a check to insure that the fire remains in prescription, and serves as a basis for evaluation and comparison of management actions in response to measured and changing fire conditions and other changes such as fuel conditions and species composition. A qualified Fire Monitor (FEMO) should monitor fire behavior

and weather conditions for the duration of the burn and alert the Burn Boss immediately if prescription parameters are exceeded or are in danger of being exceeded. The Fire Monitor may also document smoke production for the duration of the burn and notify the Burn Boss if any problems are evident.

On the Gorge Refuges, minimum levels of monitoring will include at least 3 photo-points established on each unit before the prescribed burn. Photos will be taken before and after the prescribed burn, and possibly each year thereafter, depending on burn objectives. Where necessary, substrate depths will be taken of wetland units to assess the potential depth of burns and the corresponding smoke output. Region 1 is currently developing a standardized monitoring program which may be incorporated into the Gorge Refuges fire program in the near future.

Bald eagles are the only non-aquatic federally listed species occurring on the refuge. Prescribed burns will not occur during the nesting season; however, any existing nest trees will be marked and treated to prevent accidental destruction of the tree. Prescribed burning may occur during late fall and early winter when salmonids such as chum salmon are accessing refuge creeks for spawning. Fish use of these areas will be monitored prior to any burn, and stream conditions will be monitored for water quality parameters, especially erosion. Foam and other retardants will not be utilized within 300 feet of water.

### **Required Reports**

All prescribed burn forms will be completed as outlined by the Prescribed Burn Boss. A monitor will be assigned to collect all predetermined information and complete all necessary forms prior to, during, and after the burn. All records will be archived in the refuge's fire records for future use and reference.

The Prescribed Burn Boss will prepare a final report on the prescribed burn. Information will include a narrative of the burn operation, a determination of whether objectives were met, weather and fire behavior data, map of the burn area, photographs of the burn, number of work hours, and final cost of the burn.

### **Prescribed Burn Critique**

A report detailing the actual burn will accompany any recommendations or changes deemed necessary in the program. This report will be submitted to the Refuge Project Leader. A post-season critique of the fire management program, including the prescribed burn program, will be held each year at the conclusion of the fall fire season.

### **PRESCRIBED FIRE UNITS**

The prescribed fire units (PFUs) are based closely on designated Fire Management Units and restoration or habitat management units. These units are primarily delineated by roads, trails, permanent waterways and dikes (fire breaks and/or defensible fire lines). The Prescribed Fire Units map for each refuge (to be developed) shows the location of the various units. Suppression Access Route maps (to be developed) delineate access and points of defense for prescribed fires. These units may be further delineated into prescribed fire subunits depending on the needs and objectives for the prescribed fire. Fuel models were determined using Anderson's (1982) models as a guide. Although the much of the Gorge Refuge acreage has been divided into potential Prescribed Fire Units, each Unit will be individually assessed to determine if prescribed fire is actually appropriate for use in that Unit. To date, fire managers at the refuge have not determined which units will be burned, how many acres will be burned, or what percentage of each unit will be burned. In the descriptions below, all unit designations consist of a number followed by a letter. The number corresponds to the Fire Management Unit (1 = Forestlands FMU; 2 = Grasslands FMU) that the Prescribed Fire Unit is within.

### **Steigerwald Lake National Wildlife Refuge** **Prescribed Fire Unit 1A**

This 53-acre unit is located in the northeast quadrant of the refuge north of the railroad and south of SR-14 in the Upper Straub Unit, and consists of mixed oak, maple and conifers (Fuel Model 9). The understory is primarily Himalayan blackberry. Fire control lines include the railroad right-of-way on the south and west, and SR-14 on the north.

#### Prescribed Fire Unit 1B

This 26-acre unit is located in the south central portion of the refuge, paralleling both sides of the lower reach of Gibbons Creek. Dominant vegetation is mature cottonwood (Fuel Model 9). A stand of Himalayan blackberry was cleared and sprayed in 2002-03, and native grasses were planted in 2004. A multi-year planting of native shrubs and trees is scheduled to begin during the winter of 2004-05. Northeast and west of the unit is pasture; southwest is Redtail Lake and the Columbia River Dike. Undeveloped private land (Port of Camas-Washougal Industrial Park) west of the unit will need protection with fire breaks. Steigerwald Lake to the north, the Straub Dike to the east, and the Columbia River to the south provide fire control lines, safe access, and protection against escaped fires.

#### Prescribed Fire Unit 2A

This 253-acre unit east of the Straub Dike contains wetlands and managed fields. Dominant plant cover in the wetlands is reed canarygrass (Fuel Model 3); grass cover in managed upland fields is a mixture of fescues, orchard grass and rye grass (Fuel Model 1). It is bounded on the north by the railroad right-of-way, on the west by Straub Dike road, and on the southwest by Columbia River Dike Trail. Access and control lines are along these same routes. Fire breaks will be needed to protect private lands to the southeast of this unit.

#### Prescribed Fire Unit 2B

This 182-acre unit is located west of Straub Dike, south of Steigerwald Lake, and north of PFU 1B. Habitat consists of a managed field bordered with wet meadow. Vegetation consists of pasture grasses in the managed field (Fuel Model 1) and reed canarygrass (Fuel Model 3). Fire control lines can be established along the creek trail and/or Gibbons Creek on the south and west, the Straub Dike on the east, and Steigerwald Lake to the north. Access is via the trail and dike.

#### Prescribed Fire Unit 2C

This 136-acre unit is bounded on the north by SR-14, east by Straub Dike, south by Steigerwald Lake, and west by the Gibbons Creek elevated channel/dike. The north half of this unit consists of a managed field dominated by pasture grasses (Fuel Model 1); the south half is reed canarygrass (Fuel Model 3). The Gateway Center planned for construction in the northwest corner of this unit will require protection. Access and control lines occur around the entire unit.

#### Prescribed Fire Unit 2D

This 106-unit is bounded on the north by SR-14, east by the Gibbons Creek elevated channel/dike, south by Steigerwald Lake, and west by the City of Washougal sewage treatment plant. Three habitat types occur in the unit – pasture (Fuel Model 1), riparian scrub-shrub (Fuel Model 9), and reed canarygrass (Fuel Model 3). Access and control lines exist along the dikes and SR-14.

#### Prescribed Fire Unit 2E

This 50-acre unit is bounded on the north by the railroad, south by SR14, and west by private land adjoining Gibbons Creek. A private residence and one private house exist adjacent to the unit. A fire break will be needed to protect the private property and refuge buildings. Vegetation is a managed field of pasture grasses (Fuel Model 1). Access and control lines exist along Gibbons Creek, SR-14 and the railroad right-of-way.

## **Franz Lake National Wildlife Refuge**

### Prescribed Fire Unit 1A

This 42-acre unit is located along the southern boundary of the refuge and consists of mature cottonwoods, ash, and willow with an understory of native shrubs and non-native blackberry (Fuel Model 9). The unit is bordered on the north by Franz Lake and PFU 2C, south by the Columbia River, east by an access road; all which provide significant firebreaks. A short fire break would need to be constructed along the west boundary. Access is via the road.

### Prescribed Fire Unit 2A

This 14-acre unit is located east of Franz Lake and west of the access road. It is the upper seasonal wet meadow of the lake and consists primarily of reed canarygrass and exotic iris (Fuel Model 3). The access road provides a control line to the east; fire breaks will need to be disced around the remaining perimeter of the unit.

### Prescribed Fire Unit 2B

This 8-acre unit is a continuation of PFU 2A but east of the access road. It is also comprised of reed canarygrass and iris (Fuel Model 3). The road provides access and the west control line; the remainder of the boundary will need a disced fire line for containment and foot access.

### Prescribed Fire Unit 2C

This 45-acre unit is located south of Franz Lake and north of PFU 1A. It consists primarily of scattered mature willow with an understory of dense reed canarygrass (Fuel Model 3). Access is via a mowed road through the south part of the unit. Fire breaks will need to be mowed or disced along the west, south and east boundaries. Safeguards against escaped fires include the Columbia River, Franz Lake and the main access road.

### Prescribed Fire Unit 2D

This 18-acre unit is located south of Arthur Lake and north of the Columbia River; both serve as significant fire breaks. Mowed or disced fire lines will be required on the east and west. Access to this unit is primarily via foot travel and 4-wheel drive vehicles. This area is a flood zone of Arthur Lake and is comprised of reed canarygrass (Fuel Model 3).

## **Pierce National Wildlife Refuge**

### Prescribed Fire Unit 1A

This 12-acre unit is a mixed oak woodland with moderate to dense understory (Fuel Model 9). Access and control lines occur around the unit via graveled roadways. Refuge buildings occur in the northeast portion of the unit and are sufficiently isolated from the burn area by gravel and concrete parking areas.

### Prescribed Fire Unit 1B

This 41-acre unit is an open cottonwood stand with an understory of non-native grasses and sparsely-distributed shrubs (Fuel Model 9). It is bordered by Hardy Creek (north and west) and the Columbia River (south), which serve as control lines. A two-track road runs along the east boundary and can be mowed or disced for access and control. Access occurs via a gravel road along the southern boundary as well.

### Prescribed Fire Unit 2A

This 35-acre unit is a managed pasture of non-native grasses (Fuel Model 1). It is bounded on the north and west by dirt access roads and on the south by Hamilton Creek. The eastern boundary adjoins private residential property and will require a disced or mowed fire line.

#### Prescribed Fire Unit 2B

This 22-acre unit is comprised of the seasonal wetlands east and south of Pierce Lake. It consists primarily of low to medium height native emergent plants, as well as reed canarygrass (Fuel Model 3). Access and control is via a graveled road on the west and south sides of the unit. Additional fire breaks will be needed along the woodlands to the east of the unit.

#### Prescribed Fire Unit 2C

This 12-acre upland meadow unit is comprised of non-native pasture grasses and reed canarygrass (Fuel Model 3). Access is via a gravel road along the eastern and southern border of the unit. A seasonal portion of Hardy Creek borders the north portion of the unit, and a seasonal dirt road lies along the west border. Mowing can be utilized to enhance the containment capabilities of these access routes.

#### Prescribed Fire Unit 2D

This 23-acre upland meadow unit is comprised of non-native pasture grasses and reed canarygrass (Fuel Model 3). Access and fire control is via a gravel road along the eastern border of the unit. Hardy Creek and its backwaters border the north, west and south portion of the unit and serve to isolate the unit from adjacent areas. Mowing can be utilized to enhance the containment capabilities of the access routes.

#### Prescribed Fire Unit 2E

This 32-acre unit is comprised of wet meadow (Fuel Model 3) and upland pasture habitats (Fuel Model 1). The unit is bounded by Hardy Creek and the Domestic Springs wetland on the east, west and south. An improved dirt/gravel roadway and a modified fish spawning channel on the north serves as an access route and the northern control line.

#### Prescribed Fire Unit 2F

This 11-acre unit is oak savanna and consists primarily of pasture grasses and reed canarygrass understory (Fuel Models 1 and 3). The oaks are older trees with no lower branches capable of carrying a fire into the canopy. A graveled road bisects the unit and serves as access and a control line. A modified fish spawning channel exists along the southern boundary and serves for both control and foot access. Hardy Creek and SR-14 line the northern and north-eastern portion of the unit and serve as access and control lines.

#### Prescribed Fire Unit 2G

This 13-acre unit is located in the western portion of the refuge and consists primarily of upland pasture grasses (Fuel Model 1), with a small stand of deciduous trees (Fuel Model 9) along the northwestern part of the unit. The northwestern boundary adjoins the railroad right-of-way, Lena's Lake provides the western border, Hardy Creek is on the south boundary, and a gravel road defines the eastern boundary. The railroad and gravel road provide access, while these and the waterways provide fire control around the entire unit.

## AIR QUALITY / SMOKE MANAGEMENT GUIDELINES

The proximity of the Gorge Refuges to major transportation corridors and urbanized areas requires careful planning in the development and maintenance of a prescribed fire program to maintain acceptable standards for safety and public health. Washington State has had a Smoke Management Plan in effect since 1969. It states under the revised 1995 version that “Federal agencies that do outdoor burning on forest lands must participate in and abide by the requirements of this plan under the direction of the Federal Clean Air Act. These agencies include...the Fish and Wildlife Service.” Agricultural burning for non-silvicultural needs is not covered by the state plan.

The Clean Air Washington Act of 1991 requires commercial and residential outdoor burning to be phased out in urban areas. Within Clark County, non-attainment areas have been established by the Southwest Washington Clean Air Agency (SWCAA) around urban growth areas, banning outdoor burning. The Clark County non-attainment area includes portions of Steigerwald Lake NWR west of the sewage ponds. SWCAA does not issue permits for prescribed fire, however, burn plan consultation with SWCAA should secure air quality compliance within non-attainment areas.

Washington Administrative Code (WAC) 332-24-201 (1) grants the Washington State DNR (DNR) authority to issue burning permits for habitat management. All burning must be approved prior to ignition. Washington State DNR does not issue burning permits on weekends and holidays between June 15 and September 30. Generally, DNR does not issue permits for lands within non-attainment areas of the state. However, provisions under WAC 332-24-205 (2) permit burning within non-attainment areas for improving and maintaining fire-dependant ecosystems or for fires set for a defined research project.

Large burns are those that consume 100 tons or more of fuel in a 24-hour period. A simple formula based on Anderson’s (1982) report can be used to determine how much fuel a prescribed fire is anticipated to consume:

Expected Fuel Consumption (tons) = [0.74 tons/acre][FM 1 acres] + [3.0 tons/acre][FM 3 acres] + [2.63 tons/acre][FM 9 acres]

Using this formula requires an acreage estimate for each fuel model in a burn unit. Anderson provides total fuel load numbers for each fuel type in his report; these numbers were modified in the equation based on an assumption of 100% consumption for Fuel Models 1 and 3, and 75% consumption for Fuel Model 9. For projects expected to consume over 100 tons, approval will be given through the DNR’s Resource Protection Division, Smoke Management Section after the responsible Land Manager where the burning is taking place has concurred. WAC 332-24-221 (2) imposes additional fees to permits exceeding 100 tons of consumed debris. When a project is expected to burn less than 100 tons of material, the Zone Fire Management Officer must call the 1-800-323-BURN number to obtain a set of applicable instructions that apply for the day of the proposed burn. Coordination with adjacent agencies and land owners is still required for all burns, regardless of size or expected fuel consumption.

The Refuge Manager is “responsible for ensuring that the requirements and operating procedures of the plan are met as they apply to burning on Federal lands under their control.” As described in WAC 332-24-205 (7), burning is allowed if there are no prohibited materials contained in the area. “Smoke from burning must not obscure visibility on public roads and highways,” and, “smoke from burning must not cause a nuisance as defined in WAC 332-24-205 (8).” “Burns will not be approved if: there is likelihood of an “intrusion” of smoke into “designated areas,” which includes air space 2,000 feet above the ground, or “sensitive areas,” such as population centers. There is any likelihood of an over-flight of smoke above a designated area.” However, “over-flights of smoke may be approved over designated areas on days

when visibility would be reduced naturally by clouds, fog, rain, snow, etc.” Other factors which would not allow a burn to occur include non-compliance with the State Implementation Plan (SIP) of the Federal Clean Air Act regarding visibility protection of Class I Federal areas or if smoke will not significantly dissipate within approximately eight hours of ignition and be fully dispersed by 1200 the next day. That does not include residual smoke within the immediate burn area.

The Federal Aviation Administration (503-496-7500; contact Eric Hansen) has requested 48-hour notification for prescribed fires at Steigerwald Lake NWR to notify local airports and aviators of potential smoke hazards. With this notification, the FAA would obtain emergency contact numbers in the event the fire needed to be “knocked down,” should smoke errantly enter airspace. The FAA additionally recommends a 48-hour notification to the Troutdale Airport (503-665-0108) as a safety precaution.

Wildland fire managers, especially those in the extended attack mode, will need to keep smoke management near the top of the daily objectives list within the Incident Action Plan. Smoke management will be of significant importance throughout both the active burning periods as well as during the mop-up phase. A qualified Fire Monitor (FEMO) should monitor smoke production for the duration of a prescribed burn operation and relay any concerns to the Burn Boss.

## **FIRE RESEARCH**

There are no fire research projects occurring on the Gorge Refuges at this time. Prior to implementation of the prescribed burns, the site will be evaluated for the need for long-term monitoring study. These studies would look at before and after effects of fire, specifically how it may influence growth and re-establishment of native vegetation such as Oregon white oaks.



## **PUBLIC SAFETY**

Pierce and Franz Lake National Wildlife Refuges are closed to public use, although there may be periodic events such as field trips or environmental education activities, or special events such as Migratory Bird Day or Refuge Week in which the general public is invited to the refuge. Steigerwald Lake NWR is currently closed to public use except for visitors using the Columbia River Dike Trail. When the Gateway Center is constructed, visitors will be present at this facility year round. Much of the interpretive trail, when constructed, will be open year round, while an environmentally sensitive portion will be closed seasonally. The staff at the Columbia River Gorge Refuges is dedicated to ensuring the safety of any visitors and all residents and property adjacent to the Refuge's boundary. All or portions of the areas listed above can be closed to public use in the event of a wildfire. Potentially affected trails could be closed prior to conducting a prescribed burn activity. Visitor use at Steigerwald Lake NWR is currently generally low, and closures of the Columbia River Dike Trail could be accomplished by posting at the trail heads, the entrance roads, parking areas and key locations in Camas and Washougal. State, city or county roads bisecting or adjacent to the Refuge could be closed or managed through the Skamania/Clark County Sheriff's Office and/or fire departments.

Areas of planned fire activity may be clearly signed at the Gateway Center and trailheads, and postings may occur in local newspapers. Residents adjacent to the Refuge will be notified in advance of any prescribed burn. The Sheriff's Office will make contacts on any fire which poses a threat to burn outside the Refuge boundaries. The contact list for adjoining neighbors and landowners can be found in Appendix C, Table 6.

During prescribed burns at least one burn team member will have first aid training. A first aid kit will be on-site for prescribed burns as well as wildland fires. The local police, fire, and emergency medical services will be notified prior to the ignition of any prescribed burn. They will also be notified of the location of any wildland fires.

## **PUBLIC INFORMATION AND EDUCATION**

Educating the public on the value of fire as a natural process is important to increasing public understanding and support for the fire management program. The refuge will use the most appropriate and effective means to explain the overall fire and smoke management program. This may include supplemental handouts, signing, personal contacts, auto tour routes, or media releases. When deemed necessary, interpretive presentations will address the fire management program and explain the role of fire in the environment.

The public information program may be developed as follows:

- Concepts of the prescribed burn program may be incorporated, as appropriate, in publications, brochures, and handouts.
- During periods when prescribed burns are ignited, handouts may be prepared and distributed to all visitors entering areas of fire activity.
- The fire management program may be incorporated into visitor contacts. Particular attention will be given when fires are conspicuous from roads or visitor use areas.
- News releases will be distributed to the media as appropriate.
- The public information outlets of neighboring and cooperating agencies and the Regional Office will be provided with all fire management information.
- The fire management program will be discussed in informal talks with all employees, volunteers, residents, and neighbors.

Prior to any planned ignition, information will be made available to visitors, local residents, and/or the press about what is scheduled to happen and why. On-site information will be provided to alleviate visitor concern about the apparent destruction of resources by fire or the impairment of views due to temporary smoke. This information will include prescribed burn objectives and control techniques, current fire location and behavior, effects caused by the fire, impacts on private and public facilities and services, and restrictions and closures.

As outlined in the prevention section, emergency closures or restrictions may become necessary during periods of extreme or extended fire danger.

## **FIRE CRITIQUES AND ANNUAL PLAN REVIEW**

### **FIRE CRITIQUES**

Fire reviews will be documented and filed with the final fire report. The Zone FMO will retain a copy for the refuge files.

### **ANNUAL FIRE SUMMARY REPORT**

The Zone FMO will be responsible for completing an annual fire summary report. The report will contain the number of fires by type, acres burned by fuel type, cost summary (prescribed burns and wildland fires), personnel utilized, and fire effects.

### **ANNUAL FIRE MANAGEMENT PLAN REVIEW**

The Fire Management Plan will be reviewed annually. Necessary updates or changes will be accomplished prior to the next fire season. Any additions, deletions, or changes will be reviewed by the Refuge Manager to determine if such alterations warrant a re-approval of the plan.

## CONSULTATION AND COORDINATION

The following agencies, organizations and/or individuals were consulted in preparing this plan:

Rod Altig, Columbia River Gorge National Scenic Area, Hood River, OR.

Eric Anderson, Technical Writer, Ridgefield National Wildlife Refuge Complex.

Mary Anderson, Cartographer, Pacific Region, USFWS, Portland, OR.

Jim Clapp, Refuge Manager, Stiegerwald Lake NWR.

Glenn Frederick, Regional Planner, USFWS, Portland, OR.

Brian Gales, Zone Prescribed Fire Specialist, Willamette Valley, Ridgefield & Willapa National Wildlife Refuge Complexes, USFWS.

Glenn George, Wildland-Urban Interface Coordinator, Pacific Region, USFWS, Portland, OR.

Al Lawson, Fire Operations, WA. Dept. of Natural Resources, SE Region, Klickitat Unit, Husum, WA.

Pete Nelson, Engine Leader, Gifford Pinchot NF, Mt. Adams Ranger District, Trout Lake, WA.

Greg Page, Fire Prevention Technician, Gifford Pinchot NF, Mt. Adams Ranger District, Trout Lake, WA.

James Roberts, Fire Planner, Pacific Region, USFWS, Portland, OR.

Rebecca Young, Deputy Project Leader, Ridgefield NWRC, Ridgefield, WA.

## APPENDICES

### APPENDIX A: REFERENCES CITED

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## **APPENDIX B1: DEFINITIONS**

**Agency Administrator.** The appropriate level manager having organizational responsibility for management of an administrative unit. May include Director, State Director, District Manager or Field Manager (BLM); Director, Regional Director, Complex Manager or Project Leader (FWS); Director, Regional Director, Park Superintendent, or Unit Manager (NPS), or Director, Office of Trust Responsibility, Area Director, or Superintendent (BIA).

**Appropriate Management Action.** Specific actions taken to implement a management strategy.

**Appropriate Management Response.** Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

**Appropriate Management Strategy.** A plan or direction selected by an agency administrator which guides wildland fire management actions intended to meet protection and fire use objectives.

**Appropriate Suppression.** Selecting and implementing a prudent suppression option to avoid unacceptable impacts and provide for cost-effective action.

**Bureau.** Bureaus, offices or services of the Department.

### **Class of Fire (as to size of wildland fires).**

Class A - 3 acre or less.

Class B - more than 3 but less than 10 acres.

Class C - 10 acres to 100 acres.

Class D - 100 to 300 acres.

Class E - 300 to 1,000 acres.

Class F - 1,000 to 5,000 acres.

Class G - 5,000 acres or more.

**Emergency Fire Rehabilitation/Burned Area Emergency Rehabilitation (EFR/BAER).** Emergency actions taken during or after wildland fire to stabilize and prevent unacceptable resource degradation or to minimize threats to life or property resulting from the fire. The scope of EFR/BAER projects are unplanned and unpredictable requiring funding on short notice.

**Energy Release Component (ERC).** A number related to the available energy (BTU) per unit area (square foot) within the flaming front at the head of a fire. It is generated by the National Fire Danger Rating System, a computer model of fire weather and its effect on fuels. The ERC incorporates thousand hour dead fuel moistures and live fuel moistures; day to day variations are caused by changes in the moisture content of the various fuel classes. The ERC is derived from predictions of (1) the rate of heat release per unit area during flaming combustion and (2) the duration of flaming.

**Extended Attack.** A fire on which initial attack forces are reinforced by additional forces.

**Fire Suppression Activity Damage.** The damage to lands, resources and facilities directly attributable to the fire suppression effort or activities, including: dozer lines, camps and staging areas, facilities (fences, buildings, bridges, etc.), handlines, and roads.

**Fire Effects.** Any consequences to the vegetation or the environment resulting from fire, whether neutral, detrimental, or beneficial.

**Fire Intensity.** The amount of heat produced by a fire. Usually compared by reference to the length of the flames.

**Fire Management.** All activities related to the prudent management of people and equipment to prevent or suppress wildland fire and to use fire under prescribed conditions to achieve land and resource management objectives.

**Fire Management Plan.** A strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program in the approved land use plan. The plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans and prevention plans.

**Fire Prescription.** A written direction for the use of fire to treat a specific piece of land, including limits and conditions of temperature, humidity, wind direction and speed, fuel moisture, soil moisture, etc., under which a fire will be allowed to burn, generally expressed as acceptable range of the various fire-related indices, and the limit of the area to be burned.

**Fuels.** Materials that are burned in a fire; primarily grass, surface litter, duff, logs, stumps, brush, foliage, and live trees.

**Fuel Loadings.** Amount of burnable fuel on a site, usually given as tons/acre.

**Hazard Fuels.** Those vegetative fuels which, when ignited, threaten public safety, structures and facilities, cultural resources, natural resources, natural processes, or to permit the spread of wildland fires across administrative boundaries except as authorized by agreement.

**Initial Attack.** An aggressive suppression action consistent with firefighter and public safety and values to be protected.

**Maintenance Burn.** A fire set by agency personnel to remove debris; i.e., leaves from drainage ditches or cuttings from tree pruning. Such a fire does not have a resource management objective.

**Natural Fire.** A fire of natural origin, caused by lightning or volcanic activity.

**NFDRS Fuel Model.** One of 20 mathematical models used by the National Fire Danger Rating System to predict fire danger. The models were developed by the U.S. Forest Service and are general in nature rather than site-specific.

**NFFL Fuel Model.** One of 13 mathematical models used to predict fire behavior within the conditions of their validity. The models were developed by US Forest Service personnel at the Northern Forest Fire Laboratory, Missoula, Montana.

**Prescription.** Measurable criteria which guide selection of appropriate management response and actions. Prescription criteria may include safety, public health, environmental, geographic, administrative, social, or legal considerations.

**Prescribed Fire.** A fire ignited by agency personnel in accord with an approved plan and under prescribed conditions, designed to achieve measurable resource management objectives. Such a fire is designed to produce the intensities and rates of spread needed to achieve one or more planned benefits to

natural resources as defined in objectives. Its purpose is to employ fire scientifically to realize maximize net benefits at minimum impact and acceptable cost. A written, approved prescribed fire plan must exist and NEPA requirements must be met prior to ignition. NEPA requirements can be met at the land use or fire management planning level.

**Preparedness.** Actions taken seasonally in preparation to suppress wildland fires, consisting of hiring and training personnel, making ready vehicles, equipment, and facilities, acquiring supplies, and updating agreements and contracts.

**Prevention.** Activities directed at reducing the number or the intensity of fires that occur, primarily by reducing the risk of human-caused fires.

**Rehabilitation.** Actions to (1) limit the adverse effects of suppression on soils, watershed, or other values, or (2) to mitigate adverse effects of a wildland fire on the vegetation-soil complex, watershed, and other damages.

**Suppression.** A management action intended to protect identified values from a fire, extinguish a fire, or alter a fire's direction of spread.

**Unplanned Ignition.** A natural fire that is permitted to burn under specific conditions, in certain locations, to achieve defined resource objectives.

**Wildfire.** An unwanted wildland fire.

**Wildland Fire.** Any non-structure fire, other than prescribed fire, that occurs in the wildland.

**Wildland Fire Situation Analysis (WFSA).** A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selection criteria.

**Wildland/Urban Interface Fire.** A wildland fire that threatens or involves structures.



## APPENDIX B2: ACRONYMS USED IN THE FIRE MANAGEMENT PLAN

AFMO	Assistant Fire Management Officer
BI	Burning Index
CGF	Columbia River Gorge National Scenic Area
CCP	Comprehensive Conservation Plan
CCWFOP	Central Cascades Wildland Fire Operating Plan
CWICC	Central Washington Incident Command Center
DNR	Washington State Department of Natural Resources
DOI	U.S. Department of the Interior
EA	Environmental Assessment
ERC	Energy Release Component
ESA	Endangered Species Act
ESR	Emergency Stabilization and Rehabilitation
FEMO	Fire Effects Monitor
FLNWR	Franz Lake National Wildlife Refuge
FMO	Fire Management Officer
FMP	Fire Management Plan
FMU	Fire Management Unit
FONSI	Finding of No Significant Impact
FWS	U.S. Fish and Wildlife Service
GPF	Gifford Pinchot National Forest
HMP	Habitat Management Plan
IC	Incident Commander
ICS	Incident Command System
MHNFDC	Mt. Hood National Forest Fire Dispatch Center
MIST	Minimum Impact Suppression Tactics
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIIMS	National Interagency Incident Management System
NOAA	National Oceanic and Air Administration
NRHP	National Register of Historic Places
NWCG	National Wildfire Coordinating Group
NWR	National Wildlife Refuge
NWRC	National Wildlife Refuge Complex
NWS	National Weather Service
OAS	Office of Aircraft Services
PFU	Prescribed Fire Unit
PNWR	Pierce National Wildlife Refuge
RA	Resource Advisor
RCRC	Request for Cultural Resource Compliance form
SHPO	State Historic Preservation Officer
SLNWR	Steigerwald Lake National Wildlife Refuge
SWCAA	Southwest Washington Clean Air Act
USDA	U.S. Department of Agriculture
USDOI	U.S. Department of the Interior
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WDOE	Washington Department of Ecology
WFSa	Wildland Fire Situation Analysis

**APPENDIX C: FIRE DISPATCH PLAN**

**Fire Dispatch Plan 2004**  
**Steigerwald Lake National Wildlife Refuge**  
**Franz Lake National Wildlife Refuge**  
**Pierce National Wildlife Refuge**

**A. FIRE SIZE-UP**

Use the following or the card, pocket guide, fireline handbook or red book guides.

Reporting party's name and phone number: \_\_\_\_\_

Time discovered: \_\_\_\_\_

Location of smoke or fire (plot on map; legal description): \_\_\_\_\_

Fire Behavior: \_\_\_Smoldering \_\_\_Creeping \_\_\_Running \_\_\_Crowning  
Spotting

Estimated size (acres): \_\_\_Spot \_\_\_1/4-1/2 \_\_\_1/2-3/4 \_\_\_1 \_\_\_1-5 \_\_\_\_\_5+

Wind (midflame speed & direction): \_\_\_\_\_

Dry Bulb Temperature (°F): \_\_\_\_\_ Relative Humidity (%): \_\_\_\_\_

Fuel Type: \_\_\_Grass \_\_\_Brush \_\_\_Timber \_\_\_Slash

Adjacent Fuels: \_\_\_Grass \_\_\_Brush \_\_\_Timber \_\_\_Slash

Aspect: \_\_\_\_\_ Percent Slope: \_\_\_\_\_

Additional Resources Needed: \_\_\_\_\_

Special Considerations: \_\_\_\_\_

\_\_\_\_\_

**B. NOTIFICATION**

Upon report of a wildland fire, contact staff in the following order:

**1. Call 911 – request response by nearest fire department, ambulance if necessary, traffic control.**

2. James Clapp – Refuge Manager/Resource Advisor  
Work: (360) 835-8767  
Home: (360) 253-7940

3. Rebecca Young – Deputy Project Leader  
Work: (360) 887-4106  
Home: (360) 573-4994

4. Brian Gales – Zone Prescribed Fire Specialist  
Work: (541) 757-7236  
Cell: (541) 230-0343  
Home: (503) 982-8025

5. Joseph Engler – Wildlife Biologist/Resource Advisor  
887-4106  
Work: (360)  
Cell: (503) 313-3113  
Home: (503) 663-0385

**6. Contact one of the following Regional FWS Fire Duty Officers:**

Pam Ensley – Regional Fire Management Coordinator  
Work: (503) 231-6174  
Cell: (503) 781-7978  
Home: (360) 835-7004

Roger Spaulding – Assistant Regional Fire Management Coordinator  
Work: (503) 231-6175  
Cell:  
Home:

Bruce Babb – Regional WUI Coordinator  
Work: (503) 231-6234  
Cell: (503) 703-5823

**C. ESTABLISHED SUPPRESSION GUIDELINES**

<b>Suppression Tactic</b>	<b>Forestlands Fire Management Unit</b>	<b>Grasslands Fire Management Unit</b>
Foam	IC Discretion	If Life/Property Threatened; or Based on ERC and Staffing Levels
Retardant	IC Discretion	If Life/Property Threatened; or Based on ERC and Staffing Levels
Dozer Line	IC Discretion with Resource Advisor Consultation	If Life/Property Threatened; or with Resource Advisor Approval
Handline	IC Discretion	Wetline whenever possible
Off -road travel	IC Discretion	IC w/ Resource Advisor Direction
Bucket Drops	Approved/utilize designated dips	Approved/utilize designated dips
Use of Hoselays	Approved	Approved
Burnout from Control Pts.	Group Leader Direction w/IC	Group Leader Direction w/IC

All fires not classified as prescribed fires are wildland fires and will be appropriately suppressed with aggressive containment and control. Under most situations, fires will be immediately suppressed utilizing the ground crews from responding agencies. Dike and road systems, the proximity of natural wetlands, and the narrow configuration of the Gorge Refuges (generally less than 1 mile wide and adjacent to the Columbia River) allow suppression activities to occur rapidly, as well as limiting the fire extent to relatively small defensible units. Helicopter water buckets can be effectively used in upland portions of these refuges due to the near proximity of the Columbia River. The maps found within the Fire Management Plan and in the Fire Dispatch Plan delineate the FMU boundaries, control points, access roads, dikes, canals and structures.

When looking at the Gorge Refuges from a strategy standpoint, there are two different sets of situations which may direct decision making. First, the overall setting of these Refuges is very conducive to controlling fires in the initial phase due to the relatively flat terrain, location of a major road and the Columbia River on the periphery, generally light fuels, and the narrowness of the refuges which facilitates access. The second set of issues deals with public safety and complicates suppression efforts. These issues include the relatively small size of these Refuges, the proximity to developed areas (especially at Steigerwald Lake), and the proximity of timber off-refuge (Franz Lake and Pierce) which could be susceptible to spotting and crowning.

When suppressing fires on the Refuge, it will be important for the IC, Resource Advisor or agency representative and the firefighters on the ground to keep in mind the second set of issues at all times. Public safety concerns from the fire itself as well as from smoke will typically lead to a quick and aggressive strategy to keep fires from pushing toward the Refuge’s northern boundaries. This will need to be balanced with the preference to use MIST tactics whenever practical.

While there is not a recent fire history to build a plan from, there are enough indicators to help in developing an overall strategy. While the GPF has initial attack responsibilities for the Refuge, that agency may not have available resources to send off unit. For most conditions on the Gorge Refuges, that

should not be a problem. These Refuges do not have a history of multiple fire starts and the GPF typically does not have a high incidence of multiple starts. The Mt. Adams Ranger District, however, has had in recent years, including 2001, situations with both human- and lightning-caused fires where all of their engine resources were committed either locally or for large fire support actions elsewhere. Barring that type of episode, the most common response from either the GPF or DNR will be with an engine module with an estimated time of arrival of 20-50 minutes, depending on the refuge. Unless multiple fires occur in Skamania and Clark Counties due to lightning or an unusual human-caused event, the DNR may be on scene sooner than the Forest Service. There will be times when the DNR person-in-charge is the most qualified person on site and would therefore be the logical choice as IC. These details will be addressed annually at the Central Cascades Wildland Fire Operating Plan meeting, which takes place each spring in the Columbia River Gorge.

All fires will be suppressed, but MIST tactics should be utilized whenever practical and safe to do so. Heavy equipment use will be restricted due to potential impacts to natural resources. A Resource Advisor will be ordered for every fire in the initial phase. Consultation with the Resource Advisor is necessary to insure appropriate suppression responses are utilized. However, as stated in FWS/RF95-00209 dated September 21, 1995 from the Director of the Fish and Wildlife Service to the Regional Directors, on the subject of wildfire suppression and candidate, threatened and/or endangered species, there are some overriding principles. Of paramount importance is the safety of firefighters and the general public, and no constraints for the protection of endangered species or their habitat will be considered if they place human life in danger. **FIREFIGHTER SAFETY COMES FIRST ON EVERY FIRE, EVERY TIME.**

Standards and guidelines for use of heavy equipment, foam, retardant, and aircraft as described within the FMUs were developed using an interdisciplinary process. Guidelines have been developed to assist with the Gorge Refuge's full wildfire suppression strategy and protect the Refuges from unnecessary damage (Table 5). Heavy equipment and aircraft/retardant use is restricted due to cultural, wildlife, and safety concerns. Unless life or property is determined to be in imminent danger by the IC, or when there are high fire danger or staffing level concerns, consultation with the Refuge Manager or representative prior to use is necessary. At the Annual Operating Plan Review, issues of restrictions should be discussed with cooperators. Changes and areas of concern should be documented.

#### **D. COMMUNICATIONS**

The signed Central Cascades Wildland Fire Operating Plan (Appendix F) has a provision within the communications portion relating to the use of radio frequencies. Written authority for the use of licensed radio frequencies will be provided to one another by all parties of the CCWFOP. The signing agencies include the USDA Forest Service (Columbia River Gorge National Scenic Area, Mt. Hood and Gifford Pinchot National Forests), USDOJ Bureau of Land Management (Spokane District), USDOJ Bureau Of Indian Affairs (Yakama and Warm Springs Reservations), USDOJ National Park Service (Mt. Rainier National Park), Oregon Department of Forestry (The Dalles and Clackamas-Marion Units), and the Washington Department Of Natural Resources (Central, Southwest and Southeast Regions).

In addition, the Gorge Refuges, as part of the Ridgefield National Wildlife Refuge Complex, have a communications system consisting of a digital/analog radio system, cell phones, and personal computers. The radio system includes base stations at Ridgefield and Conboy Lake National Wildlife Refuges, one portable radio for the Gorge Refuges, eight portable radios at Ridgefield NWR, four portable radios at Conboy Lake NWR, and mobile radios in most vehicles. Five cellular phones are also used at Ridgefield NWR. Radio communication by the refuge radios and phones are not 100 percent reliable, with lack of communication possible because of weather or the rough topography in the Columbia River Gorge.

Immediate emergency notifications and contacts can be found in this Fire Dispatch Plan (Table 7). During emergency fire operations, mutually agreed upon command and tactical radio channels will be used. Radio frequencies, call signs and use information are found in the CCWFOP.

**E. CONTACT LIST**

Table 7. Contact List for Columbia Gorge Refuges, neighboring agencies, and adjacent landowners.

<b>Law Enforcement and Fire - Pierce and Franz Lake Refuges</b>		
Stevenson Sheriff's Office	200 Vancouver Avenue (P.O. Box 790 Stevenson, WA 98648	(509) 427-9490
Fire District #5 - Volunteer Bob Baxter, Fire Chief	Skamania, WA	<b>Emergencies: 911</b> Administration: call Sheriff's office & leave message
Fire District #4 – Volunteer Don Ochs, Fire Chief	Washougal, WA	Fire Station: (360) 835-3427 Residence: (360) 837-3172 Dispatch: (509) 427-9490
North Bonneville Fire Department – Volunteer Trevor Munsch, Fire Chief	North Bonneville, WA	<b>Emergencies: 911</b> Administration:(509) 427- 8182 (leave a message)
<b>Law Enforcement and Fire - Steigerwald Lake NWR</b>		
Washougal Police Department	1320 "A" Street Washougal, WA 98671	(360) 835-8701
Washougal Fire Department	1400 "A" Street Washougal, WA 98671	(360) 835-2211
Clark Regional Service Agency	710 West 13 <sup>th</sup> Street Vancouver, WA 98660	(360) 992-9200
<b>Air Safety</b>		
Federal Aviation Administration Eric Hansen	McMinnville Automated Flight Service Station 3975 Cirrus Avenue McMinnville, OR 97218	(503) 496-7500
Troutdale Airport	1000 N.W. Perimeter Way Troutdale, OR	(503) 661-4184 or (503) 665-0108

<b>U.S. Fish and Wildlife Service Contacts</b>		
Ridgefield National Wildlife Refuge Complex	301 N. Third Avenue (P.O. Box 457) Ridgefield, WA 98642	Office (360) 887-4106 Fax (360) 887-4109
(Vacant), Project Leader Ridgefield NWRC	Ridgefield, WA	Office (360) 887-4106
Rebecca Young, Deputy Project Leader Ridgefield NWRC	Ridgefield, WA	Office (360) 887-4106
Joe Engler, Wildlife Biologist Ridgefield NWRC	Ridgefield, WA	Office (360) 887-4106 Cell (503) 313-3113
Steigerwald Lake NWR Franz Lake NWR Pierce NWR	35501 S.E. Evergreen Hwy., P.O. Box 1136 Washougal, WA 98671	Office (360) 835-8767 Fax (360) 835-9780
Jim Clapp, Refuge Manager Steigerwald Lake NWR	Washougal, WA	Office (360) 835-8767
Brian Gales, Zone Prescribed Fire Specialist Willamette Valley NWRC	10995 Highway 22 Dallas, OR 97338	Office (541) 757-7236 Cell (541) 740-8865
Region 1 Office, U.S. Fish & Wildlife Service	Eastside Federal Complex 911 NE 11 <sup>th</sup> Avenue Portland, OR 97232	Office (503) 736-4750 Office (503) 231-6170 Fax (503) 231-2364
Pam Ensley, Regional Fire Management Coordinator	Portland, OR	Work (503) 231-6174 Cell (503) 781-7978
Roger Spaulding, Assistant Regional Fire Management Coordinator	Portland, OR	Work (503) 231-6175
Bruce Babb, Regional WUI Coordinator	Portland, OR	Work (503) 231-6234 Cell (503) 703-5823

<b>Cooperating Agencies</b>		
Mt. Hood National Forest Dispatch	6400 Champion Way Sandy, OR 97055	(503) 668-1760/1759/1758 After Office Hours: (503) 668-0181
Columbia River Gorge National Scenic Area Fire Management Officer	902 Wasco Avenue Hood River, OR 97031	(541) 308-1700
Columbia River Gorge National Scenic Area Fire Duty Officer	Hood River, OR	Pager (541) 386-8562

Gifford Pinchot National Forest Fire Management/Dispatch Office	10600 N.E. 51 <sup>st</sup> Circle Vancouver, WA 98682	Office Hours (360) 891-5140 After Office Hours (360) 896-FIRE (3473)
Washington Department of Natural Resources	601 Bond Road P.O. Box 280 Castle Rock, WA 98611	(360) 577-2025 After Hours: 1-800-562-6010

<b>Hospitals/Emergency Services</b>		
Southwest Washington Medical Center	400 NE Mother Joseph Pl. P.O. Box 1600-98668 Vancouver, WA 98664	(360) 514-2064 EMERGENCY
Emmanuel Hospital/Burn Center	2801 N. Gantenbein Ave. Portland, Oregon 97227	(503) 413-2200 (503) 413-4232 LIFEFLIGHT (503) 413-5433
American Medical Response (Ambulance)	1 S.E. Second Avenue Portland, OR 97214	(503) 239-0389

<b>Weather Services</b>		
Fire Weather – National Weather Service General fire weather info – <a href="http://www.fire.boi.noaa.gov">www.fire.boi.noaa.gov</a>	5241 N.E. 122 <sup>nd</sup> Avenue Portland, Oregon 97230	(503) 326-2420 Fire Weather Desk 7 a.m. – 3 p.m. M-F
Zone maps and fire weather forecasts – <a href="http://www.wrh.noaa.gov/Portland/fire.html">www.wrh.noaa.gov/Portland/fire.html</a>		(503) 326-3720 Public Information 24-hour Number
Don Vogel – Washougal weather station	33220 S.E. 20 <sup>th</sup> Street Washougal, WA 98671	(360) 835-2800

<b>Adjacent Landowners/Residents – Pierce National Wildlife Refuge</b>		
<b><i>Pierce NWR - East</i> (See Figure 2 below)</b>		
Block 1, Lot 9 John Martell	North Bonneville, WA	(509) 427-5545
Block 1, Lot 10 Pollard Dickson	North Bonneville, WA	(509) 427-8488
Block 1, Lot 11 Andy DeBriae	North Bonneville WA	(509) 427-8448



Block 1, Lot 12 Jeff Heiser	North Bonneville WA	(509) 427-4452
Block 2, Lot 5 Catherine Craig	North Bonneville WA	(509) 427-4842
Block 2, Lot 6 Ruth Josie	North Bonneville WA	(509) 427-5496
Block 2, Lot 7 Vacant	North Bonneville WA	
Block 3, Lot 17 Bob Jones	North Bonneville WA	(509) 427-5756 Unlisted
Block 3, Lot 18 John McSherry	North Bonneville, WA	(509) 427-8481
Block 3, Lot 19 Vacant	North Bonneville, WA	
Block 3, Lot 20 Vacant	North Bonneville, WA	
Block 3, Lot 21 Tim Collins	North Bonneville, WA	(509) 427-8194
<b><i>Pierce NWR - North</i></b>		
Shirley Little	Stevenson, WA	(509) 427-9405
<b><i>Pierce NWR – West</i></b>		
Beacon Rock State Park	Stevenson, WA	(509) 427-8265

<b>Adjacent Landowners/Residents – Franz Lake National Wildlife Refuge</b>		
<b><i>Franz Lake NWR - Inholdings</i></b>		
Tom and Rebecca Price	Skamania, WA	(509) 427-4253
John and Melissa Price	Skamania, WA	(509) 427-4162 4904
<b><i>Landowners on Franz Road and Duncan Creek Road circling the Hoffman Tract, counterclockwise</i></b>		
David Kuhn	Skamania, WA	(509) 427-4807
Louise Engel	Skamania, WA	(509) 427-5768
James Croy	Skamania, WA	(509) 427-8237
Elizabeth Hadley	Skamania, WA	(509) 427-8639

Donna Pearson	Skamania, WA	(509) 427-5740
John Kostrikin (rents from Tom Tucker)	Skamania, WA Lives along OR coast	(509) 427-3656 Unknown
Paul Willis	Skamania, WA	(509) 427-4588
Frank Olson	Skamania, WA	(509) 427-5005
William and Ann Wear	Skamania, WA	(509) 427-4198
Rod McCaffrey	Skamania, WA	(509) 427-4935
Brenda Sorenson (Owner of empty house)	Lyle, WA	(509) 365-3517

<b>Adjacent Landowners/Residents – Steigerwald Lake National Wildlife Refuge</b>		
<b><i>Steigerwald Lake NWR - East</i></b>		
Sharleen and Ron James	Washougal, WA	(360) 835-5356
<b><i>Steigerwald Lake NWR - North</i></b>		
Jack Kruger Annie Kruger	34817 SE Evergreen Hwy Washougal, WA 98671	(360) 835-3356 (360) 835-1145
Don Jurgenson	34812 SE Evergreen Hwy Washougal, WA 98671	(360) 835-3513
Grant Johnson, Jr.	34900 SE Evergreen Hwy Washougal, WA 98671	(360) 835-2338
Jemtegaard Middle School	35500 SE Evergreen Hwy Washougal, WA 98671	(360) 835-8763
Daniel Austen	35400 SE Evergreen Hwy Washougal, WA 98671	Unknown
Randy Quarles	35560 SE Evergreen Hwy Washougal, WA 98671	(360) 835-0314
Wayne Ritter	35604 SE Evergreen Hwy Washougal, WA 98671	(360) 835-2493
D.A. Gjendem	6500 356 <sup>th</sup> Avenue Washougal, WA 98671	(360) 835-2394
Jack Ross	6505 356 <sup>th</sup> Avenue Washougal, WA 98671	(360) 835-9461
Terry Love	35900 SE Evergreen Hwy Washougal, WA 98671	(360) 835-1991

Robert Headon	35902 SE Evergreen Hwy Washougal, WA 98671	(360) 907-3620
Ronald Lister, Renter Ardith Bottemiller, Owner	35908 SE Evergreen Hwy 2524 "B" Street Washougal, WA 98671	No phone (360) 835-0512
Raymond Bottemiller	36206 SE Evergreen Hwy Washougal, WA 98671	(360) 835-1691
April Meador	36109 SE Evergreen Hwy Washougal, WA 98671	No phone
<b><i>Steigerwald Lake NWR - West</i></b>		
Port of Camas-Washougal Industrial Park	Washougal, WA	(360) 835-2196 x101
City of Washougal Sewage Treatment Plant	Washougal, WA	(360) 835-5011
<b><i>Steigerwald Lake NWR - NW</i></b>		
Gibbons Creek Mobile Home Park Manager	4501 Addy Street Washougal, WA 98671	(360) 835-2101

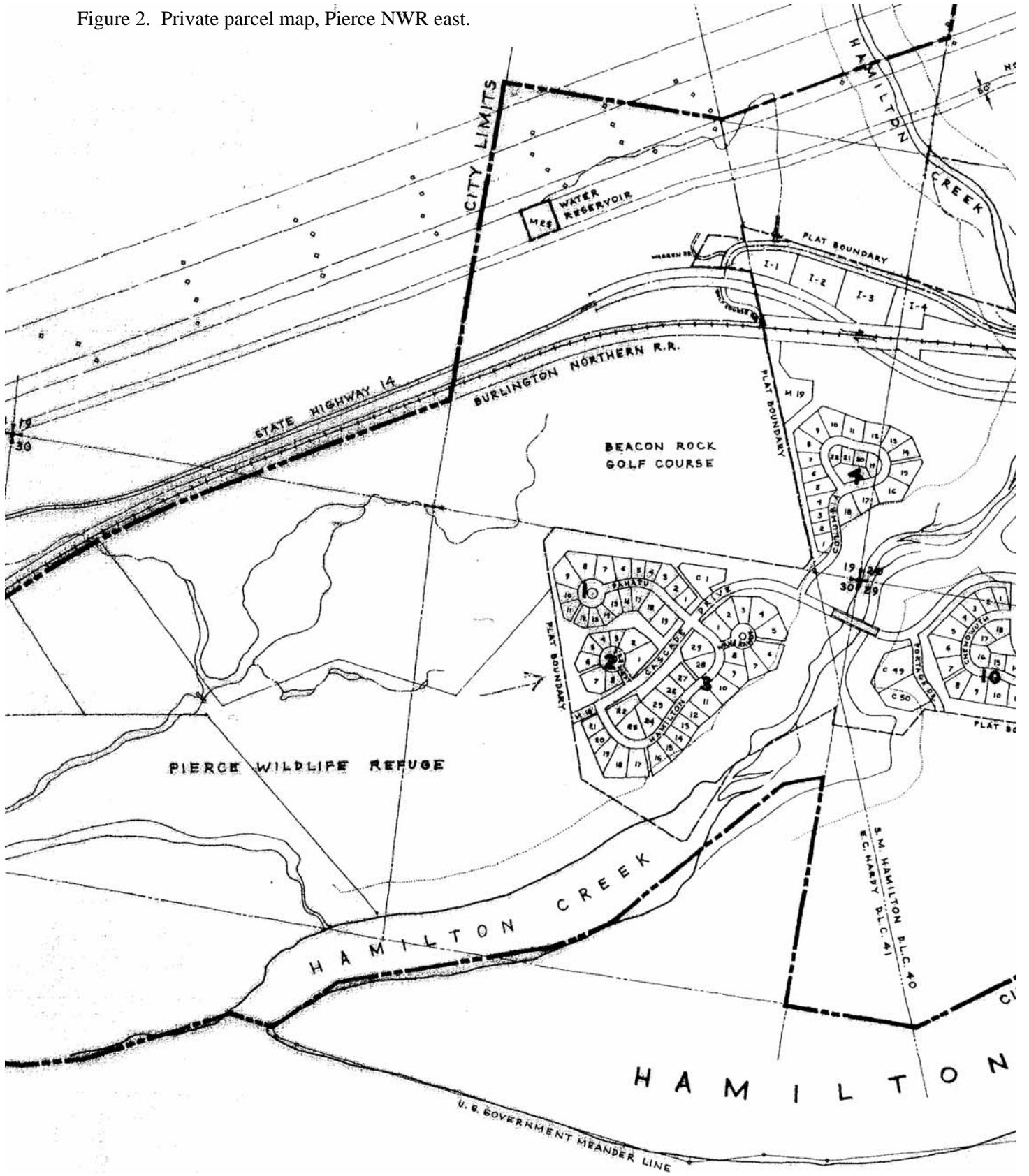
<b>Local Support Contacts – Pierce and Franz Lake National Wildlife Refuges</b>		
<b><i>Engine Repair</i></b>		
Hood River Ford-Mercury	Hood River	1-800-875-5277
Hood River Chrysler Dodge Jeep	Hood River	(541) 386-3011
Gorge Automotive	Hood River	(541) 386-5030
River's Edge Towing & Auto Repair	Hood River	(541) 386-6774 Towing (541) 386-6944
<b><i>Dozers</i></b>		
DeHart Excavation	Hood River	(541) 386-3290
Kropp Construction	Hood River	(541) 386-5244
Tom Arnold Logging	White Salmon	(509) 493-4159
<b><i>Groceries</i></b>		
A&J Select Market	Stevenson	(509) 427-5491
Skamania general Store	Skamania	(509) 427-4820

<b>Meals</b>		
His Deli in the Gorge	North Bonneville	(509) 427-8042
Big River Grill	Stevenson	(509) 427-4888
Charburger	Cascade Locks	(541) 374-8477
El Rio Mexican Café	Stevenson	(509) 427-4479
River's Edge Café	Stevenson	(509) 427-4670
<b>Motels</b>		
Best Western Columbia River Inn	Cascade Locks	(541) 374-8777
Columbia Gorge Riverside Lodge	Stevenson	(509) 427-5650
Econo Lodge	Stevenson	(509) 427-5628
<b>Hardware</b>		
Columbia Hardware	Stevenson	(509) 427-5551
True Value Hardware	Hood River	(509) 386-6200

<b>Local Support Contacts – Steigerwald Lake National Wildlife Refuge</b>		
<b>Engine Repair</b>		
East County Automotive Service	Washougal	(360) 835-8443
Hi-Way Fuel	Washougal	(360) 835-2737
<b>Dozers</b>		
Wooly's Logging & Tree Service	Washougal	(360) 944-7786 Pager (360) 905-0872
Skye Timber	Washougal	(360) 834-4566
George Schmid Excavating	Washougal	(360) 892-4874
<b>Groceries</b>		
Danielson Thriftway	1708 B Street Washougal, WA	(360) 835-2116
Safeway	800 N.E. 3 <sup>rd</sup> Avenue Camas, WA	(360) 834-6912 7933
Washougal Food Center	1736 E Street Washougal, WA	(360) 835-3525

<b><i>Lodging</i></b>		
Rama Inn	Washougal	(360) 385-8591
Camas Hotel	Camas	(360) 834-5722
Travelodge	Vancouver	(360) 254-0900
<b><i>Meals</i></b>		
Burger King	Washougal	(360) 834-1021
Camas Sandwich	Camas	(360) 834-5287
Chinese Café & Restaurant	Camas	(360) 835-8860
Juanita's Mexican Restaurant	Washougal	(360) 834-5856
Many more in Camas-Washougal phone book		
<b><i>Hardware</i></b>		
Camas True Value Hi-School Pharmacy	Camas	(360) 835-7577
Coast to Coast	Camas	(360) 834-2663
Town & Country Store	Camas	(360) 834-3811
Washougal Lumber	Camas	(360) 835-3411

Figure 2. Private parcel map, Pierce NWR east.



APPENDIX D: REQUEST FOR CULTURAL RESOURCE COMPLIANCE

REQUEST FOR CULTURAL RESOURCE COMPLIANCE

Project Name: \_\_\_\_\_

USFWS Unit: \_\_\_\_\_

Org Code: \_\_\_\_\_

Ecoregion: \_\_\_\_\_  
(By ARD; CBE, IPE, KCE, NCE)

Program: \_\_\_\_\_  
(Partners, WSECP, Refuges, Hatcheries, Jobs, Federal Aid, Other)

Location: \_\_\_\_\_ County: \_\_\_\_\_ State: \_\_\_\_\_  
(nearest town)

Township(s): \_\_\_\_\_ Range(s): \_\_\_\_\_ Section(s): \_\_\_\_\_ Meridian: \_\_\_\_\_

7.5' USGS Quad(s): \_\_\_\_\_  
(Name, Date)

Project acres or linear meters/feet: \_\_\_\_\_

Date you want to start the project: \_\_\_\_\_ Date of this request: \_\_\_\_\_

USFWS Contact: \_\_\_\_\_ Phone: \_\_\_\_\_

Address: \_\_\_\_\_ Fax: \_\_\_\_\_

Directions to project (if not obvious):

Attach to this form:

- A project (sketch) map showing the Area of Potential Effect with locations of specific ground altering activities (required).
- A photocopy of the USGS quad clearly marking the project area (required).
- A photocopy of an air photo showing the project may be attached (if available).

Return form and direct questions to:

USFWS Region 1 Cultural Resources Team  
c/o Tualatin River NWR  
20555 SW Gerda Lane  
Sherwood, OR 97140

Phone: (503) 625-4377  
Fax: (503) 625-4887

NHPA COMPLIANCE

Appendix \_\_\_\_\_ Item \_\_\_\_\_ of the Programmatic Agreement applies.

36CFR800.4 to 800.6 applies.

\_\_\_\_\_  
Cultural Resources Team Date

**The Undertaking:** *Describe the proposed project and means to facilitate it (e.g., provide funds to revegetate 1 mile of riparian habitat, restore 250 acres of seasonal wetlands, and construct a 5-acre permanent pond). How is the project designed (e.g., install 2 miles of fence and create approximately 25 feet of 3 foot high check dam)?*

**Area of Potential Effect:** *Describe where disturbance of the ground will occur. What are the dimensions of the area to be disturbed? How deep will you excavate? How long is the ditch, fence, etc? Where will fill be obtained? Where will spoil be dumped? What tools or equipment will be used? Are you replacing or repairing a structure? Are you moving dirt in a relatively undisturbed area? Will the project reach below or beyond the limits of prior land disturbance? Differentiate between areas slated for earth movement versus areas to be inundated only. Is the area to be inundated different from the area inundated today, in the recent past, or under natural conditions? Provide acres and/or linear meters or feet for all elements of the undertaking.*

**Environmental Setting:** *Describe the environmental setting of the Area of Potential Effect. A) What was the natural habitat prior to modifications, reclamation, agriculture, settlement? B) What is the land-use history? When was it first settled, modified? How deep has it been cultivated? Grazed? etc. C) What is the land-use and habitat today? What natural agents (e.g., sedimentation, or vegetation) or cultural agents (e.g., cultivation) might affect the ability to discover cultural resources? D) Do you (or does anybody else) know of cultural resources in or near the project area?*



## **APPENDIX E: INTERAGENCY AGREEMENTS**

Verbal agreements are currently in place with local firefighting resources. When formal cooperative agreements or memoranda of understanding are developed and approved, they will be inserted here. The Central Cascades Wildland Fire Operation Plan, a step-down plan for the Master Cooperative Fire Protection Agreement for Washington and Oregon, can be found in Appendix F.

**APPENDIX F: CENTRAL CASCADES WILDLAND FIRE OPERATING PLAN**

**CENTRAL CASCADES WILDLAND FIRE OPERATING PLAN**

Between

UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE

Columbia River Gorge National Scenic Area  
Mt. Hood National Forest  
Gifford Pinchot National Forest

UNITED STATES DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT

Spokane District

UNITED STATES FISH AND WILDLIFE SERVICE

Pacific Region

OREGON DEPARTMENT OF FORESTRY

The Dalles Unit  
Clackamas-Marion Unit

BUREAU OF INDIAN AFFAIRS

Yakama  
Warms Springs

NATIONAL PARKS SERVICE

Mt. Rainier

WASHINGTON DEPARTMENT OF NATURAL RESOURCES

Central Region  
Southwest Region  
Southeast Region

## **CENTRAL CASCADES WILDLAND FIRE OPERATING PLAN**

### **PREAMBLE**

This Operating Plan is prepared pursuant to the Master Cooperative Fire Protection Agreement signed and dated October 14, 1998 and the 1999 Northwest Operating Plan.

Terms, Exhibits, and Conditions in this Operating Plan are consistent with those in the Master Cooperative Fire Protection Agreement and those Terms, Exhibits, and Conditions are incorporated by reference.

This Operating Plan is between the parties listed on the signature pages and is intended to clarify procedures for fire suppression, preparedness, and prevention in all areas designated as reciprocal. Each party to this Operating Plan may have an appendix page which states the needs and restrictions specific to that agency.

This Operating Plan supersedes and cancels all previous operating plans, agreements, and MOU's between these parties signed before January 18, 2000, including but not limited to:

- Columbia River Gorge Wildland Fire Operations Plan
- Memorandum of Concurrence between GPF and SPD #1278 (OR130)
- Cooperative Engine Operations agreement between SES and GPF
- Fire Protection Agreement between FWS and SES # 14-16-0001 -3143
- Revision of Reciprocal Fire Protection Services Operating plan between CES and GPF
- Collection Agreement between CES and GPF
- Cooperative Engine Operations Agreement between CES and GPF
- Cooperative Engine Operations Agreement between SWS and GPF

### **INTERAGENCY COOPERATION**

#### **Interagency Resources:**

The Columbia River Gorge National Scenic Area (CGF) will provide and fund one crew person each for Cooperative Fire Engines operated by the Oregon Department of Forestry, The Dalles Unit (ODF), the Washington Department of Natural Resources, Southwest (SWS), and the Washington Department of Natural Resources, Southeast (SES). These positions will be filled from mid June through mid September. In return, the "Coop Engines" will be available to respond as a reciprocal fire suppression resource to all incidents occurring on lands protected by the USDA Forest Service, within the confines of the Columbia River Gorge National Scenic Area (see Exhibit A, Engine Operation Plan).

The Gifford Pinchot National Forest (GPF) will provide and fund one crew person for the Cooperative Fire Engine, provided and operated by Washington Department of Natural Resources Southeast (SES). This position will be filled normally from mid June through mid September. In return, the "Coop Engine" will be available for reciprocal fire suppression response as well as daily working projects on lands protected by the USDA Forest Service and DNR (see Exhibit A).

The GPF will provide and fund one crew person each for Cooperative Fire Engines, provided and operated by Washington Department of Natural Resources, Southwest (SWS). The GPF will provide and fund two people for staffing the Cooperative Fire Engine provided and operated by the Washington Department of Natural Resources, Central (CES). SWS will provide and fund one crew person for the

Cooperative Fire Engine, provided and operated by the GPF. These positions will be filled normally from mid June through mid September. In return the "Coop Engines" will be available for reciprocal fire suppression response as well as daily working projects occurring on lands protected by the USDA Forest Service and DNR (see Exhibit A).

The Oregon Department of Forestry, The Dalles Unit (ODF, The Dalles) will provide and fund one engine leader and one crew person each for a Cooperative Fire Engine with the Mt. Hood National Forest (MHF). These positions will be filled from mid June through mid October. In return, the "Coop Engine" will be available to respond as a reciprocal fire suppression resource to all incidents occurring on lands protected by ODF, The Dalles and the MHF (see Exhibit A). Fire suppression services required beyond the first 24 hours shall be considered "Off Set".

GPF and Mt. Rainier National Park (MRP) will share Type 3 1C as needed to cover MRP Duty Officer needs and/or GPF minimum draw down need.

### **Fire Management Services:**

Consistent with the National Interagency Agreement and the guiding principals of Closest Forces, CGF will provide fire protection and suppression services on lands managed by the U.S. Fish and Wildlife Service (FWS) within the boundaries of the Columbia River Gorge National Scenic Area. This includes; Steigerwald Lake National Wildlife Refuge, Franz Lake National Wildlife Refuge, Pierce National Wildlife Refuge, Little White Salmon National Fish Hatchery, Willard National Fish Hatchery, and Spring Creek National Fish Hatchery and involves approximately 4180 acres.

Also, CGF will provide fire protection and suppression services for lands managed by the U.S. Department of Interior, Bureau of Land Management, Spokane District, in the Klickitat River drainage. The area includes BLM ownership from the mouth of the Klickitat River to a point three miles east of the community of Klickitat at T4N, R14E, sec. 17 and involves approximately 1000 acres of scattered ownership.

Consistent with the National Interagency Agreement and the guiding principals of Closest Forces, GPF will provide initial attack fire suppression services on lands managed by the FWS, including the Gorge Refuges.

## **PREPAREDNESS**

**Protection Areas and Boundaries:** The geographic areas covered under the terms of this Operating Plan include all lands within the protection areas of each administrative unit which is a party to this plan.

**Reciprocal Fire Assistance:** Parties to this Operating Plan agree to provide reciprocal fire assistance within their designated initial attack zones. Designated initial attack zones include the lands within one mile of the aforementioned protection boundaries or within the confines of dispatch blocks/systems, whichever is greater. Specific reciprocal fire assistance shall be determined unit by unit and be consistent with predetermined dispatch systems.

**Acquisition of Services:** All costs associated with incident operations and support not identified as reciprocal shall be considered reimbursable costs. Agencies will bill one another at established "cost to agency" rates for personnel and equipment (see Exhibit B, Billing Locations).

**Fire Prevention Policies:** Parties to this Operating Plan will coordinate and implement prevention programs through the appropriate fire prevention cooperative or interagency association. Each unit will provide a representative to attend and participate in appropriate fire prevention activities.

**Industrial Restrictions:** Industrial restrictions will be administered by the protecting agency and coordinated between other protecting agencies which may be affected.

**Burning Permit Procedures:** Burning permits will be issued and maintained by the protecting agency, unless otherwise agreed (see Exhibit D, Burning Permits).

**Prescribed Fire and Fuels Management:** Parties to this Operating Plan will notify neighboring protection agencies of dates, times, sizes and locations of prescribed fires and or industrial slash bums in excess of 100 tons or field bums of more than ten acres when the aforementioned information is available or within 24 hours of planned ignition, whichever is sooner.

## **OPERATIONS**

**Fire Notification:** Where direct communications is available, lookouts will attempt to report fires to the protecting agency first.

Dispatch centers will coordinate to ensure that adjacent protection agencies are kept informed of fire activity which could involve them.

**Detection:** Parties to this Operating Plan recognize that the fire detection resources maintained by each participating unit are adequate and appropriate.

Parties to this Operating Plan routinely use aerial detection to supplement fixed coverage and will provide this service to cooperators on a reciprocal basis (non-reimbursable) when it can be accomplished in conjunction with scheduled flights over their respective protection areas. Should supplemental flights be requested the cost will be reimbursed by the requesting agency at current aircraft contract rates. Requests for supplemental detection flights will be placed with the responsible dispatch center. Dispatch centers will coordinate with each other to ensure adequate coverage and reduce flight duplication.

**Escaped Fire:** When fires escape initial attack, a supplemental fire suppression agreement will be negotiated between all agencies with protection responsibilities. This written agreement will designate divisions of operational responsibility as well as responsibility for services such as fire camp, food, and other activities essential to the fire control effort.

**Supplemental Fire Suppression Agreements:** Such agreements may be negotiated under any combination of the following terms: Unified Command with division of responsibilities based on ownership, access or threat. Multiple agency ICS organization with one Incident Commander. One agency assumes the total fire effort as the other agencies maintain full liaison including cost negotiations.

**Delegation of Authority:** On all Escaped Fires involving lands protected by two or more Parties to this Operating Plan, written Delegations of Authority will be exchanged by each agency with protection responsibility.

**Type III Resource Pool:** Parties to this Operating Plan are encouraged to maintain and utilize a Type III Resource Pool for the interim management of escaped fires that may transition to a Type I or Type II Incident Management Team. Members of the Type III resource pool may be utilized on a reciprocal basis.

**Fire Equipment:** Parties to this Operating Plan realize that different fire engine configurations exist between agencies. Each agency will work with qualified personnel from assisting agencies in the orientation of initial attack engines and equipment so that such personnel can operate that equipment in emergency situations.

**Suppression Coordination:** On fires escaping initial attack, or as requested by the protecting agency, the assisting agency will furnish an Agency Representative.

**Communications:** Parties to this Operating Plan recognize that interagency communications are essential for effective cooperation. Written authority for the use of licensed radio frequencies will be provided to one another by all parties to this Operating Plan.

**Dispatching:** Parties to this Operating Plan will use Closest Forces in accordance with Planned Area Dispatch Systems (dispatch blocks, EXHIBIT C).

Each agency will dispatch its own resources, unless otherwise agreed.

Parties to this Operating Plan will dispatch their resources, including aircraft, in accordance with a Planned Area Dispatch System and their associated boundaries.

Responsible Agencies will meet annually to review Planned Area Dispatch Systems.

Based upon availability, each agency will provide, on request, those resources identified, through the dispatch system.

Reciprocal fire protection will be provided yearlong, based upon availability, to the level identified through the dispatch system. The designated dispatch block, card, and/or system identified for low fire danger will be used during that time of year that is traditionally considered to be "outside" of fire season.

Parties to this agreement will notify each other daily, or as situations dictate, regarding the status of resources identified through Planned Area Dispatch Systems.

Variations from Planned Area Dispatch Systems may occur when a responsible party from the protecting agency deems it necessary.

Should an agency be unable to furnish a resource listed in any Planned Area Dispatch System, that agency will notify other affected agencies immediately.

Parties to this Operating Plan, when acting as the assisting agency, reserve the right to commit only those resources which are deemed reasonably available in the judgment of the responsible individual. Parties to this Operating Plan recognize that for operations during multiple fire scenarios, dispatch plans cannot be too rigid. Current fire situations and availability offerers may dictate reductions and expansions in staffing. Resource and dispatching adjustments will be coordinated between responsible representatives, as designated by each party to this Operating Plan.

Use of aerial delivered retardant is approved for use by the Incident Commander, first load only, on lands protected by Washington Department of Natural Resources; Southwest Region, Southeast Region, Central Region; Oregon Department of Forestry: The Dalles Unit, Clackamas/Marion Unit; United States Forest Service: Gifford Pinchot National Forest, Columbia River Gorge National Scenic Area; United States Department of Interior: National Park Service; Mt. Rainier, Fort Vancouver National Historic Site, Fort Clatsop National Monument; Fish and Wildlife Service: Steigerwald Lake National Wildlife Refuge, Franz Lake National Wildlife Refuge, Pierce National Wildlife Refuge, Conboy Lake National Wildlife Refuge, Nisqually National Wildlife Refuge, Ridgefield National Wildlife Refuge, Willapa National Wildlife Refuge; Bureau of Land Management: Spokane District; Bureau of Indian Affairs: Yakama Nation, Confederated Tribes of Warm Springs. Continued use of retardant is dependent upon the approval of the jurisdictional agency.

**Fire Reports:** Protecting agencies will complete required fire reports. Assisting agencies will provide all requested information regarding their involvement to the protecting agency in a timely fashion.

## **FIRE INVESTIGATIONS**

Parties to this Operating Plan will conduct detailed fire investigations to determine the cause of all fires. Each agency has trained fire investigators available to assist the other. The use of interagency fire investigation teams is encouraged on all interagency fires.

Nothing herein shall be understood to impair the right of any agency to recover the costs of suppression and damages due to fires resulting from negligent, willful, or illegal acts of any forest landowner, timber operator, or other person or corporation; or to impair any other rights of similar nature under state or federal laws. In those cases where costs have been recovered from a third party, reimbursement of initial attack costs (to the extent included in the recovery) will be made to the parties taking initial attack action.

## **MEDIA COORDINATION**

**Press Releases:** News releases related to regulated industrial and public use restrictions will be coordinated between parties to this Operating Plan and, where appropriate and practicable, will be joint press releases.

Media contact and news releases regarding specific fires is the responsibility of the protecting agency and will not be conducted or released by assisting agencies without the permission of the protecting agency.

## **PLAN REVIEW**

At least annually, or as needed, parties to this Operating Plan will meet to review the previous fire season and adjust this plan if needed. This plan shall remain in force and effect unless canceled by not less than 30 days' written notice from one party to the others. In the event of cancellation, financial liability of the parties hereto will be determined on the basis of services rendered at the time of cancellation.

**SIGNATURES**

WITNESS WHEREOF, the parties hereto have executed this Wildland Fire Operating Plan.

CLACKAMAS-MARION DISTRICT  
OREGON DEPARTMENT OF FORESTRY

District Forester:  
Date

CENTRAL OREGON DISTRICT  
OREGON DEPARTMENT OF FORESTRY

District Forester:  
Date:

WASHINGTON DEPARTMENT OF NATURAL RESOURCES

Resource Protection Division:  
Date:

MT. HOOD NATIONAL FOREST  
USDA FOREST SERVICE

Forest Supervisor:  
Date:

GIFFORD PINCHOT NATIONAL FOREST  
USDA FOREST SERVICE

Forest Supervisor:  
Date:

COLUMBIA RIVER GORGE NATIONAL SCENIC AREA  
USDA FOREST SERVICE

Area Manager:  
Date:

UNITED STATES DEPARTMENT OF INTERIOR  
BUREAU OF INDIAN AFFAIRS (Warm Springs)

Superintendent:  
Date:

CONFEDERATED TRIBES OF WARM SPRINGS

Chief Operations Officer:  
Date:



UNITED STATES DEPARTMENT OF INTERIOR  
BUREAU OF INDIAN AFFAIRS (Yakama)

Superintendent:  
Date:

YAKAMA INDIAN NATION

Chief Operations Officer:  
Date:

UNITED STATES DEPARTMENT OF INTERIOR  
NATIONAL PARK SERVICE  
MT. RAINIER NATIONAL PARK

Superintendent:  
Date:

UNITED STATES DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
SPOKANE DISTRICT

District Manager:  
Date:

UNITED STATES DEPARTMENT OF INTERIOR  
U.S. FISH AND WILDLIFE SERVICE  
PACIFIC REGION

Geographic Assistant Regional Director, North Coast:  
Date:

**CENTRAL CASCADES WILDLAND FIRE OPERATING PLAN  
EXHIBIT A**

**INTERAGENCY ENGINE OPERATION PLAN**

The assigned agency will provide an engine equipped to their standards, as the primary engine. Repairs, break downs, and maintenance that occur during the operational use when performing work under the terms of this operating plan will be borne by the assigned agency.

The cooperators agree to have shared work projects on each agency's protection. Length and duration will be negotiated and agreed to by the agency representatives.

The cooperators agree to participate in joint training on a weekly basis. Day of week and location will be agreed to and scheduled by agency representatives.

Response areas will be reviewed on an annual basis and identified in the local operating plan. Response areas will be reviewed by each agency's Fire Management Officer.

Clear and routine communication between the cooperators dispatch centers will occur on a daily basis regarding resource status, and general fire situation. Once an interagency resource is committed to an incident, notification will be made to the other dispatch center(s).

Engine #	Engine Provided By	Engine Size	Leader Provided By	FF #1 Provided By	FF#2 Provided By	Engine Location	Agency Representative
E-263	SWS	650 g T-5	DNR	DNR	CGF	Ft. Rains	Evans/Kennedy
E-47	ODF	500 g T-5	ODF	ODF	CGF	The Dalles	Jacobs/Kennedy
E-45	ODF	200 g T-4	ODF	ODF	MHF	Rock Creek	Gard/Jacobs
E-621	SES	300 g T-6	DNR	DNR	CGF	Husum	Lawson/Kennedy
E-302	GPF	300 g T-6	GPF	GPF	DNR	Wind River	Lawson/Bouchard
E-622	SES	650 g T-5	DNR	DNR	GPF	Husum	Lawson/Bouchard
E-761	CES	650 g T-5	DNR	GPF	GPF	Morton	Hutchins/Myers
E-262	SWS	650 g T-5	DNR	DNR	GPF	Battle Grnd.	Evans/Walker

**CENTRAL CASCADES WILDLAND FIRE OPERATING PLAN  
EXHIBIT B**

**BILLING LOCATIONS**

Gifford Pinchot National Forest  
Resources  
10600 NE 51st Circle  
Vancouver, WA 98682  
Attn: Fire Billings

Mt. Hood National Forest  
16400 Champion Way  
Sandy, OR 97055  
Attn: Financial Manager

Columbia River Gorge National Scenic Area  
902 Wasco Ave. #200  
Hood River, OR 97031  
Attn: Financial Manager

National Park Service  
Seattle Support Office  
909 First Avenue  
Seattle, WA 98104-1060  
Attn: Contracting Division

Oregon Department of Forestry  
The Dalles Unit  
3701 W. 13th St.  
The Dalles, OR 97058  
Attn: Office Manager

Oregon Department of Forestry  
Clackamas-Marion District  
14995 S. Highway 211  
Molalla, OR 97038  
Attn: Office Manager

Washington Department of Natural Resources  
Southeast Region  
713E Bowers Rd  
Ellensburg, WA 98926  
Attn: Financial Manager

Washington Department of Natural Resources  
Southwest Region  
P.O. Box 280  
Castle Rock, WA 98632  
Attn: Fire Operations Coordinator

Washington Dept. of Natural Resources  
Central Region  
1405 Rush Rd.  
Chehalis, WA 98532  
Attn: Financial Manager

Bureau of Land Management  
Spokane District  
1103 North Fancher  
Spokane, WA 99212  
Attn: FMO

Bureau of Indian Affairs  
Warm Springs  
P.O. Box 1239  
Warm Springs, OR 97761  
Attn: FMO

Bureau of Indian Affairs  
Yakama  
P.O.Box 151  
Toppenish, WA 98948  
Attn: FMO

**CENTRAL CASCADES WILDLAND FIRE OPERATING PLAN  
EXHIBIT C**

**DISPATCH BLOCK**

**CENTRAL CASCADES WILDLAND FIRE OPERATION PLAN  
EXHIBIT D**

**BURNING PERMITS  
2000**

The GPF will issue burning permits for less than 100 tons on private lands under DNR jurisdiction east of State Highway 133 (Forest Rd. 25) and on private lands intermixed with national forest lands in the Cispus area. This area is bordered on the north, south and east by national forest lands.

The GPF will instruct permittees to mail in fees with the permit in the provided envelopes. The GPF will not collect fees.

The GPF will maintain a DNR Warden burn permit log and send a copy to DNR Central Region monthly.

The GPF will issue a Bill of Collection for reimbursement of service rendered to DNR Central Region. The annual cost is estimated to be \$70.00 per permit based on 2.5 hours of labor, an average of 18 miles of travel, and a Forest Service overhead rate of 30% per permit. The bill will be issued at the end of the federal fiscal year (Sept. 30).

The CES will provide Ranger Commission training for designated GPF employees.

The CES will provide burn permit forms, postage, and return envelopes as well as public information explaining the burn permit process.

The CES will validate permits and send copies to the permittee and the Cowlitz Valley Ranger District.

The CES will, upon receiving the Bill of Collection from the Forest Service, reimburse the Forest Service for services rendered.

The CES hereby agrees to defend and hold harmless the USDA Forest Service, its representatives, or its employees from any damage incident to the performance of the work resulting from, related to, or arising from this agreement.

The principle contacts for this attachment are:

USDA Forest Service  
Fire Management Officer  
Cowlitz Valley Ranger District  
Packwood, WA 98361  
(360)494-5515

DNR Central Region  
Resource Protection District Manager  
1405 Rush Rd.  
Chehalis, WA 98531  
(360) 40-6800

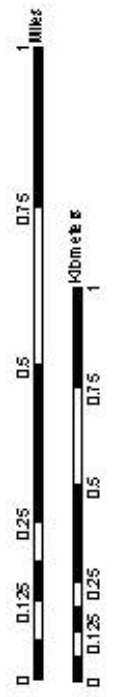
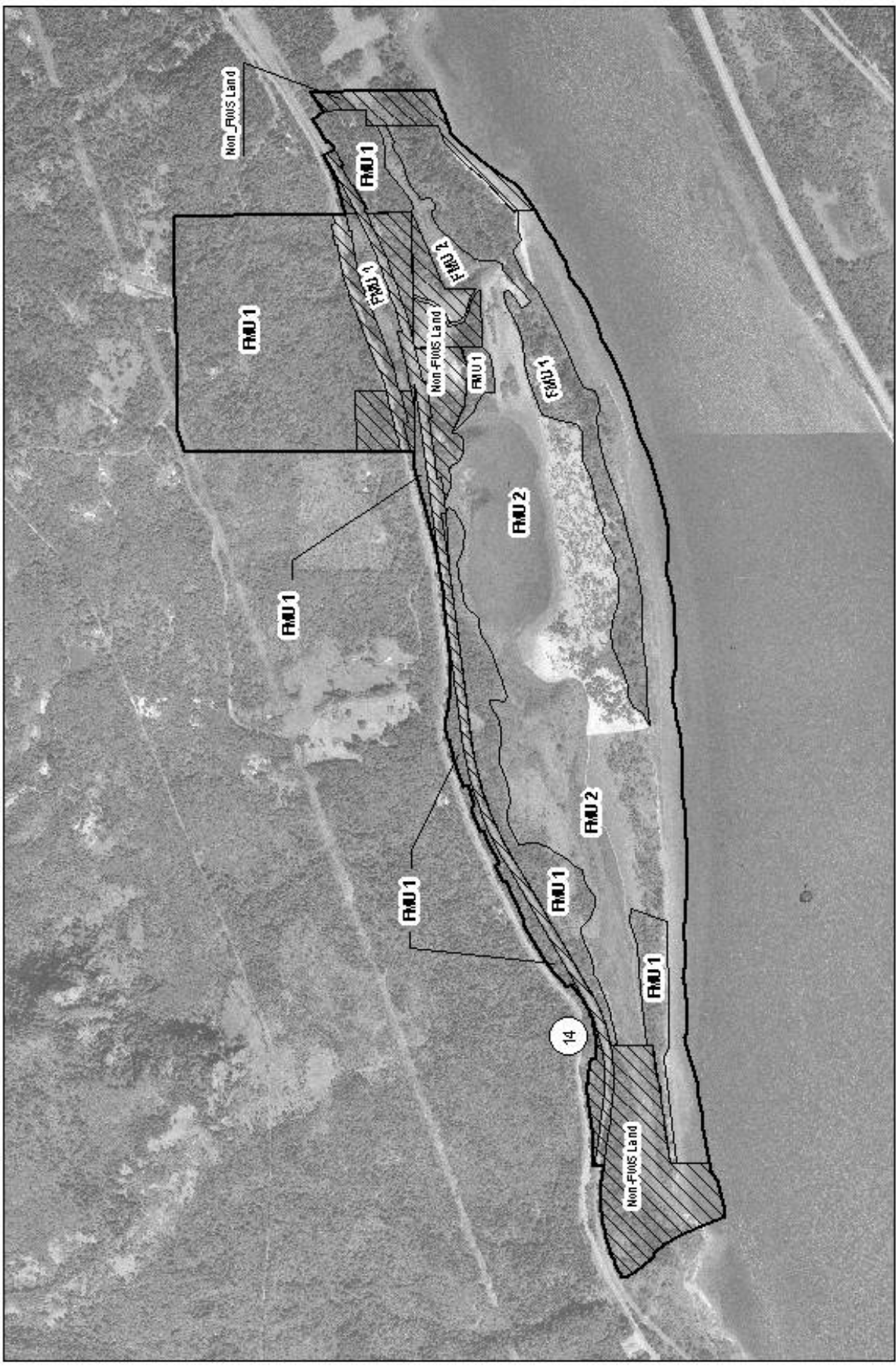
## **APPENDIX G: MAPS**

Figure 3. Fire Management Units – Franz Lake NWR.



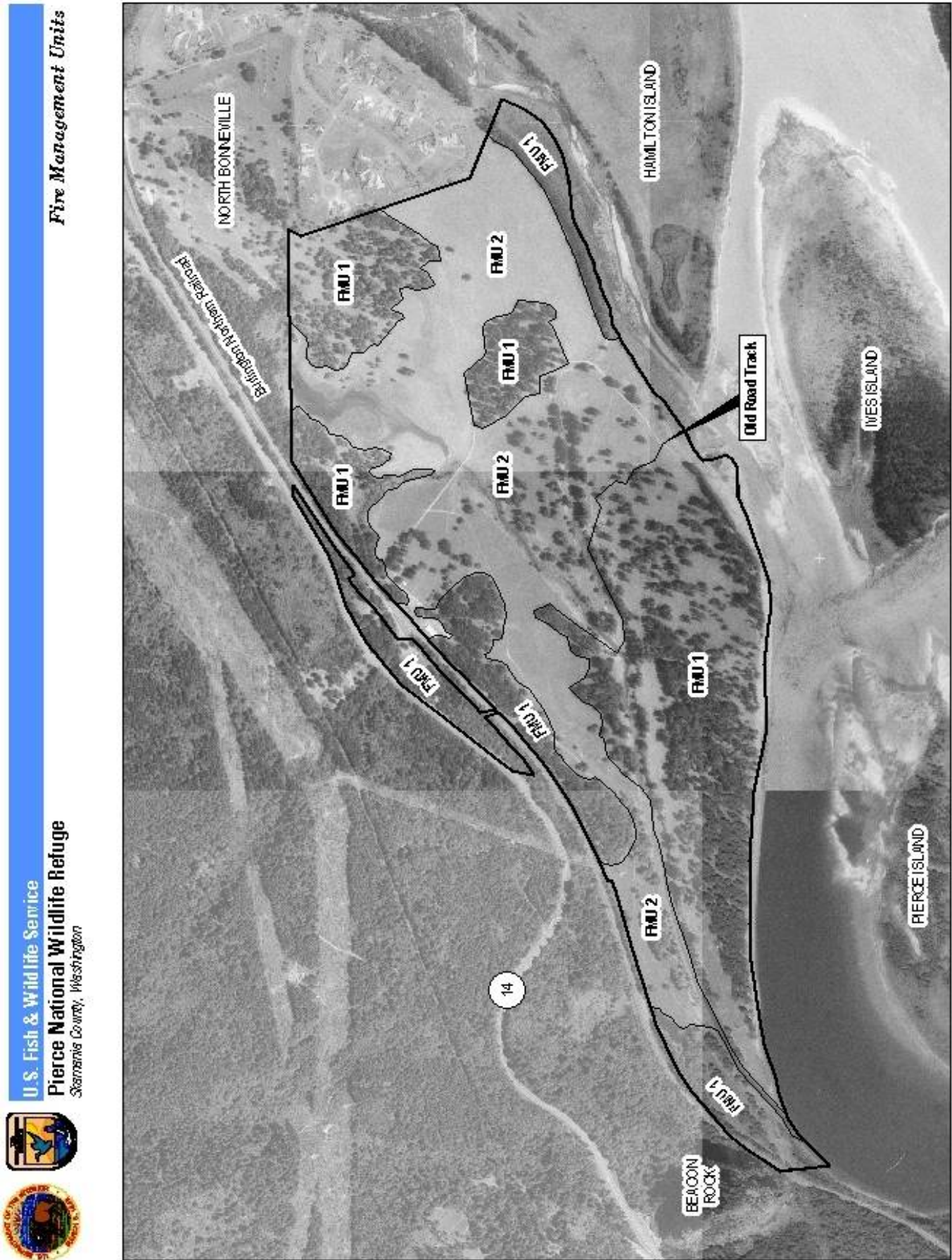
U.S. Fish & Wildlife Service  
 Franz Lake National Wildlife Refuge  
 Skamania County, Washington

Fire Management Units



PRODUCED IN THE DIVISION OF REFUGE PLANNING  
 PORTLAND, OREGON  
 LAND STATUS CURRENT TO: 2/10/04  
 MAP DATE: 3/30/04  
 MERIDIAN: WILLAMETTE  
 FILE: FIRE\_MOT\_FRANZ.MXD

Figure 4. Fire Management Units – Pierce NWR.



U.S. Fish & Wildlife Service  
 Pierce National Wildlife Refuge  
 Skamania County, Washington

Fire Management Units

PRODUCED IN THE DIVISION OF REFUGE PLANNING  
 PORTLAND, OREGON  
 LAST STATUS CURRENT TO: 2/4/04  
 MAP DATE: 3/5/04  
 MERIDIAN: WILLAMETTE  
 FILE: FIRE\_MGT\_PIERCENWR

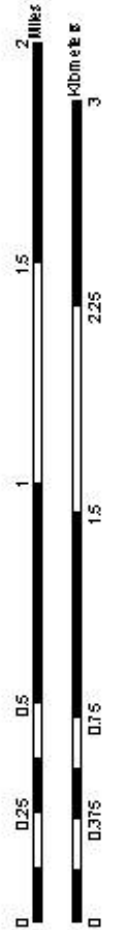


Figure 5. Fire Management Units – Stiegerwald Lake NWR.



U.S. Fish & Wildlife Service  
**Stiegerwald Lake National Wildlife Refuge**  
 Clark County, Washington

*Fire Management Units*



PRODUCED IN THE DIVISION OF REFUGE PLANNING  
 PORTLAND, OREGON  
 LAM D STATUS CURRENT TO: 2/4/04  
 MAP DATE: 3/5/04  
 MERIDIAN: UTM/METRE  
 FILE: FIRE\_MOT\_STGWLK\_LAKEN1.XD

**APPENDIX H. PRESCRIBED BURN PLAN TEMPLATE**

<b>REFUGE OR STATION:</b>	<b>UNIT:</b>
---------------------------	--------------

<b>Prepared By:</b>	<hr/> Prescribed Fire Specialist	<hr/> Date
<b>Reviewed By:</b>	<hr/> Refuge Biologist	<hr/> Date
<b>Reviewed By:</b>	<hr/> Prescribed Fire Burn Boss	<hr/> Date
<b>Reviewed By:</b>	<hr/> Fire Management Officer	<hr/> Date
<b>Reviewed By:</b>	<hr/> Biological Investigation Unit	<hr/> Date
<b>Reviewed By:</b>	<hr/> Refuge Manager	<hr/> Date
<p><b>The approved Prescribed Fire Plan constitutes the authority to burn, pending approval of Section 7 Consultations, Environmental Assessments or other required documents. No one has the authority to burn without an approved plan or in a manner not in compliance with the approved plan. Prescribed burning conditions established in the plan are firm limits. Actions taken in compliance with the approved Prescribed Fire Plan will be fully supported, but personnel will be held accountable for actions taken which are not in compliance with the approved plan.</b></p>		
<b>Approved By:</b>	<hr/> Project Leader	<hr/> Date

**PRESCRIBED FIRE BURN PLAN**

<b>Refuge:</b>	<b>Refuge Burn Number:</b>
<b>Substation:</b>	<b>Fire Number:</b>
<b>Name of Area:</b>	<b>Unit Number:</b>
<b>Acres to be Burned:</b>	<b>Perimeter of Burn:</b>
<b>Legal Description:</b> T_____    R_____    S_____ <b>Meridian:</b> _____  <b>Latitude:</b> _____ <b>Longitude:</b> _____	
<b>County:</b>	<b>State:</b>

Is a Section 7 Consultation being forwarded to Fish and Wildlife Enhancement for review?

Yes     No    (check one).

(Page 2 of this PFP should be a refuge base map showing the location of the burn on Fish and Wildlife Service land)

The Prescribed Fire Burn Boss/Specialist must participate in the development of this plan.

## **I. GENERAL DESCRIPTION OF BURN UNIT**

Physical Features and Vegetation Cover Types (Species, height, density, etc.):

Primary Resource Objectives of Unit (Be specific. These are management goals):

1)

2)

3)

Objectives of Fire (Be specific. These are different than management goals):

1)

2)

3)

Acceptable Range of Results (Area burned vs. unburned, scorch height, percent kill of a species, range of litter removed, etc.):

1)

2)

3)

*[Attach Project Map Here]*

*[Attach Project Pre-Burn Photos Here]*

**II. PRE-BURN MONITORING**

Vegetation Type	Acres	%	FBPS Fuel Model
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Total	_____	_____	_____

Habitat Conditions (Identify with transect numbers if more than one in burn unit.):

Type of Transects:

Photo Documentation (Add enough spaces here to put a pre-burn photo showing the habitat condition or problem you are using fire to change/correct. A photo along your transect may reflect your transect data.):

Other:

### **III. PLANNING AND ACTIONS**

Complexity Analysis Results: (Attach a completed copy of the Complexity Analysis worksheet to this plan.)

Site preparation (What, when, who & how. Should be done with Burn Boss):

Weather information required (who, what, when, where, how, and how much):

Safety considerations and protection of sensitive features (Adjacent lands, visitors, facilities, terrain, etc., and needed actions. Include buffer and safety zones. Be specific, indicate on a burn unit map. Map should be a USGS quadrangle if possible, so ridges, washes, water, trails, etc. can be identified.)

Special Safety Precautions Needing Attention (Aerial ignition, aircraft, ignition from boat, etc.):

Media Contacts (Radio stations, newspaper, etc., list with telephone numbers):

Special Constraints and Considerations (Should be discussed with Burn Boss):

Communication and Coordination on the Burn (Who will have radios, frequencies to be used, who will coordinate various activities.):

**IV. IGNITION, BURNING AND CONTROL**

Planned or Proposed

Actual

Scheduling: Approx. Date(s)

\_\_\_\_\_

\_\_\_\_\_

Time of Day

\_\_\_\_\_

\_\_\_\_\_

Acceptable Range

FBPS Fuel Model: ____	Low	High	Actual
Temperature			
Relative Humidity			
Wind Speed (20' forecast)			
Wind Speed (mid-flame)			
Wind Direction			
<b>ENVIRONMENTAL CONDITIONS</b>			
Soil Moisture			
1 hr. Fuel Moisture			
10 hr. FM			
100 hr. FM			
Woody Live Fuel Moisture			
Herb. Live Fuel Moisture			
Litter/Duff Moisture			
<b>FIRE BEHAVIOR</b>			
Type of Fire (H,B,F)	B	H	
Rate of Spread (ch/hour)			
Fireline Intensity			
Flame Length			
Energy Release Component NFDRS Fuel Model: _____			

Note: Attach BEHAVE Runs as an appendix to the end of this plan.

Cumulative effects of weather and drought on fire behavior:

Ignition Technique (Explain and include on map of burn unit. Use of aerial ignition must be identified in this plan. Last minute changes to use aircraft will not be allowed and will be considered a major change to the plan. This will require a resubmission):

Prescribed Fire Organization (See Section VII, Crew and Equipment Assignments. All personnel and their assignments must be listed. All personnel must be qualified for the positions they will fill.)

Other (If portions of the burn unit must be burnt under conditions slightly different than stated above, i.e., a different wind direction to keep smoke off of a highway or off of the neighbors wash, detail here.)

Prescription monitoring (Discuss monitoring procedure and frequency to determine if conditions for the burn are within prescription):



## V. SMOKE MANAGEMENT

Make any Smoke Management Plan an attachment. Also attach pertinent smoke variances (if any) and all SASEM runs.

Permits required (who, when):

Distance and Direction from Smoke Sensitive Area(s):

Necessary Transport Wind Direction, Speed and Mixing Height (Explain how this information will be obtained and used):

Visibility Hazard(s) (Roads, airports, etc.):

Actions to Reduce Visibility Hazard(s):

Residual Smoke Problems (Measures to reduce problem, i.e., rapid and complete mop-up, mop-up of certain fuels, specific fuel moistures, time of day, etc.):

Particulate emissions in Tons/Acre and how calculated (This should be filled in after the burn so more precise acreage figures can be used):

**VI. FUNDING AND PERSONNEL**

Activity Code: \_\_\_\_\_

Costs

	Equipment & Supplies	Labor	Overtime	Staff Days	Total Cost
Administration (planning, permits, etc.)					
Site Preparation					
Ignition & Control					
Travel/Per Diem					
Total					

## **VII. BURN-DAY ACTIVITIES**

Public/Media Contacts on Burn Day (List with telephone numbers):

Crew & Equipment Assignments (List all personnel, equipment needed, and assignments. The following is not an all inclusive list for what you may need.)

Crew Briefing Points (Communications, hazards, equipment, water sources, escape fire actions, etc. To be done by Burn Boss. Refer to Safety Considerations in Planning Actions and points listed below):

Ignition Technique (Methods, how, where, who, and sequence. Go over what was submitted in Section IV and any changes needed for the present conditions.) Attach ignition sequencing map if necessary:

Personnel Escape Plan:

Special Safety Requirements:

Go-No-Go Checklist:

## GO-NO-GO CHECKLIST

\_\_\_\_\_  
Unit

- \_\_\_\_\_ Is burn plan complete and approved?
- \_\_\_\_\_ Are all fire prescriptions specifications met?
- \_\_\_\_\_ Are all smoke management prescriptions met?
- \_\_\_\_\_ Is the current and projected fire weather forecast favorable?
- \_\_\_\_\_ Have all air quality considerations and smoke requirements been met?
- \_\_\_\_\_ Have all required cultural resource protection objectives been met?
- \_\_\_\_\_ Are all personnel required in the prescribed burn plan on-site and are they all qualified for their assigned duties?
- \_\_\_\_\_ Have all personnel been briefed on the prescribed burn plan requirements?
- \_\_\_\_\_ Have all personnel been briefed on safety hazards, escape routes, and safety zones?
- \_\_\_\_\_ Is all required equipment in place and in working order?
- \_\_\_\_\_ Are available (including back-up) resources adequate for containment of escapes under the worst-case conditions?
- \_\_\_\_\_ Are answers to all of the above questions "YES"?
- \_\_\_\_\_ In your opinion, can the burn be carried out according to the plan and will the burn meet planned objectives?
- \_\_\_\_\_ Is there an adequate contingency plan developed and proofed?

All 14 questions have been answered "YES".

\_\_\_\_\_  
Burn Boss

\_\_\_\_\_  
Date

\_\_\_\_\_  
Refuge Manager or Designee

\_\_\_\_\_  
Date

Holding and Control:

Critical Control Problems:

Water Refill Points:

Other:

Contingency Plan for Escaped Fire (Are there crews standing by to initial attack or will people doing other jobs be called upon to do initial attack, who must be called in case of an escape, what radio frequencies will be used, etc.)

Mop Up and Patrol:

Rehabilitation Needs:

DI 1202 Submission Date:

Special Problems:

## **VIII. CRITIQUE OF BURN**

Were burn objectives within acceptable range of results? (Refer to Section I):

What would be done differently to obtain results or get better results?

Was there any deviation from plan?      If so, why?

Problems and general comments:

**IX. POST-BURN MONITORING**

Date: \_\_\_\_\_ Refuge Burn Number: \_\_\_\_\_

Length of Time after Burn:

Vegetative Transects:

Comments on Habitat Conditions, etc.:

Photo Documentation:

Other:

**X. FOLLOW-UP EVALUATION**

Date: \_\_\_\_\_ Refuge Burn Number: \_\_\_\_\_

Length of Time after Burn:

Vegetative Transects:

Comments on Habitat Conditions, etc.:

Photo Documentation:

Other:



**DAILY FIRE BEHAVIOR MONITORING SHEET**

Refuge: \_\_\_\_\_

Project Name: \_\_\_\_\_

RX Fire Number: \_\_\_\_\_

Date of Burn: \_\_\_\_\_

Ignition Time: \_\_\_\_\_

Start: \_\_\_\_\_

Finish: \_\_\_\_\_

Weather Observations During Burn:

Time of Weather Observations

Dry Bulb Temp							
Wet Bulb Temp							
RH							
Wind Speed							
Wind Direction							
Cloud Cover %							

Comments Concerning Weather:

Last Live Fuel Moisture Measurement: \_\_\_\_\_ 1-Hour Fuel Moisture: \_\_\_\_\_

10-Hour Fuel Moisture (from fuel stick): \_\_\_\_\_ Haines Index: \_\_\_\_\_

Test Fire Results:

Firing Pattern:

Fire Behavior Characteristics (Rate of Spread, Flame Length, Fire Spread Direction, etc

Acres Treated:

Smoke Dispersal Narrative (venting height, transport wind speed & direction, visibility, holding problems, problem spots, complaints, etc

Burn Severity

Effects to Vegetation Narrative:

Ground Char (%): Unburned \_\_\_\_\_ Light \_\_\_\_\_ Moderate \_\_\_\_\_ Deep \_\_\_\_\_

Soil Moisture on Day of Burn:

Were Resource Objectives Met? (If burn was successful, what conditions made it possible, ie: low live fuel moisture, high winds, etc.):

Photos of Fire Area:	Preburn	Yes _____	No _____
	During Burn	Yes _____	No _____
	Postburn	Yes _____	No _____

Daily Burn Cost:

Personnel Cost: \$ \_\_\_\_\_  
 Equipment Cost: \$ \_\_\_\_\_  
 Fuel Cost: \$ \_\_\_\_\_  
 Total: \$ \_\_\_\_\_  
 Cost per Acre: \$ \_\_\_\_\_

Vehicles Used:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Burn Organization:

Burn Boss: \_\_\_\_\_

Ignition Specialist: \_\_\_\_\_  
 Lighting Crew: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Holding Specialist: \_\_\_\_\_  
 Holding Crew: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Burn Evaluation Prepared By: \_\_\_\_\_

Date: \_\_\_\_\_

\*\*Attach pertinent Spot Weather Forecast, WIMS/NFDRS, Smoke Mgt Variance, etc. information for burn day to back of sheet.

**APPENDIX I: DELEGATION OF AUTHORITY**

**DELEGATION OF AUTHORITY**

**Region 1, U.S. Fish and Wildlife Service**

**GORGE REFUGES**

**Steigerwald Lake National Wildlife Refuge  
Franz Lake National Wildlife Refuge  
Pierce National Wildlife Refuge**

\_\_\_\_\_, you are assigned as Incident Commander of the \_\_\_\_\_ Incident on the \_\_\_\_\_ National Wildlife Refuge. You have full authority and responsibility for managing the fire suppression operation on this incident within the framework of legal statute, current policy, broad direction, and the Wildland Fire Situation Analysis (WFSA). Your primary responsibility is to achieve complete control of the fire by organizing and directing the fire suppression organization in an effective, efficient, economical and most importantly, safe manner.

You should be guided in your duties by the fire job descriptions relating to Incident Commander, as found in the Fireline Handbook. Strongly consider long-term ecosystem health, and the effects of suppression actions in the development of appropriate suppression responses. These issues are to be addressed and documented in the WFSA.

You are accountable to \_\_\_\_\_, Project Leader of the Ridgefield National Wildlife Refuge Complex, who is the Line Officer. James R. Clapp, Gorge Refuges Manager, may serve as the Line Officer Designee for this incident.

You will immediately notify me in person in the event of:

- (1) a serious injury or fatality,
- (2) threat to private property,
- (3) if the incident exceeds the limits of the selected alternative of the WFSA.

Your job as Incident Commander is critical, as you must minimize damage to the habitats, as well as provide for fire fighter and public safety. Minimum environmental suppression tactics shall be used, commensurate with forecasted and threatened resource values. Unless there are immediate threats to life and/or property, you must receive approval from the Complex Manager or Designee to use heavy equipment (dozers, tractors, etc.).

You are to be guided by the Wildland Fire Situation Analysis, approved by \_\_\_\_\_, Project Leader.

The Resource Advisor assigned to your incident will be Joseph D. Engler, Wildlife Biologist.

\_\_\_\_\_  
Project Leader, Ridgefield NWR Complex

\_\_\_\_\_  
Date

# WILDLAND FIRE SITUATION ANALYSIS

Incident Name: \_\_\_\_\_

Jurisdiction: \_\_\_\_\_

Date and Time Completed: \_\_\_\_\_

<b>I. WILDLAND FIRE SITUATION ANALYSIS</b>	
<b>A. Jurisdiction(s)</b>	<b>B. Geographic Area</b>
<b>C. Unit(s)</b>	<b>D. WSFA #</b>
<b>E. Fire Name</b>	<b>F. Incident #</b>
<b>G. Accounting Code:</b> _____	
<b>H. Date/Time Prepared:</b> _____ @ _____	
<b>I. Attachments:</b> _____	
Complexity Matrix/Analysis * _____ Risk Assessment/Analysis * _____ Probability of Success * _____ Consequences of Failure * _____ Maps * _____ Decision Tree ** _____ Fire Behavior Projections * _____ Calculations of Resource Requirements * _____ Other (specify) _____	
* Required ** Required by FWS	

**This page is completed by the Agency Administrator(s)**

## II.

## OBJECTIVES AND CONSTRAINTS

### A. Objectives (must be specific and measurable)

1. Safety
  - Public
  
  - Firefighter
  
2. Economic
  
3. Environmental
  
4. Social
  
5. Other

### B. Constraints

This page is completed by the Agency Administrator(s)

<b>III. ALTERNATIVES</b>			
	<b>A</b>	<b>B</b>	<b>C</b>
<b>A. Wildland Fire Strategy</b>			
<b>B. Narrative</b>			
<b>C. Resources Needed</b>			
Handcrews	_____	_____	_____
Engines	_____	_____	_____
Dozers	_____	_____	_____
Airtankers	_____	_____	_____
Helicopters	_____	_____	_____
<b>D. Final Size</b>			
<b>E. Estimated Contain/ Control Date</b>			
<b>F. Costs</b>			
<b>G. Risk Assessment</b>			
Probability of Success	_____	_____	_____
Consequences of Failure	_____	_____	_____
<b>H. Complexity</b>			
<b>I.</b>	<b>Attach maps for each alternative</b>		

**This page is completed by the Agency Administrator(s) and FMO/Incident Commander**

## IV. EVALUATION OF ALTERNATIVES

<b>A. Evaluation Process</b>	<b>A</b>	<b>B</b>	<b>C</b>
<b>Safety</b>			
Firefighter	_____	_____	_____
Aviation	_____	_____	_____
Public	_____	_____	_____
<i>Sum of Safety Values</i>			
<b>Economic</b>			
Forage	_____	_____	_____
Improvements	_____	_____	_____
Recreation	_____	_____	_____
Timber	_____	_____	_____
Water	_____	_____	_____
Wilderness	_____	_____	_____
Wildlife	_____	_____	_____
Other (specify)	_____	_____	_____
<i>Sum of Economic Values</i>			
<b>Environmental</b>			
Air	_____	_____	_____
Visual	_____	_____	_____
Fuels	_____	_____	_____
T & E Species	_____	_____	_____
Other (specify)	_____	_____	_____
<i>Sum of Environmental Values</i>			
<b>Social</b>			
Employment	_____	_____	_____
Public Concern	_____	_____	_____
Cultural	_____	_____	_____
Other (specify)	_____	_____	_____
<i>Sum of Social Values</i>			
<b>Other</b>			

**This page is completed by the Agency Administrator(s) and FMO/Incident Commander**



**V.**

**ANALYSIS SUMMARY**

Alternatives	A	B	C
<b>A. Compliance with Objectives</b> Safety Economic Environmental Social Other (specify)	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>
<b>B. Pertinent Data</b> Final Fire Size Complexity Suppression Cost Resource Values Probability of Success Consequences of Failure	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

**C. External/Internal Influences**

National & Geographic Preparedness Level: \_\_\_\_\_

Incident Priority: \_\_\_\_\_

Resource Availability: \_\_\_\_\_

Weather Forecast (long range): \_\_\_\_\_

Fire Behavior Projections: \_\_\_\_\_

**This page is completed by the Agency Administrator(s) and FMO/Incident Commander**

**VI.**

**DECISION**

The Selected Alternative is: \_\_\_\_\_

Rationale: \_\_\_\_\_

\_\_\_\_\_  
Agency Administrator's Signature

\_\_\_\_\_  
Date/Time

This page is completed by the Agency Administrator(s) or designate

**VII.**

**DAILY REVIEW**

To be reviewed daily to determine if still valid until containment or control

			P R E P A R E D N E S S  L E V E L	I N C I D E N T  P R I O R I T Y	R E S O U R C E  A V A I L A B I L I T Y	W E A T H E R  F O R E C A S T	F I R E  B E H A V I O R  P R O J E C T I O N S	W F S A  V A L I D

**IF WFS A IS NO LONGER VALID, A NEW WFS A WILL BE COMPLETED!**

This page is completed by the Agency Administrator(s) or designate

**VIII.**

**FINAL REVIEW**

The elements of the selected alternative were met on:

\_\_\_\_\_   
Date

\_\_\_\_\_   
Time

By: \_\_\_\_\_   
Agency Administrator(s)

## INSTRUCTIONS

### Section I. WFSA Information Page

---

- A. Jurisdiction(s): Assign the agency or agencies that have or could have fire protection responsibility, e.g., USFWS, BLM, etc.
- B. Geographic Area: Assign the recognized "Geographic Coordination Area" the fire is located in, e.g., Northwest, Northern Rockies, etc.
- C. Unit(s): Designate the local administrative unit(s), e.g., Hart Mountain Refuge Area, Flathead Indian Reservation, etc.
- D. WFSA #: Identify the number assigned to the most recent WFSA for this fire.
- E. Fire Name: Self-explanatory.
- F. Incident #: Identify the incident number assigned to the fire.
- G. Accounting Code: Insert the local unit's accounting code.
- H. Date/Time Prepared: Self-explanatory.
- I. Attachments: Check here to designate items used to complete the WFSA. "Other" could include data or models used in the development of the WFSA. Briefly describe the "other" items used.

### Section II. Objectives and Constraints

---

- A. Objectives: Specify objectives that must be considered in the development of alternatives. Safety objectives for firefighter, aviation, and public must receive the highest priority. Suppression objectives must relate to resource management objectives in the unit resource management plan.

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

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

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

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

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

### **Section III. Alternatives**

---

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

### **Section IV. Evaluation of Alternatives**

---

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

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

## **Section V. Analysis Summary**

---

- A. Compliance with Objectives: Prepare narratives that summarize each alternative's effectiveness in meeting each objective. Alternatives that do not comply with objectives are not acceptable. Narrative could be based on effectiveness and efficiency. For example: "most effective and least efficient," "least effective and most efficient," or "effective and efficient." Or answers could be based on a two-tiered rating system such as "complies with objective" and "fully complies with or exceeds objective." Use a system that best fits the manager's needs.
- B. Pertinent Data: Data for this Section has already been presented, and is duplicated here to help the Agency Administrator(s) confirm their selection of an alternative. Final Fire Size is displayed in Section III.D. Complexity is calculated in the attachments and displayed in Section III.H. Costs are displayed on page 4. Probability of Success/Consequences of Failure is calculated in the attachments and displayed in Section III.G.
- C. External and Internal Influences: Assign information and data occurring at the time the WFSA is signed. Identify the Preparedness Index (1 through 5) for the National and Geographic levels. If available, indicate the Incident Priority assigned by the MAC Group. Designate the Resource Availability status. This information is available at the Geographic Coordination Center, and is needed to select a viable alternative. Designate "yes," indicating an up-to-date weather forecast has been provided to, and used by, the Agency Administrator(s) to evaluate each alternative. Assign information to the "Other" category as needed by the Agency Administrator(s).

## **Section IV. Decision**

---

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

## **Section VII. Daily Review**

---

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

## **Section VIII. Final Review**

---

This Section is completed by the Agency Administrator(s). A signature, date, and time are provided once all conditions of the WFSA are met.

## **A GUIDE FOR ASSESSING FIRE COMPLEXITY**

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

### **Use of the Guide:**

1. Analyze each element and check the response "yes" or "no."
2. If positive responses exceed, or are equal to, negative responses within any primary factor (A through G), the primary factor should be considered as a positive response.
3. If any three of the primary factors (A through G) are positive responses, this indicates the fire situation is, or is predicted to be, Type I.
4. Factor H should be considered after all the above steps. If more than two of these items are answered "yes," and three or more of the other primary factors are positive responses, a Type I team should be considered. If the composites of H are negative, and there are fewer than three positive responses in the primary factors (A-G), a Type II team should be considered. If the answers to all questions in H are negative, it may be advisable to allow the existing overhead to continue action on the fire.

### **GLOSSARY OF TERMS**

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

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

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

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

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

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

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

**Have overhead overextended themselves mentally or physically** - This is a critical item that requires judgment by the responsible agency. It is difficult to write guidelines for this judgment because of the wide differences between individuals. If, however, the Agency Administrator feels the existing overhead cannot



continue to function efficiently and take safe and aggressive action due to mental or physical reasons, assistance is mandatory.

## FIRE COMPLEXITY ANALYSIS

### A. FIRE BEHAVIOR: Observed or Predicted

YES/NO

1. Burning Index (from on-site measurement of weather conditions) predicted to be above the 90% level using the major fuel model in which the fire is burning. \_\_\_\_\_
2. Potential exists for "blowup" conditions (fuel moisture, winds, etc.). \_\_\_\_\_
3. Crowning, profuse or long-range spotting. \_\_\_\_\_
4. Weather forecast indicating no significant relief or worsening conditions. \_\_\_\_\_

**Total** \_\_\_\_\_

### B. RESOURCES COMMITTED

1. 200 or more personnel assigned. \_\_\_\_\_
2. Three or more divisions. \_\_\_\_\_
3. Wide variety of special support personnel. \_\_\_\_\_
4. Substantial air operation which is not properly staffed. \_\_\_\_\_
5. Majority of initial attack resources committed. \_\_\_\_\_

**Total** \_\_\_\_\_

### C. RESOURCES THREATENED

1. Urban interface. \_\_\_\_\_
2. Developments and facilities. \_\_\_\_\_
3. Restricted, threatened, or endangered species habitat. \_\_\_\_\_
4. Cultural Sites. \_\_\_\_\_
5. Unique natural resources, special designation zones, or wilderness. \_\_\_\_\_
6. Other special resources. \_\_\_\_\_

**Total** \_\_\_\_\_

**D. SAFETY**

**YES/NO**

- 1. Unusually hazardous fire line conditions. \_\_\_\_\_
- 2. Serious accidents or fatalities. \_\_\_\_\_
- 3. Threat to safety of visitors from fire and related operations. \_\_\_\_\_
- 4. Restricted and/or closures in effect or being considered. \_\_\_\_\_
- 5. No night operations in place for safety reasons. \_\_\_\_\_

**Total** \_\_\_\_\_

**E. OWNERSHIP**

- 1. Fire burning or threatening more than one jurisdiction. \_\_\_\_\_
- 2. Potential for claims (damages). \_\_\_\_\_
- 3. Conflicting management objectives. \_\_\_\_\_
- 4. Disputes over fire management responsibility. \_\_\_\_\_
- 5. Potential for unified command. \_\_\_\_\_

**Total** \_\_\_\_\_

**F. EXTERNAL INFLUENCES**

- 1. Controversial wildland fire management policy. \_\_\_\_\_
- 2. Pre-existing controversies/relationships. \_\_\_\_\_
- 3. Sensitive media relationships. \_\_\_\_\_
- 4. Smoke management problems. \_\_\_\_\_
- 5. Sensitive political interests. \_\_\_\_\_
- 6. Other external influences. \_\_\_\_\_

**Total** \_\_\_\_\_

**G. CHANGE**

**YES/NO**

- 1. Change in strategy to confine/contain to control. \_\_\_\_\_
- 2. Large amount of unburned fuel within planned perimeter. \_\_\_\_\_
- 3. WFSA invalid or requires updating. \_\_\_\_\_

**Total** \_\_\_\_\_

**H. EXISTING OVERHEAD**

- Worked two operational periods without achieving initial objectives. \_\_\_\_\_
- Existing management organization ineffective. \_\_\_\_\_
- IMT overextended themselves mentally and/or physically. \_\_\_\_\_
- Incident action plans, briefings, etc. missing or poorly prepared. \_\_\_\_\_

**Total** \_\_\_\_\_

**I. SIGNATURE**

\_\_\_\_\_  
**Name and Title**

\_\_\_\_\_  
**Date and Time**

## **APPENDIX K: NEPA COMPLIANCE**

Compliance with the NEPA for this Fire Management Plan is covered under the Environmental Assessment and Decision Document for the Columbia River Gorge Refuges Comprehensive Conservation Plan. Please reference that document for compliance details.

## **APPENDIX L: ESA SECTION 7 COMPLIANCE**

An intra-Service Biological Evaluation was prepared to address impacts of prescribed burning on threatened and endangered species found on or near the refuge. For all species except bald eagle, the Project Leader determined that prescribed burning would have “no effect.” It was determined that the prescribed burning “may affect, but is not likely to adversely affect” the bald eagle. The Biological Evaluation was submitted to the Western Washington Fish and Wildlife Office for concurrence on the bald eagle determination. When completed, the Biological Evaluation and subsequent Biological Opinion will be inserted here. No prescribed burning may occur until the documents are added to this Fire Management Plan.