

Yukon Flats National Wildlife Refuge 2005 Fires

BURNED AREA REHABILITATION PLAN

Mudflows in 2005 caused by a 2004 fire in the Hodzana River drainage.
Yukon Flats National Wildlife Refuge

UNIT: *Yukon Flats National Wildlife Refuge*

LOCATION: *Fairbanks, Alaska*

DATE: *December 7, 2005*

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EXECUTIVE SUMMARY

Introduction

This Burned Area Emergency Response (BAER) Rehabilitation Plan has been prepared in accordance with Department of the Interior and U.S. Fish and Wildlife Service (USFWS) policy. This plan provides rehabilitation recommendations for lands burned within 2005 Yukon Flats National Wildlife Refuge (NWR) fire perimeters and additional impact areas including: public lands administered by the USFWS, and other jurisdictions if necessary. The primary objectives of the Yukon Flats Burned Area Rehabilitation Plan are:

- To prescribe cost effective post-fire rehabilitation measures necessary to protect human life, property, and critical cultural and natural resources.
- To rehabilitate and prevent further degradation to affected resources on lands within the fire perimeter or downstream impact areas and mitigate damages caused by fire suppression operations in accordance with approved land management plans and policies, and all relevant federal, state, and local laws and regulations.

Rehabilitation Treatments

This plan addresses burned area rehabilitation treatments on the Yukon Flats NWR that will occur in Fiscal Year 2007 as a follow-up to emergency stabilization activities taking place in 2006. Eighteen fires burned approximately 597,000 acres on the Yukon Flats NWR in 2005. This is based on preliminary fire perimeter maps developed by the Bureau of Land Management (BLM), Alaska Fire Service (AFS). Most work will be focused on the Sheenjek River Fire; however, suppression actions and known cultural and critical resource sites require investigation of seven additional 2005 fires. At this time we do not anticipate doing a detailed analysis of the other ten fires due to lack of fire suppression activity or property losses, small acreage within the refuge, and limited availability of clear imagery.

Brief Fire Backgrounds

The Sheenjek River Fire (BT6U), which burned 114,596 acres, was the most significant of these fires in terms of suppression activity, due to its proximity to the village of Fort Yukon. The Sheenjek River Fire started on June 12, 2005, after a lightning strike in tall riparian white spruce, 25 miles northeast of Fort Yukon. The initial lightning strike was located on the northwest bank of the Sheenjek River, near the confluence with the Porcupine River. Within two days, the fire advanced rapidly to the southwest under hot, dry and windy conditions. The fire then burned along the north side of the Porcupine River to within 12 miles of Fort Yukon. The fire movement toward allotments, cabins, and the village of Fort Yukon required concerted and varied suppression actions by Alaska Fire Service in coordination with the USFWS. These actions were implemented by a number of Emergency Firefighter (EFF) crews from across Alaska. The intent was to stop further movement of the fire into the Modified and Full Suppression areas near Fort Yukon. The suppression actions taken by the firefighters included construction of numerous

helispots, sequential handlines, additional firelines, backfires, water drops, defense of allotments and permitted cabins, boat transport of firefighters to and from Fort Yukon, and similar activities.

These actions were successful by June 24, 2005 in stopping the spread of the fire towards Fort Yukon. The Sheenjek River Fire, after a change in the wind direction, was then allowed to burn to the north into a FWS Limited Suppression area. Further management action was reduced to regular monitoring because attention was directed to other fires. The Sheenjek fire was officially declared out on September 26, 2005.

Smokejumpers were also deployed to protect Native allotments and permitted cabins during four other 2005 Yukon Flats action fires in Limited or Modified Suppression areas. Fires in which these suppression actions took place included the Salmon Fork, the Glacier Creek, Squirrel Creek, and the Long Lake Fires. However, these suppression actions were relatively minor by comparison to those taken during the Sheenjek River Fire. There were no suppression actions on the ground at the Nelson Mountain, Hodzana River, and the John Herberts Village Fires. The fires below are discussed in order of decreasing size.

The Nelson Mountain Fire (BT8K) began as a lightning strike into black spruce and hardwoods in a Limited Suppression area on the south slope of Nelson Mountain, 24 miles northwest of the village of Beaver, on June 13, 2005. The fire burned through August, and eventually covered 244,600 acres. Although this was the largest fire on Yukon Flats NWR in 2005, no suppression actions other than monitoring were necessary. One arm of the fire burned over a section of the old Caro Trail, located near the Hadweenzic River, from Beaver to the former Chandalar goldfields. The fire was declared out on September 26, 2005 after receiving significant rain.

The Salmon Fork Fire (BO2M), which began as a lightning strike into extensive black spruce stands along the Salmon Fork River, 37 miles northeast of Chalkyitsik, on July 19, 2005, burned 236,702 acres in Limited. The lightning strike occurred under Red Flag conditions with NE winds and low humidity. The resulting fire became very large but there were few identified values at risk. Suppression actions included only the defense of two permitted main cabins along with three associated secondary trapline cabins. These structures, known as the Greer and Thomas cabins, were defended by smokejumpers who brushed out and then burned out from the various buildings as the fire approached on July 22 – 24, 2005. There was no known ground disturbance at these sites. The fire was then monitored at intervals for the remainder of the summer. The last smoke was observed on September 8, 2005. The fire was declared out on Sept. 26, 2005, after receiving significant rain.

The Glacier Creek Fire (B4BH) burned 33,065 acres in Limited on the north slope of the White Mountains near the confluence of Victoria Creek with Beaver Creek. The fire started as a result of a probable lightning strike into black spruce stands under very smoky conditions on August 15, 2005. Subsequent suppression actions began on August 23, 2005, and included only the defense of two FWS permitted cabins along Beaver Creek. Two fire crews cleared trees and brush around the two cabins, installed sprinkler systems and pre-treated the perimeters with water. The fire never actually approached the cabins. The two crews were demobilized from the

cabins on August 25, 2005. The fire, smoldering and creeping, was then monitored through the rest of August. There were no open flames by September 2, 2005 and the fire was declared out on September 26, 2005.

The Hodzana River Fire (BT7A) also began as a lightning strike into black spruce in a Limited Suppression area on the south side of the Hodzana River, 43 miles northwest of Beaver, on June 12, 2005. The fire burned slowly through June, July, and August, and eventually covered 26,710 acres. Similarly, no suppression actions other than monitoring were necessary. Only a few smokes were reported by August 9, 2005, and the fire was declared out by September 15, 2005.

The Squirrel Creek Fire (B13D) burned 19,345 acres in Modified and Limited 25 miles SE of Fort Yukon. The fire started as a lightning strike on July 26, 2005 into black spruce and tundra. Suppression actions included only the defense of two cabins on allotments using sprinkler systems and saw lines. Cabins and allotments were eventually not threatened by the fire approach. The fire continued to smolder and creep until September 2, 2005 when the last smoke was observed.

The John Herberts Village Fire (B10F) is an example of another fire that was placed only in monitor status. However, there are concerns about the potential effects of this fire on cultural resources. The fire was across the Porcupine River from an old village site. This fire started as a lightning strike into black and white spruce on the south bank of the Porcupine in Limited, 57 miles northeast of Ft. Yukon, on July 25th. The site of the initial ignition was across the river from the old village site. The fire burned 17,093 acres to the SW on the south bank of the river but never actually spotted across the Porcupine. The last smoke was observed on September 2nd and the fire was declared out on September 26th.

The Long Lake Fire (BWE2) burned 481 acres 13 miles northwest of Beaver. The fire began as a lightning strike in Modified Suppression Zone on June 26, 2005. This was before the annual conversion date to Limited Suppression (approximately July 10th) and was thus treated as Full Suppression fire. The fire began under hot and dry conditions with strong gusty winds. Fuel types were aspen with mixed understory, black spruce, white spruce, and deciduous shrublands. Suppression forces were deployed to contain the fire because of the Full Suppression category, the risk of expansion, and the proximity to the village of Beaver, as well as to a nearby USFWS field camp. Up to 112 personnel worked on the fire, including six Type 2 crews, smokejumpers, three helicopters, and two air tankers. Ground crews successfully encircled the fire with a hoselay, extinguished the flames, and gridded and cold-trailed the fire until July 8, 2005. The fire was then monitored and no further smokes were observed by July 26, 2005.

Smoke, an extended fire season, poor weather conditions, and October snowfall have prevented an assessment of the fires to date, and a full assessment will not be possible until spring 2006. Therefore, this plan is based on existing knowledge of the affected areas rather than post-fire assessments conducted by agency personnel. In preparation of this plan, the preparers reviewed existing information about biological and cultural resources within or adjacent to the fire perimeter and reviewed fire reports to assess potential impacts of suppression activities.

Issues to be Addressed in this Rehabilitation Plan

The following issues will be addressed in the BAER Rehabilitation Plan:

1. Non-native, invasive plant species - Sites where the possibility that seeds of invasive weeds were inadvertently introduced on tools and equipment used by firefighters during suppression activities will be further evaluated and weeds will be hand pulled if found. Invasive plants may not appear in the first year after the fires, but invasives may appear in subsequent years and necessitate monitoring and rehabilitation treatments.
2. Hazard trees near campsites and trails – Newly appearing standing dead or leaning danger trees within falling distance of annually used campsites and a winter trail will be assessed in subsequent years and removed.

Goals and Objectives Pertinent to BAER Activities

The Yukon Flats Fire Management Plan (FMP) was completed in 2001. Goals within the plan are (Section III.B):

1. Protect life, property, and identified resources from fire.
2. Manage wildland fire and prescribed fire to protect or enhance habitat and ecosystems for the benefit of fish and wildlife.
3. Communicate, coordinate, and cooperate with suppression organization staff, adjacent land owners, and the general public.

Within these broad goals, several objectives are pertinent to BAER activities. Under Goal 1 in the FMP, there is an objective to protect critical refuge resources from undue damage from wildland fire and from fire suppression activities. Effects of these fires on cultural resources are not yet known. Known or incidentally discovered cultural resource sites within or adjacent to 2005 wildfires, primarily within the Sheenjek River, Nelson Mountain, Salmon Fork, and John Herberts Village fire perimeters are being considered under this rehabilitation plan.

The FWS Cultural Resources Policy (614 FW1, 1992) directs refuges to “protect, maintain, and plan for the use of Service managed cultural resources for the benefit of present and future generations,” and that we “exercise caution that cultural resources are not inadvertently transferred, sold, demolished, or substantially altered as a result of Service sanctioned activities until appropriate identification, evaluation, and planning are accomplished.” Many of the refuge’s cultural resources have not been adequately identified or evaluated, and are thus subject to loss through fire and other activities.

Subsistence camp site safety also needs to be addressed under Goal 1. Burned, weakened or leaning trees will continue to appear in 2006 and subsequent post-fire years. These newly appearing danger trees need to be identified and removed from traditional campsites in burned areas as part of burned area rehabilitation. These camp sites are usually found in riparian areas,

such as along the Yukon, Porcupine and Sheenjek Rivers.

Activities within this BAER proposal are also supported by national policy. The FWS Biological Integrity, Diversity, and Environmental Health Policy (601 FW3, 2001) directs refuges to “prevent the introduction of invasive species, detect and control populations of invasive species, and provide for restoration of native species and habitat conditions in invaded ecosystems.” Yukon Flats NWR currently has limited populations of invasive/exotic plants, and will take a proactive role in preventing introduction via seeds introduced on fire suppression equipment and/or from adjacent human-use areas such as permitted cabins and allotments. These invasive plant species may not appear for several years after the fires, thus qualifying for rehabilitation treatments.

Detailed fire backgrounds are found in Part A. A summary of the costs is in Part E. The individual rehabilitation treatment specifications, including effectiveness monitoring identified in the assessments, can be found in Part F. Appendix II contains the National Environmental Policy Act (NEPA) compliance documentation summary. Appendix III contains the Burned Area Emergency Response Rehabilitation Plan maps.

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	3
PART A – FIRE LOCATION AND BACKGROUND INFORMATION.....	9
PART B – NATURE OF PLAN.....	18
PART C – REHABILITATION ASSESSMENT.....	18
PART D – TEAM ORGANIZATION, MEMBERS, AND RESOURCE ADVISORS....	19
PART E – SUMMARY OF ACTIVITIES AND COSTS.....	20
PART F – INDIVIDUAL SPECIFICATION.....	21
PART H – CONSULTATIONS.....	30
APPENDIX I – BURNED AREA ASSESSMENT REPORTS.....	31
APPENDIX II – ENVIRONMENTAL COMPLIANCE.....	42
APPENDIX III – MAPS.....	48

PART A - FIRE LOCATIONS AND BACKGROUND INFORMATION

Management Requirements

Yukon Flats NWR was created in December 1980 with the passage of the Alaska National Interest Lands conservation Act (ANILCA – Public Law 96-487). The refuge encompasses 11.2 million acres in northeastern Alaska, straddling the Arctic Circle and occupying a basin formed by the Yukon River. Habitats consist of boreal forest and muskeg, numerous wetlands, riparian areas, and upland tundra. The boreal forest of the Yukon Flats NWR is a fire-driven ecosystem, subject to repeated cycles of burning and regeneration, and the source of much habitat diversity. Bureau of Land Management lands, the Venetie Reservation, and the Arctic National Wildlife Refuge lie to the north of the Refuge, and BLM and Alaska State lands abut the southern boundary of the Yukon Flats Refuge.

The establishing purposes of the refuge, defined in ANILCA, are: 1) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, canvasbacks and other migratory birds, Dall sheep, bears, moose, wolves, wolverines and other furbearers, caribou (including participation in coordinated ecological studies and management of the Porcupine and Fortymile caribou herds) and salmon; 2) to fulfill international treaty obligations with respect to fish and wildlife and their habitats; 3) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and 4) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (1), water quality and necessary water quantity within the refuge.

Yukon Flats NWR does not contain designated Wilderness. However, ANILCA also designated a 16-mile section of Beaver Creek in the southern portion of the Refuge as part of the National Wild and Scenic River System. No threatened or endangered species are known to occur on the refuge, although a State ranked S2 plant species (considered imperiled in Alaska), the Yukon wild buckwheat (*Erigonum flavum* var. *aquilinum*), has been found on a bluff above the Porcupine River.

Detailed Fire Background

The Sheenjek Fire, Fire Number BT6U, was first detected within the Yukon Flats National Wildlife Refuge on June 12, 2005, in a Limited Suppression area, but within a half mile of an allotment. The fire began after a lightning strike to several riparian white spruce. The lightning strike occurred during very dry and windy conditions. Initial attack forces were launched immediately because of proximity of the ignition to the allotment and to a Modified Suppression area. The resulting fire, pushed by strong northeast winds, quickly escaped the initial attack. The fire moved rapidly to the southwest, entered the Modified Suppression, and moved towards a Full Suppression area. The fuels in this area consisted of open muskeg habitat, black spruce, aspen stands, and deciduous shrubs. The fire moved actively through all fuel types. The fire secondarily spread into similar flat wooded terrain north and west of the Sheenjek River. Primary movement, however, continued southwest into a Full Suppression area along the

Porcupine River, north of the village of Fort Yukon. This area contained approximately twenty-five allotments. The fire also began to burn westward towards the 2004 Winter Trail Fire area. The 2004 burn scar was unlikely to reburn with any intensity. Fire management officials immediately decided to construct several sequential firelines connecting the riparian corridor of Sheenjek River to the burn scar of the 2004 Winter Trail Fire. This was done in order to inhibit further southwest movement of the 2005 Sheenjek Fire. The intent of this fireline construction was to connect wetlands adjacent to the riparian corridor of the Sheenjek and Porcupine rivers with the 2004 Winter Trail burn scar, burn out along the fireline, and stop further SW movement of the fire. Under strong and prolonged NE winds, the fire jumped the first fireline, but a second fireline, constructed further west, was effective in holding the fire. The fire perimeter also included areas along the Sheenjek River that supported five allotments and several cabins. EFF ground crews also constructed secondary firelines and burned out to protect the Native allotments north and west of the Sheenjek and Porcupine Rivers. The Sheenjek River fire perimeter was last updated on September 26, 2005 when the digitized acreage was 114,596.5 acres and the fire was officially declared out.

The Sheenjek River Fire was monitored on a daily basis, except when smoke and weather precluded monitoring efforts. This fire dominated all other fire suppression activities on the Yukon Flats in summer 2005 because it threatened Fort Yukon. Table 1 summarizes important parameters and characteristics of the Sheenjek River Fire. Table 2 provides a daily summary of suppression actions and acreage involved for the 2005 Sheenjek River Fire. Table 3 briefly summarizes fire numbers, ignition sources, FWS acres, acres per agency jurisdiction, and total acres for all the other Yukon Flats fires under discussion. Other Yukon Flats NWR action fires or fires of interest (Nelson Mountain, Salmon Fork, Glacier Creek, Hodzana River, Squirrel Creek, John Herberts Village, and Long Lake) are portrayed in more detail in Tables 4-10. Information was provided by the BLM Alaska Fire Service.

Table 1. Important Parameters and Characteristics of the 2005 Sheenjek River Fire.

Fire Name	Sheenjek River 2005
Fire Number	BT6U
Agency Unit	Yukon Flats NWR
FWS Region	7
State	Alaska
County(s)	NA
Ignition Date/Cause	June 12, lightning
Zone	Upper Yukon – Tanana (UYT)
Date Fully Contained	September 30, 2005
Jurisdiction	FWS, 81,510 acres
Other jurisdictions	Doyon, 23,040 acres
Other jurisdictions	Approximately 30 Native Allotments
Total Acres	114,596.5
Date Contained	September 26, 2005

Table 2. Daily summary of 2005 Sheenjek River fire activity, suppression efforts, and acreage. This was the most important fire on Yukon Flats NWR in 2005. Information from preliminary AFS reports.

Date	Activity	Acres
June 12	Fire detected 25 miles NE of Fort Yukon in Limited near Modified, on NW bank of the Sheenjek River, within ½ mile of an allotment. Decision made immediately to deploy suppression resources. IA and air attack begin.	20 when detected
June 13	Fire driven rapidly southwest by strong winds. Fire escapes initial attack. Crews work on cabin and allotment protection.	3000
June 14	Fire has progressed about 5 miles to the southwest and has spotted across the Sheenjek River.	4,500
June 15	The fire transitioned from Type 3 to Type 2 team. Successful burnout around 2 cabins.	8,000
June 16	Resources continued to hold and secure cabins and allotments. Aerial firing slowed fire growth to west.	15,000
June 17	Fireline construction towards 2004 Winter Trail burn scar. Active aerial watertanker use.	23,000
June 18	Fire weather watch for high easterly winds Spots over Sheenjek River secured.	23,510
June 19	Fire jumps first control line under high wind conditions. Smoke restricts aircraft operations.	37,120
June 20	Fire extends on western and southwestern perimeters; spots across Porcupine River.	
June 21	Second fireline construction extends westward from Sheenjek River to Winter Trail burn scar. Evacuation plan development begins for Ft. Yukon. Spots across Porcupine River secured.	59,572
June 22	Crews reinforced southern fireline perimeter. Fire very active under dry gusty winds. CL-215's effective for water drops. EFF's continue securing the perimeter towards Winter Trail burn.	
June 23	Crews continued to reinforce second main fireline and additional firelines around cabins and allotments. Fort Yukon evacuation plan finalized. Fire is 12 miles from Ft. Yukon.	68,400
June 24	Second main fireline holds even under hot and dry conditions.	71,040
June 25	Wind shifts from NE to SW. Crews mop up and secure additional firelines around cabins and allotments. Fire allowed to burn to N into FWS Limited Suppression land.	80,490
July 4	Numerous smoldering pockets, occasional torching within northern section of fire. Firefighters continue to protect allotments near the confluence of the Sheenjek and Porcupine Rivers. Staffing remained at 66.	105,787
July 5	Surveillance aircraft reported one interior smoke. Helicopters and some crews released.	
July 7	EFF completed mop up around the cabins, remaining personnel mopped up around allotments. No activity on southwest edge towards Ft. Yukon.	107,240.0
July 8	Fire behavior minimal.	
July 9-14	Crews and overhead demobilized and fire placed in monitor status.	
July 15	Only a few smokes were located on the western edge and in the interior of the fire.	
July 16	Intermittent smokes on the perimeter, scattered smokes in the interior, 1 smoke on SW control line.	
July 19	Fire backing to north and NW, smoldering and creeping, with interior smokes.	107,240.0
July 24	Surveillance plane reports 10% active perimeter to north, a few isolated interior smokes and no activity to SW.	
July 25	Fire is smoldering and creeping, 5% active on north end.	111,662.0
July 29	No smokes on entire fire. Overcast with light rain.	
July 31	Smoldering in interior, but no activity on perimeter.	114,135.2
August 5	One interior smoke reported.	114,135.2
August 9	Fire was smoldering, creeping and backing to N, NE in Limited.	114,135.3
Sept 2	Only a few smokes on northern perimeter in Limited.	114,135.3

Sept 8	A few scattered smokes on the north end of the fire and no activity on the south end.	
Sept 26	Fire had received significant rain. Fire declared out.	114,596.5

Table 3. Summary of the most significant 2005 fires on Yukon Flats NWR; fire names, ignition causes and dates, and burned acreage per agency jurisdiction. Information from preliminary AFS reports.

Fire Name	Sheenjok River	Nelson Mtn	Hodzana River	Long Lake	John Herberts Village	Squirrel Creek	Glacier Creek	Salmon Fork
Fire Number	B13V	B2VK	B10P	B21N	BUK9	BUL2	BS3J	B3HV
Agency Unit	FWS							
Region	7	7	7	7	7	7	7	7
State	AK							
Ignition Date/Cause	06/12/05 lightning	06/13/05 lightning	06/12/05 lightning	06/26/05 lightning	07/26/05 lightning	08/15/05 lightning	08/15/05 lightning	07/19/05 lightning
Zone	Upper Yukon							
Date Fully Contained	09/26/05	09/26/05	09/15/05	07/26/05	09/26/05	09/26/05	09/26/05	09/26/05
Jurisdiction	Acres							
US Fish and Wildlife Service	81,586	244,014	26,710	481	17,092	19,281	28,688	154,178
Other jurisdictions	33,011	586	0	0	1	64	4377	82,524
Total Acres	114,597	244,600	26,710	481	17,093	19,345	33,065	236,702

Table 4. Daily summary of 2005 Nelson Mountain Fire (BT8K) activity, suppression efforts, and acreage. Information from preliminary AFS reports.

Date	Activity	Acres
June 13	Fire discovered on south slope of Nelson Mountain 24 miles NW of Beaver in Limited. Probable lightning strike. Black spruce and hardwoods fuel type. 100% active. Fire placed in monitor status.	4 acres
June 24	Fire very smoky. SE corner backing into wind with intermittent runs.	11,116 acres
July 26	Fire backing at tail, running and intermittently crowning on the flanks with 100 ft spotting at the head.	25,711 acres
August 8	Fire very active on NW side, moving in arc to E, flanking to W, producing 10,000 smoke columns.	50,000 acres
August 25	One arm of the fire moves east towards Hadweenzic River and burns over a section of the old Caro Trail. No values determined at risk. Monitoring continues	164,637 acres
Sept. 26	Fire burns in Limited and becomes very large. Fire declared out on Sept 26 th after heavy rain.	244,600 acres

Table 5. Daily summary of 2005 Salmon Fork Fire (B02M) activity, suppression efforts, and acreage. Information from preliminary AFS reports.

Date	Activity	Acres
July 19	Fire discovered 37 miles NE of Chalkyitsik in Limited. Probable lightning strike. Black spruce and hardwoods fuel type. IA requested to respond. 8 SMJ's deployed to protect 2 FWS permitted cabins. Fire 50% active driven by 15 mph NE wind.	400 acres
July 20	Smokejumpers cut saw line, plumbed hose lays, sprinkler kits, brushed out, burned out and mopped up around one cabin, and cut helispots. Fire perimeter 85% active, w/ 8-10 mph winds. Smokejumpers demobilized and fire placed in monitor status.	1,000 acres
July 22	Fire approaches permitted second cabin. SMJ return and nearly complete burn out around second cabin as main fire nears.	
July 23	Successful burn out around second cabin.	
July 24	Main fire activity increases to 100% during day; 15 ft flame lengths..	
July 25	Smokejumpers mop up 50 ft from the cabin.	
July 26	Cabins secure. SMJ demobilized and fire placed in monitor status. Fire burns in Limited and becomes very large, until Sept. 8 th when last smokes observed.	
Sept. 26	Fire declared out on Sept. 26 th after heavy rains.	236,702 acres

Table 6. Daily summary of 2005 Glacier Creek Fire (B4BH) activity, suppression efforts, and acreage. Information from preliminary AFS reports.

Date	Activity	Acres
August 15	Fire discovered under very smoky conditions on north slope of White Mountains near confluence of Victoria Creek and Beaver Creek in Limited. Probable lightning strike. Black spruce fuel type. Fire placed in monitor status.	100 acres
August 23	Fire nears 2 permitted cabins on Beaver Creek under very smoky conditions. 2 SMJ crews deployed to clear trees and brush from around cabins, set up sprinkler systems for wet lines, and pre-treat perimeters.	3,643 acres
August 25	Fire never actually approaches cabins. Fire smoldering and creeping. Crews demobilized.	3,643 acres
August 26	Fire moving away from cabins. Fire continues smoldering and creeping under very smoky conditions.	
Sept. 2	No open flames.	
Sept. 26	Fire declared out Sept 26 th .	33,065 acres

Table 7. Daily summary of 2005 Hodzana Fire (BT7A) activity, suppression efforts, and acreage. Information from preliminary AFS reports.

Date	Activity	Acres
June 12	Fire begins as lightning strike into black spruce stands in Limited 43 miles NW of Beaver. Fire crowning through black spruce. Fire placed in monitor status.	500 acres
June 15	Fire smoldering and creeping after rainfall.	1,000 acres
June 17	Perimeter 5% active, smoldering.	
June 22	Fire 6% active, backing to SE.	
June 23	Fire perimeter 40% active, backing on 6 mi. flame front, with 20 – 30 ft flame lengths.	5,140 acres
June 27	Fire burning in black spruce and tundra, smoldering, creeping, and backing.	
July 19	No smokes observed.	
August 10	Small amount of smoke on west side of fire. Very little fire activity observed.	17,511 acres
Sept. 8	No smoke observed.	
Sept. 15	Fire declared out on Sept. 15 th .	26,710 acres

Table 8. Daily summary of 2005 Squirrel Creek Fire (B13D) activity, suppression efforts, and acreage. Information from preliminary AFS reports.

Date	Activity	Acres
June 26	Fire discovered 25 miles SE of Fort Yukon in Modified 1.5 mi E of Yukon River. Probable lightning strike. Black spruce and tundra fuel types. 3-4 ft flame lengths. Placed in monitor status because of shortage of resources.	1 acre
June 27	Fire 1.5 mi from permitted cabin and allotment. 2 sloughs and old burn between fire and cabin.	300 acres
July 29	Perimeter 70% active in black spruce with 4,500 smoke column.	600 acres
July 30	SMJ set up sprinkler system for cabin on allotment. Fire moving away from cabin.	
July 31	SMJ set up another sprinkler system for another cabin on allotment SE of fire. No open flames.	
August 2	Only three small areas of smoke at NNW corner of fire.	4,690 acres
August 10	Fire active on E and backing to NW, but cabin and allotment not threatened.	6,860 acres
August 18	Type 1 crew assigned to fire and arrive on site to protect cabin and allotment.	13,278 acres
August 19	Saw line cut around north cabin and hose lay in place. Defensible space improved.	
August 21	Reinforced and improved saw line surrounding allotment.	
August 22	Crew demobilized.	
Sept. 2	Last smoke observed Sept 2 nd .	
Sept. 26	Fire declared out Sept. 26 th .	19,345 acres

Table 9. Daily summary of 2005 John Herbert's Village Fire (B10F) activity, suppression efforts, and acreage. Information from preliminary AFS reports.

Date	Activity	Acres
July 25	Fire discovered 57 miles NE of Fort Yukon in Limited on south bank of Porcupine River across from John Herberts Village. Probable lightning strike. Black and white spruce fuel types. No open flame, smoldering.	1 acre
July 27	Zone surveillance reported fire 100% active.	300 acres
July 29	Fire 60% active with 2-3 ft flame lengths.	
July 31	Fire smoldering and backing, 70% active, but no open flame.	
August 5	Fire backing to SW and SE.	
August 9	Fire 70% active on all sides, but has grown most to west.	
August 10	Active crown fire with west wind, 50 to 75 ft. flame lengths	
August 13	Perimeter 75% active with 3 – 5 flame lengths with NE wind at 5-7 mph.	
August 22	No significant fire activity.	
Sept. 2	Smoldering in black spruce and tundra. No flames observed. Last smoke observed.	
Sept. 26	Fire declared out on Sept. 26 th after heavy rain.	17,092.9 acres

Table 10. Daily summary of 2005 Long Lake Fire (BWE2) activity, suppression efforts, and acreage. Information from preliminary AFS reports.

Date	Activity	Acres
June 26	Fire discovered smoldering in mixed hardwoods and spruce 13 miles NW of Beaver in Modified. Probable reburn of Adam Lake Fire. IA requested to respond: SMJ's, 2 CL-215, 2 Type 2 crews. Priority was to keep fire from spreading and protect allotments to south.	200 acres
June 27	3 helicopters, 2 air tankers, 2 crews worked the fire, setting up southern perimeter.	
June 28	3 additional type 2 crews arrive and are deployed, attempt to cut off the head of the fire.	407 acres
June 29	Crews worked on securing south flank with hose lay and pumps. 91 personnel assigned.	
June 30	Hose lay continues, working to establish around entire perimeter. Mop up and secure southern perimeter lines. Fire smoldering and creeping with intermittent torching.	
July 1	Crews secure hose lay around entire perimeter. Rain, high RH, clouds reduce fire activity.	481 acres
July 2	Crews tie in saw line and hose lay and mop up 100 ft within perimeter.	
July 3	Crews resume gridding within 300 feet into the fire. 2 crews demobilized.	
July 4	Crews backhaul equipment and extinguish hot spots. Fire contained 2150 hrs.	
July 5	Mop up and extinguish a few smokes. 2 more crews demobilized.	
July 8	All personnel demobilized. Fire placed in monitor status.	
Sept. 15	Fire declared out Sept. 15.	481 acres

PART B - NATURE OF PLAN

Type of Action (check one box below)

XXX	Initial Submission
	Amendment to the Initial Submission

PART C - REHABILITATION ASSESSMENT

Rehabilitation Objectives:

- Locate and rehabilitate severely burned conditions that pose a direct threat to human life, property, or critically important cultural and natural resources.
- Recommend post-fire rehabilitation prescriptions that prevent irreversible loss of natural, historic, and cultural resources.
- Determine if treatment of non-native invasive plants has been effective and confirm presence/absence of these species in areas occupied by fire personnel during suppression efforts or in severely burned sites adjacent to areas that may serve as seed sources for invasive species (e.g., winter trails, allotments, or other areas of human use where equipment/vehicles may serve as a vector for seed dispersal); develop eradication plans as appropriate.

PART D - TEAM ORGANIZATION, MEMBERS, AND RESOURCE ADVISORS

I. Burned Area Emergency Response Team Members: *(List of technical specialists used to develop the plan)*

Position	Team Member (Agency)
Team Leader	Sam Patten (FWS)
Operations	Barry Whitehill (FWS)
Cultural Resources/Archeologist	Debra Corbett (FWS)
Vegetation Specialist	Delia Vargas Kretsinger (FWS)
Biologist/GIS Specialist	Sheila Dufford (FWS)

II. Resource Advisors: (Note: Resource Advisors are individuals who assisted the burned area emergency response team with the preparation of the plan. See Part H for a full list of agencies and individuals who were consulted or otherwise contributed to the development of the plan.)

Name	Affiliation
Gene Long	USFWS - Regional Fire Management Coordinator
Karen Murphy	USFWS – Regional Fire Ecologist
Randi Jandt	BLM - Alaska Fire Service – Fire Ecologist

PART E - SUMMARY OF ACTIVITIES AND COSTS

The summary of activities and cost table below identifies rehabilitation costs charged or **proposed** for funding from subactivity 9142 funding sources.

Table 9. Summary of Rehabilitation activity costs for 2005 Yukon Flats NWR Fires

FY07 cost estimates. Costs will be revised following 2006 ES findings.

Spec #	Title	Unit	Unit Cost	# of Units	Work Agent	Cost
1	Remove Hazards from Campsites and Winter Trail	acres	\$243.00	est. 40	FA & SC	\$10,021
2	Invasive Plants control	acres	\$285.00	251	FA & SC	\$66,821
TOTAL COSTS						\$76,842
Work Agent: CA=Coop Agreement, FA=Force Account, G=Grantee, P=Permitee, SC=Service Contract, TSP=Timber Sales Purchaser, V=Volunteer						

FY08 cost estimates. Costs will be revised following 2007 Rehabilitation findings.

Spec #	Title	Unit	Unit Cost	# of Units	Work Agent	Cost
2	Monitoring and Treatment of Inventory of Invasive Plants	acres	\$285	251	FA & SC	\$66,821
TOTAL COSTS						\$66,821
Work Agent: CA=Coop Agreement, FA=Force Account, G=Grantee, P=Permitee, SC=Service Contract, TSP=Timber Sales Purchaser, V=Volunteer						

PART F - INDIVIDUAL SPECIFICATION

TREATMENT/ACTIVITY NAME	Remove Hazards from Campsites and Winter Trail	PART E SPECIFICATION #	1
NFPORS TREATMENT CATEGORY*	Trails	FISCAL YEAR(S) (list each year):	2007
NFPORS TREATMENT TYPE *	Hazard Removal	WUI? Y / N	No
IMPACTED COMMUNITIES AT RISK	None	IMPACTED T&E SPECIES	None

* See NFPORS Restoration & Rehabilitation module – Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>A. General Description: Clear standing dead hazardous trees that pose a threat to the public within falling distance of annually used campsites along the Porcupine, Yukon, and Sheenjek Rivers that were killed by the 2005 Sheenjek River, Squirrel Creek, and John Herberts Village Fires. In addition, hazard trees along a roughly three mile section of the Chalkyitsik winter trail that traverses north from the Village of Chalkyitsik was burned over by the John Herberts Village Fire and possibly needs to be cleared. Details in this specification will likely be modified based on findings from Specification #4, Assess Damage to Campsites and Winter Trail, which will take place during village meetings during March-April and after an aerial/on-the-ground assessment in June. Acres to be treated will also be determined through Specification #4 assessment work.</p> <p>B. Location/(Suitable) Sites: Annually used campsites on Yukon Flats National Wildlife Refuge lands within the Sheenjek River, Squirrel Creek, and John Herberts Village Fires, plus approximately three miles of the Chalkyitsik winter trail was burned by the John Herberts Village Fire. The trail crosses wetland areas, riparian habitat, and forested uplands within the fire perimeter.</p> <p>C. Design/Construction Specifications: 1. Implement most cost effective treatment method as early in the spring/summer of 2007 as possible. 2. Clear original width of the trail from downed and leaning trees approximately 6 – 10 feet wide during summer or winter 2006 as described in assessment recommendations.</p> <p>D. Purpose of Treatment Specifications: Standing danger trees pose a threat to campers and travelers through the Yukon Flats NWR. Blocked trails and debris on trails can represent significant safety risks to travelers that rely on trails for winter travel to allotments and seasonal hunting areas. Burning can also remove familiar landmarks and destroy existing trail delineation that can result in travelers losing the trail in dark, cold conditions, a potentially life-threatening situation. Only trees considered to be hazardous will be removed.</p> <p>Four members of the village fire crew will be hired to drop danger trees and clear the trail of debris if needed. Two crew members will be certified sawyers equipped with chain saws and one will be crew boss.</p> <p>E. Treatment Effectiveness Monitoring Proposed: Treatments will be monitored to determine if refuge winter trails are clearly marked and meet refuge safety standards. Monitoring results are reported annually and summarized in NFPORS.</p>
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LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):	COST /
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Do not include contract personnel costs here (see contractor services below).	ITEM
GS-12 Pilot @ \$48/hour X 12 hours (FY 07)	\$576.00
GS-12 Deputy Manager @ \$48/hour X 30 hours (FY 07)	\$1,200.00
TOTAL PERSONNEL SERVICE COST	\$1,776.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
Cessna 185@\$148/hour X 8 hours (FY 07)	\$1,184.00
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$1,184.00
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
Aviation fuel: 120 gallons @ \$5.00/gallon (FY07)	\$600.00
Miscellaneous equipment and spare parts for chainsaw	\$100.00
Stihl chainsaw model MS290@\$350.00 X 2	\$700.00
Fuel for boat/snowmobiles and chainsaws: 150 gal. @ \$5.00/gallon (FY07)	\$750.00
Chain saw and bar oil:	\$16.00
TOTAL MATERIALS AND SUPPLY COST	\$2,166.00
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
Roundtrip (72 miles) @ \$35 X 7 roundtrips X 4 snowmobiles	\$980.00
Roundtrip travel to Fort Yukon @\$270 for Deputy Manager	\$270.00
Camp food	\$120.00
TOTAL TRAVEL COST	\$1,385.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
Crew Boss AD4@21.00/hr X 60 hrs (FY07)	\$1,260.00
Trail Crew AD1@15.00/hr X 50 hrs X 3 people (FY07)	\$2,250.00
TOTAL CONTRACT COST	\$3,510.00

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY-07	10/01/2006	08/30/2007	F & S	Acres	\$486/acre	est. 40 acres	\$10,021.00
FY-08							0
FY-09							0
TOTAL							\$10,021.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	
2.	Documented cost figures from similar project work obtained from local agency sources.	
3.	Estimate supported by cost guides from independent sources or other federal agencies	M, E
4.	Estimates based upon government wage rates and material cost.	C, T
5.	No cost estimate required – cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within the Accomplishment Report.
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TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
USFWS – Yukon Flats National Wildlife Refuge	est. 40 acres	\$10,021.00
	TOTAL COST	\$10,021.00

TREATMENT/ACTIVITY NAME	Invasive Species Control	PART E SPECIFICATION #	2
NFPORS TREATMENT CATEGORY*	Invasive Species	FISCAL YEAR(S) (list each year):	2007/2008
NFPORS TREATMENT TYPE *	Hand Treatment	WUI? Y / N	No
IMPACTED COMMUNITIES AT RISK	None	IMPACTED T&E SPECIES	None

*See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: Implement burned area rehabilitation measures to control and eradicate invasive species where ground wildfire suppression actions were taken and in the vicinity of public use and access areas.

B. Location/(Suitable) Sites: Ground wildfire suppression area and public use and access areas in the 2005 burned areas. Proposed sites include:

1. Sheenjok River Fire
 - a. Allotment perimeters within refuge lands(i.e. fire suppression areas)
 - b. Helispots
 - c. Gravel bar areas along the Sheenjok and Porcupine River downstream of allotments (where fire suppression activities occurred) and adjacent to burned areas
 - d. Sites where smokejumpers conducted suppression activities and spike camps
2. Salmon Fork Fire
 - a. Two permitted cabins and their associated trapping cabins (one on the Black River upstream of Old Salmon Village; the other on an eastern tributary of the Black upstream of the first permitted cabin)
3. Glacier Creek Fire
 - a. Two permitted cabins
4. Squirrel Creek
 - a. Allotment perimeters
5. Long Lake Fire
 - a. Suppression areas
 - b. Fire suppression crews
 - c. spike camps

C. Design/Construction Specifications: Continue emergency stabilization invasive species detection monitoring and control initiated in the Burned Area Emergency Response plan.

1. Inspect past treated areas and reevaluate potential invasive species establishment area at least once in FY2007 and 2008.
2. Treat as necessary.
2. Document control actions taken and additional control actions needed.
3. Follow-up on all additional actions.
4. Data will be collected according to the Alaska Exotic Plants Information Clearinghouse (AKEPIC) methods, draft BAER Invasive Plant Monitoring methods (USFWS 2005), and other accepted plant inventory and monitoring protocols. Sites will be accessed via helicopter in mid-to late July 2007. All sites visited will be photographed and GPS locations recorded.
5. Hand-pulling of exotics will occur whenever these plant species are found unless the species do not respond to hand-pulling or the population extent is too large. Permanent plots may be established in areas where invasive plants are detected for future monitoring work.
6. Non native plants with questionable identification will be collected, pressed, and submitted to the University of

Alaska Fairbanks Herbarium for species verification, cataloguing, and specimen mounting.
 7. A progress and final report of the findings will include site descriptions, verified species lists and status of extent of invasive plant establishment of sites surveyed.
 8. Data will be submitted into the Alaska Exotic Plants Clearinghouse database managed by the Alaska Natural Heritage Program.

D. Purpose of Treatment Specifications: Control and eradicate invasive species that survived the initial year treatments.

E. Treatment Effectiveness Monitoring Proposed: All treated area will be will be monitored (at least on the ground visits at the most ecologically appropriate time) through FY2009 to ensure that treatments are still in place and effective or additional burned area rehabilitation invasive species control treatments are needed. Monitoring results are reported annually and summarized in NFORS.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
GS-11 Wildlife Biologist/Vegetation Specialist @ \$40/hr x 218 hrs (see breakdown below) Field preparations: 7.5 days = 60 hrs Field: 5 days @ 10hrs/day = 50 hrs + 2 weather days (16hrs) = 66 hrs Plant identification: 2.5 days = 20 hrs Data summary/report write-up: 7 days = 56 hrs Budget management: 2 days = 16 hrs Total hrs: 218	\$8,720
GS-11 Wildlife Biologist/GIS Specialist @ \$40/hr x 8 hrs (consultation) estimated FY07 wage	\$320
GS-7 Seasonal Biological Science Technician @ \$17/hr x 144 reg. hrs + \$23/hr x 10 overtime hrs (field prep, field work, AKEPIC data entry/summary)	\$2,678
TOTAL PERSONNEL SERVICE COST	\$11,718
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
Jet A fuel @ \$6.00/gal x 936 gallons 26 gal/hr for Bell 206 x 36 hrs: Field: 4hr/day x 5 days = 20 hrs Transit time to job site: 16 hrs roundtrip	\$5,616
Field camp food (\$15/person/day x 4 personnel [includes pilot and mechanic] x 7 days)	\$420
Miscellaneous non food field gear (one pair leather boots)	\$300
TOTAL MATERIALS AND SUPPLY COST	\$6,336

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
Roundtrip commercial transport between Fairbanks and Fort Yukon (\$275/person x 3)	\$825
Excess baggage/freight (food and gear)	\$200
Field per diem@\$3.00/day x 7 days x 2 personnel	\$42
TOTAL TRAVEL COST	\$1,067
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
Cessna Caravan @ \$1300/trip x 1 trip (to haul six 55gal. drums Jet A fuel to Beaver)	\$1,300
University of Alaska Museum Herbarium contract@\$37/hr x 40 hrs x 25% administrative overhead	\$1,850
Bell 206 Jet Ranger (Charter) \$4,950/day x 9 days -- includes: 2 weather days + 2 days for roundtrip transport of helicopter to job site from King Salmon)	\$44,550
TOTAL CONTRACT COST	\$47,700

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	Planned Cost
FY-07	7/15/2007	8/30/2007	F	acres	\$285/acre	251 acres	\$66,821
FY-08	7/15/2008	8/30/2008	F	acres	\$285/acre	251 acres	\$66,821
TOTAL							\$133,642

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	M, C
3. Estimate supported by cost guides from independent sources or other federal agencies	M, T, C
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
USFWS – Yukon Flats National Wildlife Refuge	251 acres	\$66,821
	TOTAL COST	\$66,821.00

PART H - CONSULTATIONS

U.S. Fish and Wildlife Service

Debbie Corbett Regional Archeologist
Karen Murphy, Regional Fire Ecologist

Bureau of Land Management

Randi Jandt, Fire Ecologist

Tanana Chiefs Conference

Tom Gillispie, Archaeologist

Council of Athabascan Tribal Governments

Craig Fleener, Director
Bruce Thomas, Natural Resource Director

Village of Chalkyitsik

Paul Edwin, Chief
Everett Herbert, Natural Resources Director

Village of Fort Yukon

Bruce Thomas, Chief
Davey James, Natural Resources Director

Village of Beaver

Selina Petruska, Chief

Village of Birch Creek

Winston James, Chief

APPENDIX I. RESOURCE ASSESSMENTS:

- **VEGETATION ASSESSMENT**
- **CULTURAL RESOURCE ASSESSMENT**
- **CAMPSITE AND WINTER TRAIL ASSESSMENT**

BURNED AREA EMERGENCY RESPONSE REHABILITATION PLAN

2005 Yukon Flats National Wildlife Refuge Fires

VEGETATION ASSESSMENT

I. Objectives

- Evaluate and assess fire impacts on vegetation resources and identify values at risk associated with vegetation losses
- A burn severity and vegetation mortality assessment will be made following the acquisition and analysis of soil burn severity and vegetation mortality imagery.
- Evaluate potential for invasive plant species introduction or encroachment into native plant communities within, and adjacent to fire areas, downstream impact areas, and along river corridors.

II. Issues

- Areas adjacent to or within burned areas of the Porcupine and Salmon Fork Rivers have been identified as possibly supporting unusual, potentially sensitive steppe-bluff plant communities
- Non-native noxious and invasive plant species may be inadvertently introduced on firefighting equipment or have a greater chance of proliferation in burned areas adjacent to existing seed sources in areas of human use

III. Observations

A. Sensitive Plant Communities

A purpose of the refuge's comprehensive conservation plan is to conserve habitats in their natural diversity. One of the 2001 Yukon Flats NWR fire management objectives is to protect critical refuge resources from undue damage from wildland fire and fire suppression activities. Here, we define a critical refuge resource as a plant community and habitat type that is considered uncommon on the Refuge because of its diverse assemblage of relict plant species which contributes to the overall plant diversity on the Refuge. These steppe-bluff plant communities are restricted to steep south-facing river bluffs on several tributaries of the Yukon River. Plant communities on north-facing river bluff also contain an unusual assemblage of plants including several orchid species.

Previous work in these bluff communities has documented the presence of two species new to science (*Erigeron* and *Asterella*) and other species considered rare within the state or globally (USFWS 2001). *Crypthantha shackletteana* and *Posdistera yukonensis* have a state rank of S1 while *Eriogonum flavum* var. *aquilinum* and *Draba murrayi* both have a state

ranking of S2.

Plant communities on north-facing bluffs were located within or adjacent to the John Herbert's Village fire perimeter on the Porcupine. In addition, current fire perimeter maps place the south facing bluff plant communities just north of the Salmon Fork fire perimeter. Although some work has been done to inventory bluff plant communities, little is known on this communities response to fire and if rehabilitation measures should be taken. We will determine if management actions should be taken to protect these areas from burning in the future.

B. *Invasive Plant Species*

One of the establishing refuge purposes is "...to conserve fish and wildlife populations and habitats in their natural diversity...". Natural disturbance events such as fire are integral to maintaining plant diversity across the landscape. However, when wildland fires burn into areas that require suppression action, the potential juxtaposition of allotments (some are actively used) near high burn severity areas may serve as avenues for the introduction of invasive plant propagules. Smoke jumpers and other fire suppression crews originate from Alaska and the Lower 48 states, where invasive plants are a problem, potentially transporting plant seeds/vegetative parts on their equipment. Federal land managers in Alaska have a unique opportunity to take proactive measures to prevent the establishment or spread of invasive plants, especially in areas that are vulnerable or at risk such as riparian corridors.

Invasive plants are known to occur on the Yukon Flats NWR. A plant survey conducted along Beaver Creek found several exotic/invasive plant species but none that were ranked high according to the Weed Ranking project of the Alaska Natural Heritage Program (ANHP). Exotics are also known to occur in Villages within the refuge, primarily along roadways, airports and boat launches.

In 2005, the ANHP, under contract with the USFWS, surveyed areas within the Yukon Flats NWR, that were within or adjacent to 2004 firescars, for the presence of invasive plants (Carlson and Cortes-Burns 2005). The surveyed sites included nine allotments and/or perimeters, four cabin areas, and a portion of the Lower Mouth winter trail. In addition, ANHP crews surveyed fire suppression staging areas (airport runway/ramp and boat launch) in Fort Yukon and found five exotic plant species that had a low to medium ranking in terms of invasiveness (ANHP 2005).

Under the Emergency Stabilization Plan, exotic plant surveys will occur July 2006 in areas of moderate to high burn severity. Priority sites include those where fire suppression activities occurred near human-use areas, including allotments and permitted cabins. The following 2005 fire burn scars will be visited: Sheenjok River, Salmon Fork, John Herbert Village, Glacier Creek, Squirrel Creek, and Long Lake Fires. Work proposed under this plan will focus on sites where invasive plant infestations were detected and those sites where no invasive plants were detected but are at risk from infestation due to proximity of an exotic seed source.

V. Recommendations

VI. Consultations

No additional consultations were made.

VII. References

Alaska Exotic Plants Information Clearinghouse
2005 <http://akweeds.uaa.alaska.edu/>

Carlson, M. and H. Cortes-Burns. 2005. BAER Accomplishment Report - Invasive Plant Monitoring Following 2004 Fires, report for the USFWS National Wildlife Refuge System – Region 7 Alaska. pp12.

USFWS. 2001. Yukon Flats National Wildlife Refuge Fire Management Plan, September 2001. pp56.

BURNED AREA EMERGENCY RESPONSE REHABILITATION PLAN
2005 FIRES ON THE YUKON FLATS NATIONAL WILDLIFE REFUGE
CULTURAL RESOURCES ASSESSMENT

Figure CR-1. Mudbank Cabin remains after the 2005 Nelson Mountain Fire.

I. OBJECTIVES

- Assess damage to known historic and prehistoric cultural resource sites on Yukon Flats National Wildlife Refuge lands caused by 2005 wildland fire and fire suppression activities.
- Protect these sites from fire-caused erosion, the destabilization of standing structures, and from exposure of previously hidden artifacts that now may be subjected to looting.

II. ISSUES

- There is significant potential for impacts to cultural resources resulting from the direct and indirect effects of fires.
- Known historic and prehistoric sites, including cabins, burials, lithic scatters, and house depressions, are located within the burned areas.
- Adverse conditions, including smoke, weather, lack of aircraft or personnel availability, and snow have prevented monitoring of known sites to determine post-fire conditions.

III. OBSERVATIONS

A. Background

During the 2005 fire season 597,713 acres burned on Yukon Flats National Wildlife Refuge. A wide variety of prehistoric and historic sites are known to occur in the area. The area encompassed by the Refuge was occupied by several groups of Athabascan people at the time of white contact, distinguishable on linguistic and cultural grounds. Descendants of these people still live and subsist on these lands, primarily residing in the

villages of Venetie, Chalkyitsik, Fort Yukon, Circle, Birch Creek, Beaver, and Stevens Village. These villages are either located within the Refuge boundary or immediately adjacent to it.

The early historic period involved sporadic contacts from explorers, traders, and missionaries. Canadian traders entered the area from the east, establishing a Hudson Bay trading post at Fort Yukon in 1847. Goods were traded widely from trading posts. At the same time missionaries began the transformation of native belief systems. However, nothing could match the impact of the gold rush, beginning in 1886 with the discovery of gold on the Fortymile River. Impacts to the Native culture spread rapidly throughout the region. As gold production declined, many of the smaller and more remote camps died out, leaving ghost towns and isolated cabin ruins scattered across the landscape.

Both historic and late prehistoric sites are often characterized by wooden structures. These may include such things as cabins, caches, and game fences. Elements of these structures may include other organic materials. For example, *Sphagnum* mosses are a common element of both historic cabins and pre-contact native dwellings. Such sites may or may not have associated scatters of artifacts, and bone derived from game animals captured and processed into food. These structural sites are largely intact and undecayed. They stand above the natural ground surface and can be easily recognized as cultural sites by non-specialists. Since structural sites are defined by preserved structures built of organic materials and exposed above the ground, they are highly vulnerable to damage and destruction by wildfire.

The second category of cultural sites consists of prehistoric and historic localities lacking intact organic structures. These sites typically consist of scatters of artifacts organized by their association with task-specific activity areas. Sites of this type may include camp sites, butchering areas, raw-material processing areas, and middens. These sites typically lie on top of the natural surface or are buried under it. Most will not be recognized as cultural sites by laypersons, particularly if no distinctive artifacts are visible. These non-structural sites may have included wooden structures in the past, but these have been lost through decomposition over time. In certain conditions these structures may have left behind soil stains as evidence of their existence; however this evidence can generally be recognized only by pains-taking archaeological excavation. Some of these sites may also preserve earthen features such as pit caches or the berms surrounding dwellings. The vulnerability of non-structural sites to wildfire is highly variable and depends on several factors. Most important among these are: site contents, depth of burial, age, burn intensity, and local wildfire history. Fire could still impact such sites through post-fire erosion or through exposing hidden material that increases the chance for looting. Prehistoric sites could also be seriously damaged or destroyed as a result of fire line construction or other surface disturbing activities.

B. Findings

During August 2005, while doing cultural emergency stabilization work from the 2004

fires in the Hodzana River region, an historic cabin was quickly visited (see Figure CR-1) that was found to be still smoldering after being burned by the Nelson Mountain Fire. This site and several other known historic and prehistoric sites are within the boundaries of the 2005 wildfires on the Yukon Flats National Wildlife Refuge. Table CR-1 notes the number of known historic and prehistoric sites listed in Tanana Chiefs GIS Coverage of Cultural Sites that were within 2005 wildfire boundaries.

Table CR-1. Known sites by Individual Fires.

Fire Name	Number of Prehistoric Sites	Number of Historic Sites
Nelson Mountain	2	2
Sheenjok River		8
John Herbert's Village	1	
Salmon Fork	2	

All eighteen fires that burned in 2005 on Yukon Flats National Wildlife Refuge lands had the potential to impact cultural sites. In the absence of concrete, on-the-ground observations, besides a quick look at a smoldering historic site in the 2005 Nelson Mountain Fire during August 2005, it is impossible to develop any certain findings. However, the analysis presented here establishes a clear potential for impacts to historic and prehistoric sites.

I. RECOMMENDATIONS

Visit all known sites within the 2005 fire boundaries (Yukon Flats National Wildlife Refuge BAER Emergency Stabilization Specification #6). Assess each individual situation involving the known sites with the assistance of an archaeologist and conduct rehabilitation actions if warranted. If additional archaeological sites are discovered during the course of known site visits, or situations are found where unique archaeological material is discovered that the fire action has set into motion an accelerated decay process, such as with burned bone assemblages, additional action will be recommended through a rehabilitation plan.

Typically, archaeological field evaluation and site preservation efforts occur in stages. This is due to the complexity of the task, and the need for Federal agencies to comply with the consultation requirements of Sections 106 and 110 of the National Historic Preservation Act. Section 106 requirements may not apply during the actual fire, if it constitutes an emergency, but do apply to any work planned and executed after a fire emergency has passed. For this reason, archaeological work under the initial BAER rehabilitation grade must be limited to non-destructive data collection, site evaluations, and planning for subsequent rehabilitation.

Field evaluation methods should include the following: identification of locality by latitude and longitude and UTM coordinates, description of terrain and original vegetation,

description of typical soil and sediment deposits, description of cultural remains encountered, archaeological reconnaissance maps, photographs of site environment and cultural remains encountered, limited grab-sampling of diagnostic artifacts, collection of buried carbon-14 samples were indicated. Historic buildings will be recorded to HABS level one standards, all other site data will be recorded to archaeological standards and guidelines set by the Secretary of the Interior of the United States.

Post-field evaluation of sites should include: a narrative summarizing field observations made at each site written to a standard format, analysis of cultural, radiocarbon and other samples, classification of each site according to probable research and educational value, classification of each site according to wildfire intensity, classification of each site according to preservation category, classification of each site by observed and predicted wildfire effects, and recommendations for site treatment to offset degradation caused by wildfire. The evaluation report will also conform to standards and guidelines set by the Secretary of the Interior.

II. CONSULTATIONS

Tanana Chiefs Conference, Tom Gillispie, Archaeologist, (907) 452-8251 ext. 3415

U.S. Fish and Wildlife Service, Debbie Corbett Regional Archeologist, (907) 786-3399

III. REFERENCES

Alaska Fires Burned Area Rehabilitation and Rehabilitation Plan. October 2004.

Slaughter, Dale C. 1985. Yukon Flats Cultural Resources Survey. pp207. January 1985

Tanana Chiefs Conference, GIS Coverage of Cultural Sites within the Doyon Region. December 2005.

BURNED AREA EMERGENCY RESPONSE REHABILITATION PLAN
2005 FIRES ON THE YUKON FLATS NATIONAL WILDLIFE REFUGE

CAMPSITE AND WINTER TRAIL ASSESSMENT

I. OBJECTIVES

- Determine the location of annually used campsites and main winter trails used by recreational and subsistence users on Refuge lands within the 2005 wildfire boundaries.
- Assess these sites for standing fire-killed danger trees that pose a threat to users of these sites and travel corridors.
- Recommend treatments to mitigate short and long-term impacts of tree fall, resulting from the 2005 fires, on these sites and travel corridors.

II. ISSUES

- There is significant potential for public safety due to falling trees on traditional camping areas and main winter trails.
- Adverse conditions, including smoke, weather, lack of aircraft or personnel availability, and snow have prevented locating annually used campsites and main winter trail locations.

III. OBSERVATIONS

A. Background

The eighteen wildfires that burned on the Yukon Flats National Wildlife Refuge in 2005 engulfed 597,713 acres of Refuge land. Much of this area is used throughout the year by residents of seven villages that are either located within the Refuge boundary or immediately adjacent to it. The residents of these villages; Venetie, Chalkyitsik, Fort Yukon, Circle, Birch Creek, Beaver, and Stevens Village, are predominately of Athabascan heritage. Their ancestors were the same people that were living a subsistence lifestyle at the time of white contact. Many still lead subsistence lifestyles on the land that is now managed as the Yukon Flats National Wildlife Refuge. Subsistence activities include hunting, fishing, trapping, berry picking, and wood gathering. Many of these activities include annually camping for extended periods at traditional sites that have been used for years.

Recreational users also use Refuge land. Primarily this involves floating down major rivers during the summer months. The 2005 fires burned along the banks of the Sheenjek, Porcupine, and Yukon Rivers, all corridors for recreational users.

The 2005 Sheenjek River, Squirrel Creek, and John Herbert's Village Fires, in particular, may have annually used campsites within their fire boundaries. Also major winter trails, used primarily by subsistence users, are at risk to hazards created by falling and downed trees impacted by the 2005 wildfires. Of particular concern is for the safety of the public in close proximity to standing trees, of sufficient size to cause harm, that have had root systems damaged by the fires, and are subject to falling over unexpectedly.

B. Findings

All eighteen fires that burned in 2005 on Yukon Flats National Wildlife Refuge lands had the potential to impact campsites and trails used annually by the public. In the absence of concrete, on-the-ground observations, it is impossible to assess the need to address danger trees at campsites and trails. However, the analysis presented here establishes a clear potential for impacts to annually used campsites and winter trails.

IV. RECOMMENDATIONS

The true extent of this project will not be known until after assessment through March-April 2006 village meetings in Fort Yukon and Chalkyitsik, plus an on-the-ground assessment conducted by boat in June 2006. The meetings will be to discuss the locations of annually used campsites and main trail locations within the 2005 burns. Rehabilitation is anticipated to involve negating the public safety hazards, primarily through using a team of sawyers contracted from the nearby villages to drop standing danger trees and clearing of the Chalkyitsik winter trail to make it passable.

V. CONSULTATIONS

U.S. Fish and Wildlife Service, Wennona Brown, Subsistence Coordinator, (907) 456-0408

VI. REFERENCES

Alaska Fires Burned Area Rehabilitation and Rehabilitation Plan. October 2004.

Slaughter, Dale C. 1985. Yukon Flats Cultural Resources Survey. pp207. January 1985

APPENDIX II - ENVIRONMENTAL COMPLIANCE

Federal, State, and Private Lands Environmental Compliance Responsibilities

All projects proposed in the Yukon Flats National Wildlife Refuge 2005 Fires Burned Area Emergency Response Rehabilitation Plan that are prescribed, funded, or implemented by Federal agencies on Federal, State, or private lands are subject to compliance with the National Environmental Policy Act (NEPA) in accordance with the guidelines provided by the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508) and the Department of the Interior. This Appendix documents the burned area emergency response team considerations of NEPA compliance requirements for rehabilitation and monitoring actions described in this plan for all jurisdictions affected by the Yukon Flats National Wildlife Refuge 2005 Fires.

Related Plans and Cumulative Impact Analysis

Yukon Flats National Wildlife Refuge 2005 Fires Burned Area Emergency Stabilization Plan (12/05/05). The Yukon Flats National Wildlife Refuge 2005 Fires Burned Area Emergency Stabilization Plan was reviewed and it was determined that actions proposed in the Yukon Flats National Wildlife Refuge 2005 Fires Burned Area Emergency Stabilization Plan within the boundary of the Sheenjek River and other 2005 fires are consistent with the management objectives established in the Comprehensive Conservation Plan. The Comprehensive Conservation Plan NEPA compliance process specifically addresses:

- Fire management and suppression activities within the refuge;
- Maintaining water quality;
- Conserving fish and wildlife populations and habitats in their natural diversities; and
- Provide for continued subsistence uses by local residents.

The Yukon Flats National Wildlife Refuge 2005 Fires Burned Area Emergency Response Rehabilitation Plan was reviewed and it was determined that actions proposed in the Yukon Flats National Wildlife Refuge 2005 Fires Burned Area Emergency Response Rehabilitation Plan within the boundary of the Sheenjek River Fire and other 2005 fires are consistent with the management objectives established in the Yukon Flats National Wildlife Refuge Fire Management Plan, and the Environmental Assessment for the Refuge Fire Management Plan (dated September 2001). The fire management plan specifically addresses:

- Protection of sensitive biological communities, cultural and historic sites, Native allotments, privately owned and legally registered cabins, and refuge administrative facilities on Yukon Flats NWR from wildland fires to the extent practicable;
- Restoration, perpetuation and protection of native wildlife and plant species on Yukon Flats NWR by maintaining a diversity of plant communities that would be expected under a natural regime of wildland fire; and
- Maintenance of natural fire-related ecosystem processes on Yukon Flats NWR to the maximum extent feasible and initiate studies if the role of fire in these processes is poorly understood.

Cumulative Impact Analysis

Cumulative effects are the environmental impacts resulting from the incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions, both Federal and non-Federal. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. The rehabilitation treatments for areas affected by the Yukon Flats National Wildlife Refuge 2005 Fires, are proposed in the Yukon Flats National Wildlife Refuge 2005 Fires Burned Area Emergency Response Rehabilitation Plan. These past actions and reasonably foreseeable future actions do not result in an intensity of impact (i.e. major ground disturbance, etc.) that would cumulatively constitute a significant impact on the quality of the environment. The treatments are consistent with the above jurisdictional management plans and associated environmental compliance documents and categorical exclusions listed below.

Applicable and Relevant Categorical Exclusions

The individual actions proposed in this plan for the Yukon Flats National Wildlife Refuge 2005 Fires are Categorically Excluded from further environmental analysis as provided for in section 516 DM 2, Appendix 2 of the Departmental Manual. All applicable and relevant Department and Agency Categorical Exclusions are listed below. Categorical Exclusion decisions were made with consideration given to the results of required emergency consultations completed by the burned area emergency response team and documented below.

Applicable Department Categorical Exclusions

- The operation, maintenance, and management of existing facilities and routine recurring management activities or improvement, including renovations and replacement which result in no nor only minor changes in the use, and have no negligible **environmental** effect on-site or in the vicinity of the site.
- Fire management activities, including prevention and restoration measures, when conducted in accordance with **departmental** and Service procedures.
- Consultation and technical assistance activities directly related to the conservation of fish and wildlife resources.

U.S. Fish and Wildlife, Region 7 Statement of Compliance

This section documents consideration given to the requirements of specific environmental laws in the development of the Yukon Flats National Wildlife Refuge 2005 Fires Burned Area Emergency Response Rehabilitation Plan. Specific consultations initiated or completed during development and implementation of this plan are also documented. The following executive orders and legislative acts have been reviewed as they apply to the Yukon Flats National Wildlife Refuge 2005 Fires Burned Area Emergency Response Rehabilitation Plan:

Project Name: Burned Area Emergency Response Rehabilitation Plan. Yukon Flats National Wildlife Refuge.

Location: Selected fire locations within Yukon Flats National Wildlife Refuge.

Description: The U.S. Fish and Wildlife Service proposes to conduct rehabilitation activities within the perimeters of seven 2005 fires on refuge lands. These activities include assessment of burn severity and fire effects, detection of introduced noxious and invasive non-native plants, and assessment of fire damage to cultural resources, danger trees and winter trails.

National Environmental Policy Act: The Service has determined that implementation of the specifications of the plan for the proposed project qualifies as a categorical exclusion under 516 DM 6, Appendix 1,C (4), to the National Environmental Policy Act of 1969 (see attached Qualification for Categorical Exclusion).

Endangered Species Act: The proposed action will not affect listed, proposed or candidate species of adversely modify critical habitat.

Coastal Zone Management Action, Section 307: The Alaska Coastal Management Program (ACMP) has concurred with the National Weather Service's negative determination, and that a ACMP review is not necessary.

Telecommunications Act of 1996, Section 704: Not applicable.

Coastal Barrier Resources Act, Section 6: Not applicable.

Subsistence Evaluation and Finding, Section 810 – Alaska Lands Act: Subsistence uses of the area will not be impacted by the proposed action (see attached Section 810 evaluation).

National Historic Preservation Act, Section 106: The Service's Regional Archeologist has determined that this action will have no effect on historic properties following regulations at 36 CFR 8.00.5 (b)

Executive Order 11988 – Floodplain Management: Not applicable.

Executive Order 11990 – Protection of Wetlands: No wetlands areas will be affected by the proposed project.

Executive Order 12372 – Intergovernmental Review of Federal Programs: Intergovernmental review was accomplished during formal review by the State of Alaska through the Alaska Coastal Management Program.

NEPA Checklist: If any of the following exception applies, the Burned Area Emergency Response Rehabilitation Plan cannot be Categorically Excluded and an Environmental Assessment (EA) is required.

(Yes) (No)

- (X) Adversely affect Public Health and Safety
- (X) Adversely affect historic or cultural resources, wilderness, wild and scenic rivers aquifers, prime farmlands, wetlands, floodplains, ecologically critical areas, or Natural Landmarks.
- (X) Have highly controversial environmental effects.
- (X) Have highly uncertain environmental effects or involve unique or unknown environmental risks.
- (X) Establish a precedent resulting in significant environmental effects.
- (X) Relates to other actions with individually insignificant but cumulatively significant environmental effects.
- (X) Adversely effects properties listed or eligible for listing in the National Register of Historic Places.
- (X) Adversely affect a species listed or proposed to be listed as Threatened or Endangered.
- (X) Threaten to violate any laws or requirements imposed for the "protection of the environment" such as Executive Order 1 1 988 (Floodplain Management) or Executive Order 1 1990 (Protection of Wetlands).

National Historic Preservation Act

Ground Disturbance:

- (X) None
- () Ground disturbance did occur and an archeologist survey, required under section 110 of the NHPA will be prepared. A report will be prepared under contract as specified by the Burned Area Emergency Response Rehabilitation Plan.

A NHPA Clearance Form:

- () Is required because the project may have affected a site that is eligible or on the national register. The clearance form is attached. SHPO has been consulted under Section 106 (see Cultural Resource Assessment, Appendix I).
- (X) Is not required because the Burned Area Emergency Response Rehabilitation Plan has no potential to affect cultural resources (initial of cultural resource specialist).

Other Requirements

(Yes) (No)

- (X) Does the Burned Area Emergency Response Rehabilitation Plan have potential to affect any Native American uses? If so, consultation with affiliated tribes is needed.
- (X) Are any toxic chemicals, including pesticides or treated wood, proposed for use? If so, local agency integrated pest management specialists must be consulted.

APPENDIX III - MAPS

Map 1: 2005 Fires on the Yukon Flats National Wildlife Refuge

Map 2: Sheenjek River Fire

Map 3: Nelson Mountain Fire

Map 4: Salmon Fork Fire

Map 5: Glacier Creek Fire

Map 6: Hodzana River Fire

Map 7: Squirrel Creek Fire

Map 8: John Herberts Village Fire

Map 9: Long Lake Fire