

Public Review Draft

**WILLOW MOUNTAIN
CRITICAL HABITAT AREA
MANAGEMENT PLAN**

by

Habitat Section

and

Division of Wildlife Conservation

May 2021 Draft

Alaska Department of Fish and Game

Habitat Section and Division of Wildlife Conservation



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative		fork length	FL
deciliter	dL	Code	AAC	mideye-to-fork	MEF
gram	g	all commonly accepted		mideye-to-tail-fork	METF
hectare	ha	abbreviations	e.g., Mr., Mrs., AM, PM, etc.	standard length	SL
kilogram	kg			total length	TL
kilometer	km	all commonly accepted			
liter	L	professional titles	e.g., Dr., Ph.D., R.N., etc.	Mathematics, statistics	
meter	m			<i>all standard mathematical</i>	
milliliter	mL	at	@	<i>signs, symbols and</i>	
millimeter	mm	compass directions:		<i>abbreviations</i>	
		east	E	alternate hypothesis	H _A
		north	N	base of natural logarithm	<i>e</i>
		south	S	catch per unit effort	CPUE
		west	W	coefficient of variation	CV
		copyright	©	common test statistics	(F, t, χ^2 , etc.)
		corporate suffixes:		confidence interval	CI
		Company	Co.	correlation coefficient	
		Corporation	Corp.	(multiple)	R
		Incorporated	Inc.	correlation coefficient	
		Limited	Ltd.	(simple)	r
		District of Columbia	D.C.	covariance	cov
		et alii (and others)	et al.	degree (angular)	°
		et cetera (and so forth)	etc.	degrees of freedom	df
		exempli gratia		expected value	<i>E</i>
		(for example)	e.g.	greater than	>
		Federal Information		greater than or equal to	≥
		Code	FIC	harvest per unit effort	HPUE
		id est (that is)	i.e.	less than	<
		latitude or longitude	lat. or long.	less than or equal to	≤
		monetary symbols		logarithm (natural)	ln
		(U.S.)	\$, ¢	logarithm (base 10)	log
		months (tables and		logarithm (specify base)	log ₂ , etc.
		figures): first three		minute (angular)	'
		letters	Jan, ..., Dec	not significant	NS
		registered trademark	®	null hypothesis	H ₀
		trademark	™	percent	%
		United States		probability	P
		(adjective)	U.S.	probability of a type I error	
		United States of		(rejection of the null	
		America (noun)	USA	hypothesis when true)	α
		U.S.C.	United States	probability of a type II error	
			Code	(acceptance of the null	
		U.S. state	use two-letter	hypothesis when false)	β
			abbreviations	"	
			(e.g., AK, WA)	second (angular)	
				standard deviation	SD
				standard error	SE
				variance	
				population	Var
				sample	var
Weights and measures (English)					
cubic feet per second	ft ³ /s				
foot	ft				
gallon	gal				
inch	in				
mile	mi				
nautical mile	nmi				
ounce	oz				
pound	lb				
quart	qt				
yard	yd				
Time and temperature					
day	d				
degrees Celsius	°C				
degrees Fahrenheit	°F				
degrees Kelvin	°K				
hour	h				
minute	min				
second	s				
Physics and chemistry					
all atomic symbols					
alternating current	AC				
ampere	A				
calorie	cal				
direct current	DC				
hertz	Hz				
horsepower	hp				
hydrogen ion activity	pH				
(negative log of)					
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

WILLOW MOUNTAIN
CRITICAL HABITAT AREA
MANAGEMENT PLAN
PUBLIC REVIEW DRAFT

Prepared by

Alaska Department of Fish and Game
333 Raspberry Road, Anchorage, Alaska 99518-1599

May 2021 Draft

Prepared by the Habitat Section and Division of Wildlife Conservation
Alaska Department of Fish and Game
Anchorage, Alaska

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For information on alternative formats and questions on this publication, please contact:

ADF&G, Sport Fish Division, Research and Technical Services, 333 Raspberry Road, Anchorage AK 99518 (907)267-2375.

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The *Willow Mountain Critical Habitat Area Management Plan* has been prepared by Alaska Department of Fish and Game biologists Tammy Massie and Ian Gill (Habitat Section), and Doug Hill (Division of Wildlife Conservation). This plan was developed with the aid of an interagency planning team composed of representatives from state and local agencies with jurisdiction over land and resources within the critical habitat area. Team members included:

Charles Pinckney, Alaska Department of Natural Resources

Shane Serrano, Alaska Department of Environmental Conservation

Frankie Barker, Matanuska-Susitna Borough

Doug Hill, Joe Meehan, Todd Rinaldi, Tim Peltier, Mark Burch, and Olin Albertson, Alaska Department of Fish and Game, Division of Wildlife Conservation

Samantha Oslund and Mark Fink, Alaska Department of Fish and Game, Division of Sport Fish

Ken Bouwens, Ron Benkert, and Sarah Wilber, Alaska Department of Fish and Game, Habitat Section

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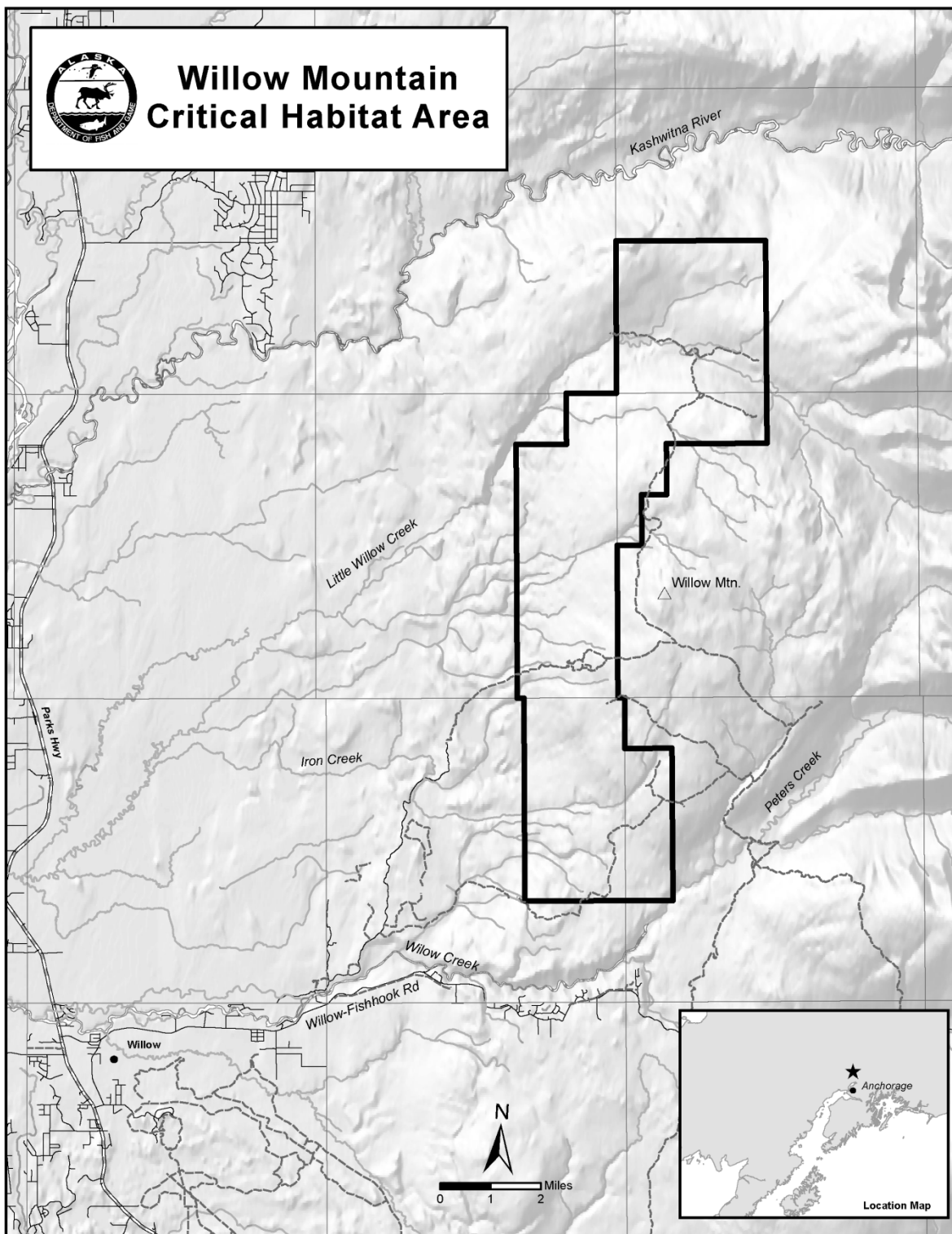


Figure 1.— Map of Willow Mountain Critical Habitat Area.

INTRODUCTION

In 1989 the Alaska Legislature established the Willow Mountain Critical Habitat Area (CHA) to protect and enhance the exceptional post-rut moose habitat found on the western slopes of Willow Mountain and for the continued public use and enjoyment of the area (§ 2 ch 28 SLA 1989). The Willow Mountain CHA is located in the Susitna River valley of Southcentral Alaska, northeast of the community of Willow, and northwest of the City of Wasilla. The CHA encompasses approximately 23,000 acres of state land in the southwestern Talkeetna Mountain Range, stretching from Willow Creek in the south up to the Kashwitna River in the north.

The Willow Mountain CHA is co-managed by the Alaska Department of Fish and Game (ADF&G) in accordance with Alaska Statutes 16.20.520-530, and the Alaska Department of Natural Resources (DNR) per AS 38.05. The purpose of the *Willow Mountain Critical Habitat Area Management Plan* is to provide consistent, long-range guidance to ADF&G in managing the CHA. The ADF&G has undertaken this comprehensive planning process in order to establish guidelines, policies, and regulations for management of fish and wildlife habitat and current and future activities in the CHA.

This draft plan presents management goals for the CHA and its resources, and it also defines policies that determine whether proposed activities are compatible with the purposes of the CHA; namely, the protection of fish and wildlife habitat, and continued public use of the CHA. Both the goals and policies of this plan will be adopted into regulation.

This draft plan affects state lands and waters. There are no private or federal lands within the boundary of the CHA. Furthermore, the plan does not address or affect hunting, trapping, or fishing regulations, which are the purview of the Alaska Boards of Fisheries and Game.

THE PLANNING PROCESS

This plan is the result of a public planning process led by ADF&G. It was developed by a collaborative planning team representing the following state and local entities: the State of Alaska Departments of Fish and Game, Natural Resources, and Environmental Conservation, and the Matanuska-Susitna Borough.

The ADF&G initiated the planning effort by holding public scoping meetings in Willow, Wasilla, and Anchorage to explain the planning process and solicit input on the issues, interests, and concerns of users of the Willow Mountain CHA. The planning team considered public input from these meetings while formulating the list of issues that would be addressed in the plan's policies. Concurrently, the department began collecting and synthesizing information on fish and wildlife populations and their habitats, other natural resources, land ownership, and existing land uses in the vicinity of the Willow Mountain CHA. This information, presented in both map and narrative form, comprises the plan's Resource Inventory (Appendices A and C).

Management goals and policies for the Willow Mountain CHA were developed by the planning team to address the identified issues. All policies were developed with consideration of their ability to meet the formulated management goals. In addition, other applicable laws and the Public Trust Doctrine were considered.

This public review draft has been distributed widely to solicit comments and suggestions that will strengthen the plan and make it useful to the department and the public. A final plan will be prepared taking into consideration the comments received during the public review process. Once revised, the Commissioner of the ADF&G will adopt the plan and corresponding regulations, pursuant to the Administrative Procedures Act, for use by the department in managing the CHA. At that point, the plan will be implemented by ADF&G.

IMPLEMENTATION OF THE PLAN

The ADF&G will implement the final, adopted plan in several ways. Research programs, public use facilities, and other department projects will be consistent with the goals and policies presented in this plan. Similarly, future land use activities within the CHA, including those proposed by private individuals, companies or federal, local, or state agencies, will be approved, conditioned, or denied on the basis of their consistency with the goals and policies provided in the management plan and applicable state statutes and regulations.

A Special Areas Permit is required for any activity that may affect fish and wildlife habitat, including any construction activity, or any activity which disturbs fish or wildlife other than lawful hunting, trapping, fishing, and viewing in a designated state Critical Habitat Area (5 AAC 95). A Special Areas Permit application form can be obtained from any ADF&G office or the department website (<http://www.adfg.alaska.gov/index.cfm?adfg=uselicense.main>); the completed application should be submitted to the Habitat Section Office in Palmer.

Other state, federal, and local agencies have management responsibilities that affect the Willow Mountain CHA as well. Many uses, including leasing, permitting, or disposal of resources on state land within the CHA may also require DNR authorization. Activities affecting air or water quality may require authorization from the Alaska Department of Environmental Conservation (DEC). The U.S. Army Corps of Engineers evaluates applications for permits which authorize activities affecting navigable waters and for the discharge of dredged and fill material in waters of the United States, including wetlands. Various federal and state agencies, along with local governments, review proposals for federal permits, pursuant to the Fish and Wildlife Coordination Act (16 USC 661-667 et. seq.).

The Willow Mountain CHA overlaps with state lands managed by DNR under the Hatcher Pass Management Plan, Willow Mountain Management Unit. DNR and ADF&G act as co-managers of this area; both agencies retain their individual regulatory authorities. Authorizations must be obtained from both DNR and ADF&G for any activity that is regulated by both departments. Upon adoption of the Willow Mountain CHA Management Plan by ADF&G, DNR management will be conducted consistent with the CHA management plan. Uses not controlled by the CHA management plan are to be authorized by DNR consistent with DNR's current land use plan for the area. For uses not specifically identified in the CHA Management Plan, ADF&G authorizations will be based on the "All Other Uses Policy". In situations where department requirements are not the same, the most restrictive authorization must be obtained before the activity can proceed.

This plan will be reviewed and updated, as appropriate and necessary. Public participation will be solicited during the update process.

STATUTES

Alaska Statutes that specifically pertain to the establishment and management of the Willow Mountain Critical Habitat Area are codified in Title 16, Chapter 20. The management direction for all state critical habitat areas, AS 16.20.500, became law in 1972 (§ 2 ch 140 SLA 1972). The enabling legislation for the Willow Mountain Critical Habitat Area (AS 16.20.620) became law in 1989 (§ 2 ch 28 SLA 1989).

AS 16.20.500. Purpose. The purpose of AS 16.20.500-16.20.690 is to protect and preserve habitat areas especially crucial to the perpetuation of fish and wildlife, and to restrict all other uses not compatible with that primary purpose.

AS 16.20.510. Regulations. The Board of Fisheries and the Board of Game, where appropriate, shall adopt regulations they consider advisable for conservation and protection purposes governing the taking of fish and game in state fish and game critical habitat areas.

AS 16.20.520. Multiple land use. Before the use, lease, or other disposal of land under private ownership or state jurisdiction and control, within state fish and game critical habitat areas created under AS 16.20.500-16.20.690, the person or responsible state department or agency shall notify the commissioner of fish and game. The commissioner shall acknowledge receipt of notice by return mail.

AS 16.20.530. Submission of plans and specifications.

(a) When a board determines that the following information is required, it shall instruct the commissioner, in the letter of acknowledgment required under AS 16.20.520, to require the person or governmental agency to submit:

- (1) full plans for the anticipated use;
- (2) full plans and specifications of proposed construction work;
- (3) complete plans and specifications for the proper protection of fish and game; and
- (4) the approximate date when the construction or work is to commence.

(b) The board shall require the person or governmental agency to obtain the written approval of the commissioner as to the sufficiency of the plans or specifications before construction is commenced.

AS 16.20.620. Willow Mountain Critical Habitat Area established. (a) The following described area is established as the Willow Mountain Critical Habitat Area:

- (1) Township 20 North, Range 2 West, Seward Meridian
Section 7
Sections 18-19;
- (2) Township 20 North, Range 3 West, Seward Meridian
Sections 1-2
Sections 11-14
Sections 23-24
- (3) Township 21 North, Range 2 West, Seward Meridian

Sections 4-7
Section 18: W1/2;

(4) Township 21 North, Range 3 West, Seward Meridian
Section 1
Sections 11-14
Sections 23-26
Sections 35-36

(5) Township 22 North, Range 2 West, Seward Meridian
Sections 19-21
Sections 28-33.

(b) Notwithstanding AS 16.20.510-16.20.530, the commissioner of fish and game, in consultation with the commissioner of natural resources, shall prepare a management plan for the Willow Mountain Critical Habitat Area. The commissioner of fish and game and the commissioner of natural resources shall exercise their respective authorities over the area in a manner consistent with the management plan. (§ 2 ch 28 SLA 1989)

ALLOWED USES IN WILLOW MOUNTAIN CHA

The following activities can be conducted in the Willow Mountain CHA without either an individual special area permit or a special area general permit. Users are ultimately responsible for ensuring that their activities comply with all statutes and regulations. Off-road vehicle access will only be authorized by general or individual permit. Copies of current general permits are available on the ADF&G website or by contacting the Habitat Section Office in Palmer. If there are any questions about whether or not a specific activity is allowed, users should contact ADF&G, Habitat Section at 907-861-3200.

These allowed uses are specific to ADF&G's management of the Willow Mountain CHA. In instances where allowed uses in the CHA conflict with DNR's Generally Allowed Uses on state lands, the most restrictive standard must be met.

Allowed uses:

- Walking, hiking, skiing, dog sledding, other foot travel, and bike riding provided that no new trails are created.
- Hunting, trapping, and fishing as allowed under other regulations.
- Berry-picking, and plant and mushroom gathering for personal use. Dead and down timber may be used for firewood but harvesting live timber or vegetation clearing is not allowed.
- Camping for 14 consecutive days or less in the same location. See "Camping" and "Structures" policies for long term camps or building hardened structures.
- Transporting or storing small amounts (10 gallons or less) of fuel in appropriate containers. See "Hazardous Materials and Fuel Storage" policy.
- Gold panning, small-scale non-mechanized mining, and non-invasive activities such as metal detecting. It is the user's responsibility to confirm that a specific location is open to mining.
- Landing and take-off of ski mounted aircraft when sufficient snow is present.
- Non-commercial wildlife photography.

GOALS

Activities occurring within the Willow Mountain Critical Habitat Area (CHA) will be consistent with the following goals in accordance with the purpose for which the area was established (AS 16.20.620). All department management decisions in the Willow Mountain CHA, whether affecting activities undertaken by the department, other agencies, or the public, will be in accordance with these goals.

GOAL I. FISH AND WILDLIFE POPULATIONS AND THEIR HABITATS

- A. Manage the Willow Mountain CHA to protect moose habitat, especially the fall post-rut congregation areas, and to maintain the productivity of that habitat for moose.
- B. Manage the Willow Mountain CHA to protect and enhance the habitat for other naturally occurring fish and wildlife populations, such as upland game birds.
- C. Minimize harmful disturbance to fish and wildlife, with special attention to moose, especially during the fall post-rut period.
- D. Maintain water quality and quantity, natural substrates, and water circulation patterns sufficient for the growth and propagation of fish and wildlife populations.

GOAL II. PUBLIC ACCESS AND USE

- A. Maintain opportunities for public access to the Willow Mountain CHA for public uses consistent with Goal I, including hunting, trapping, and other dispersed recreational activities.
- B. Allow other public uses when those uses are consistent with Goal I.

GOAL III. MANAGEMENT, RESEARCH, AND OTHER ACTIVITIES

- A. Consider opportunities to enhance the quantity or quality of moose habitat in the Willow Mountain CHA.
- B. Encourage and support research and monitoring activities necessary to achieve the goals and policies of the Willow Mountain CHA Management Plan, as funding allows.
- C. Foster interagency and community cooperation and coordination to assist in the implementation of this management plan.
- D. Consider and evaluate the potential for the cumulative impacts of small, incremental activities to negatively affect critical habitat area resources, and minimize harmful disturbances associated with those cumulative impacts.

EXPLANATION OF TERMS

Minimize Harmful Disturbance: To reduce activities that displace animals from their natural habitat, or interrupt their seasonal activities, to a level that does not have a significant impact on fish

and wildlife or their habitat. Harmful disturbance does not refer to the legal harvest of fish and wildlife.

PROPOSED POLICIES

The policies provided in this plan will be used to guide ADF&G decisions on management activities and Special Area Permits for activities on land and water within the Willow Mountain CHA. When reviewing a proposed activity to determine whether a Special Area Permit will be issued, the proposed activity must be evaluated against the applicable goals and policies of the management plan. The compatibility policy is always used to evaluate whether a proposed activity is compatible with the purposes for which the critical habitat area was established.

These policies have been evaluated for their ability to meet CHA management goals, effects on major critical habitat area uses and activities, and impacts on department management responsibilities. The evaluation of the effects of each policy includes the types and degrees of effect that could reasonably be expected to occur under each policy. Special Area permits based on these policies will mitigate potential project impacts using the mitigation sequence found at 5 AAC 95.900. The evaluation of proposed policies includes consideration of how these policies could affect the following eight factors:

Habitat: Will implementation of this proposed policy enhance, damage, or have no effect on habitat values? Will implementation of this policy alter the potential for habitat damage?

Fish and Wildlife Populations: Will implementation of this proposed policy increase, decrease, or not change the potential to maintain species diversity and abundance of fish and/or wildlife, especially moose?

Fish and Wildlife Harvest: Will implementation of this proposed policy increase, decrease, or not change the number of user days, type of harvest, season of use, or quality of use that occurs within the CHA?

Non-consumptive Use of Fish and Wildlife: Will implementation of this proposed policy increase, decrease, or have no effect on the number of user days, type of use, season of use, or quality of non-consumptive use that occurs within the CHA?

Public Access: Will implementation of this proposed policy increase, decrease, or not change the number of user days, type of public access, season of use, or quality of public access that occurs within the CHA?

Public Use and Recreation: Will implementation of this proposed policy increase, decrease, or have no effect on public use on CHA lands and waters?

Management Responsibilities: Will implementation of this proposed policy increase, decrease, or not change monitoring requirements, enforcement requirements, and administrative requirements of managing the CHA?

User Conflicts: Will implementation of this proposed policy increase, decrease, or have no effect on user conflicts on CHA lands and waters?

COMPATIBILITY

Issue

Develop a policy requiring that authorized activities within the Willow Mountain CHA be conducted in a manner that is compatible with the statutory purposes for which the area was created and with the goals and policies of its management plan.

Proposed Policy

Uses and activities may be allowed in the Willow Mountain CHA when those uses and activities are compatible with the purposes for which the critical habitat area was established (AS 16.20.505 and AS 16.20.620) and with the goals and policies of the management plan. Uses and activities may be restricted as necessary to reflect the legislative intent of the CHA, which is to: (1) protect the area's exceptional fish and wildlife habitats and populations; and (2) ensure that the area will be managed primarily to maintain the productivity of the habitat for moose and will provide opportunities for hunting, trapping, and other dispersed recreational activities.

Evaluation

This policy ensures that all projects authorized by the department in the CHA are reviewed in reference to the overarching habitat protection standards developed in this plan and contained in statute. This policy provides specific protection to habitat and populations and allows for improvements to moose habitat. Compatible harvest and non-consumptive uses of fish and wildlife should be maintained by this policy. This policy should not have any undue negative effects on public access, public use or recreation, except that they may be curtailed when necessary to protect fish and wildlife or their habitats. This policy will not substantially increase the department's management responsibilities.

HAZARDOUS MATERIALS AND FUEL STORAGE

Issue

Develop a policy to address the placement of hazardous substances and waste in the critical habitat area.

Background

AS 46.09.900 defines a hazardous substance as, (A) an element or compound that, when it enters into or on the surface or subsurface land or water of the state, presents an imminent and substantial danger to the public health or welfare, or to fish, animals, vegetation, or any part of the natural habitat in which fish, animals, or wildlife may be found; or (B) a substance defined as a hazardous substance under 42 U.S.C 9601-9657 (Comprehensive Environmental Response, Compensation, and Liability Act of 1980); "hazardous substance" does not include uncontaminated crude oil or uncontaminated refined oil.

Disposals and spills of stored or in-transit hazardous substances have the potential to cause habitat damage in a CHA. There are no known fuel storage sites within the Willow Mountain CHA.

Proposed Policy

The storage of small amounts of petroleum-based products (ten gallons or less, not including fuel in vehicle tanks) properly contained in an occupied camp or stored in appropriate containers in an authorized off-road vehicle or trailer, is generally allowed. No petroleum based product can be disposed of within the critical habitat area.

The storage or disposal of hazardous substances (as defined by AS 46.09.900) within the critical habitat area is prohibited. Storage of more than ten gallons of petroleum-based products within the critical habitat area is prohibited, except that the department may, in its discretion, issue a Special Area Permit authorizing the storage of petroleum-based products within the critical habitat area. Exceptions will only be authorized if the fuel storage occurs in association with a permitted habitat enhancement or trail improvement project. Disposal of petroleum based products within the critical habitat area is prohibited.

Evaluation

This policy would help prevent impacts to fish and wildlife populations and their habitats from pollution with petroleum-based products or hazardous materials. Impacts to fish and wildlife harvest, and resources, would be avoided. This policy would not impact motorized access, since small amounts of petroleum-based products needed for transportation are not prohibited. There would likely be no significant change in management responsibilities for permitting, monitoring, and enforcement; however, with the remoteness of the CHA, an increase in monitoring and enforcement could be warranted.

CAMPING

Issue

Develop a policy that provides guidance for determining where and under what terms and conditions camping may be allowed in the CHA.

Background

Under the DNR's Generally Allowed Uses on State Land (11 AAC 96.020), recreational camping is allowed for up to 14 consecutive days in the same location without a permit, provided that it is not part of any commercial activity and does not contribute to significant disturbance of vegetation, drainage, or soil stability. After 14 consecutive days, campers must move to a new location at least two miles away from the original site.

Based on scoping comments and input from Division of Wildlife Conservation staff, it seems that most camping within the Willow Mountain CHA occurs in conjunction with fall moose hunts. While most of the hunting in this area is done without a guide, the camping policy for the Willow Mountain CHA should maintain a balance between allowing public access and to the CHA's resources and preventing proprietary use. There are currently no commercial guiding leases issued within the CHA.

Proposed Policy

Non-commercial camping within the critical habitat area for up to 14 consecutive days in the same location is allowed without a Special Area Permit. Establishment of a non-commercial camp for more than 14 consecutive days at any one location within the critical habitat area, or relocating a non-commercial camp within a two-mile radius of the original campsite within 14 days of its establishment, is prohibited, except under the terms and conditions of a Special Area Permit.

Any campsite must be marked with the responsible party's full name and date of arrival when there are no people present in the campsite.

Commercial camping within the critical habitat area is prohibited, except under terms and conditions of a Special Area Permit.

While camping within the critical habitat area, all food and garbage must be stored in a manner that does not attract bears or other wildlife. Methods to isolate food and garbage may include, but are not limited to: bear-resistant containers, electric fences, and food caches suspended at least 10 feet off the ground and hung at least 100 feet away from camp. After camping, all camping equipment and associated materials (including garbage) must be removed from the critical habitat area. Solid waste disposal is not allowed within the critical habitat area. Human waste must be disposed of in accordance with DEC's Temporary Camp Practices. Only dead and down trees or brush may be utilized for campfires or other camping purposes.

The following definitions apply for the purposes of implementing this camping policy:

"Commercial camping" refers to any activity that is associated with the provision of assistance for compensation, or with the intent to receive compensation, to persons who camp in the critical habitat area.

"Solid waste" refers to garbage, refuse, or abandoned or otherwise discarded solid or semi-solid materials (excluding human waste), regardless of its source or level of decomposition.

Evaluation

Public access for camping opportunities in the CHA will be maintained. The policy would help to reduce user conflicts for preferred camp sites and prevent proprietary use. Appropriately sited and maintained camps, which isolate food and garbage, should avoid impacts from food conditioning to wildlife populations. Restrictions to public camping could be implemented should future impacts occur. Management responsibilities could increase to assure implementation of the policy.

MOTORIZED ACCESS

Issue

Develop a policy identifying appropriate off-road use of motorized vehicles in the Willow Mountain CHA and the terms and conditions under which that use may be authorized.

Background

Motorized vehicle use in the Willow Mountain CHA is an important issue for members of the

public that access the area for hunting, trapping and general recreation, as well as for land managers, who must balance public access with the protection of fish and wildlife habitat. Most motorized use in the CHA currently occurs primarily by small off-road vehicles (ORVs), such as all-terrain vehicles (ATVs) during the summer and fall, and snowmachines during the winter – though the areas east and south of the CHA have several trails that appear to be used regularly by larger ORVs. There may be rare fixed wing aircraft landings in the CHA, but there have been few known helicopter landings, and there is no motorized vessel traffic in the CHA's streams. Habitat impacts due to motorized use in the CHA, then, primarily arise from ORV traffic, and this has been a concern of ADF&G biologists since the area was established in 1989.

These concerns mostly center on damage to soil, surface hydrology, and vegetation, but also include habitat fragmentation due to noise and wildlife disturbance caused by motorized traffic in remote areas. Research has shown that ORV traffic can compress soil matrices, which decreases the productivity and diversity of native vegetation and increases the chances of invasion by exotic species – especially when their seeds are introduced to an area by vehicle traffic. Lower vehicle weights can also be generally correlated with less powerful engines and narrower trail footprints, both of which mitigate the extent of ground disturbance. Ruts caused by conventional ORVs damage the vegetative mat and affect the hydrology of a watershed by channelizing runoff. Over time, this channelization can increase rates of soil erosion and contribute to sedimentation of streams. Some larger (six- or eight-wheeled) vehicles cause greater damage to vegetation and soils because they steer by spinning their wheels on either side at different speeds, thereby dragging the slower wheels across the ground (also known as "skid-steering"). Finally, ORV traffic can fragment wildlife habitat, altering the movement patterns of affected species and limiting a population's use of available cover or food sources, as individual animals seek to avoid noise and disturbance.

These considerations influenced the Department of Natural Resources (DNR) most recent update of its Generally Allowed Uses (GAUs). In 2008, DNR chose a maximum curb weight of 1,500 pounds (defined as the vehicle's dry weight plus a full tank of fuel and oil) for vehicles traveling across state land. This weight limit was intended to protect soil and vegetation from damage due to skid-steering vehicles while allowing members of the public to travel across state land on conventional ORVs without a permit. After this decision, the Department of Fish and Game, Habitat Division (ADF&G Habitat), updated the weight limit restriction on ORV travel in the Willow Mountain CHA's General Permit, which is issued annually. Given its legislatively designated status as key habitat for moose populations in the Matanuska-Susitna river valley, ADF&G Habitat chose a maximum weight limit of 1,000 pounds dry weight (as published by the manufacturer) for ORV travel in the CHA in order to protect the area from the impacts of larger ATVs.

Historically, the maximum weight limit for motorized vehicles in the CHA has been high enough to allow full-size vehicle traffic. A General Permit (GP) for motorized access has been issued almost every year since the CHA's establishment in 1989. From 1989-1991, the GP carried a 6,000 lb. *gross* vehicle weight restriction. From 1997-2007 the GP carried a 10,000 lb. *gross* vehicle weight restriction (there is no record of a GP being issued for the Willow Mountain CHA from 1992-1996). From 2008 to 2016, the GP carried a 1,000 lb. *dry* weight vehicle restriction; after 2016 this was amended to gross vehicle weight. All Willow Mountain CHA GPs have restricted motorized use to designated trails unless there is sufficient snow cover to protect the soil

and vegetation from erosion as specified in the GP.

There are currently two designated trails traversing the CHA. One designated trail approaches the western border of the CHA from the Willer-Kash Road and bisects the CHA before crossing out through its eastern border. Recent trail condition surveys found this trail to be deeply rutted as it approaches the CHA, with one significant stretch within the CHA where the soil and vegetative mat have been severely impacted by ORV traffic. As this trail ascends Willow Mountain, it travels across drier ground and trail conditions improve. The second designated trail branches off the first trail near the top of Willow Mountain and heads north, where it crosses back into the CHA, descends the northern slope of the mountain, and ends at the southern bank of Little Willow Creek. The trail itself appears to continue north after an unauthorized crossing of Little Willow Creek before it branches and leads out of the CHA to the east and the west. These two trails have been designated for ORV use since the area's establishment in 1989, though their condition on the ground appears to have deteriorated since that time due to increased traffic and greater impact of today's ORVs.

As technology has improved over the past two decades, ORV engines have increased in size and power, especially those found in ATVs. A survey of 2012 and 2017 model ATVs and utility task vehicles (UTVs, also known as "side-by-sides"), found that almost all ATVs on the market today are now under the Willow Mountain CHA's weight restriction of 1,000 pounds weight. Of the one hundred thirty-three 2017 model year ATVs reviewed, only one was over 1,000 lbs. The majority range in weight between 600 and 800 lbs. All three 2017 model year 6x6 ATVs exceeded 1,000 lbs. Of the skid-steer UTVs, in 2012, the four smallest models on the market were under the Willow Mountain CHA's weight restriction, though the other seven models are still too heavy to be allowed in the CHA. Of the conventional-steering UTVs, only two were light enough to travel in the Willow Mountain CHA based on current restrictions, while the remaining eight models are too heavy. None of the 2012 models of the four-seat UTVs are light enough to be allowed in the CHA; only the heaviest of the 2012 four-seat UTV models surveyed is over DNR's GAUs limit of 1,500 lbs. curb weight, the other 38 were under. Weight specifications for one hundred fifteen UTVs were available for review in 2017, of these, two were under 1,000 lbs. and fifty-five more were under 1,500lbs. The remainder ranged between 1,500lb and 2,370 lbs.

Proposed Policy

The off-road use of a wheeled, tracked, ground contact or other ground effect motorized vehicle is prohibited within the critical habitat area, except that the department may authorize motorized use through one, or a combination of more than one, of the following permits:

- 1) A General Permit authorizing off-road vehicle (ORV) use on designated trails within the critical habitat area. This General Permit will include restrictions on vehicle weights and types, timing of vehicle use, and/or trail access, as needed, to minimize impacts on vegetation, soils, and surface hydrography. These restrictions will be used as necessary to minimize trail deterioration or the creation of new unauthorized trails; where the department is unable to repair ORV damage from on or off trail use, additional limitations on vehicle weight or seasonal use may be implemented.
- 2) A General Permit authorizing ORV use throughout the critical habitat area when there is sufficient snow cover and ground frost to prevent the penetration of or disturbance to the

soil surface or plant roots. This General Permit will indicate when snow cover and frost conditions are sufficient to satisfy this standard.

3) An individual Special Area Permit for off-trail ORV use within the critical habitat area in association with an authorized habitat enhancement or trail improvement activity.

Ski-mounted fixed-wing aircraft may land and take-off in the critical habitat area without a permit when sufficient snow cover is present.

Wheeled, fixed-wing aircraft and rotary aircraft landings are prohibited without an individual Special Area Permit or authorization under a General Permit.

In all cases, the department will restrict motorized access when necessary to protect fish and wildlife habitat, prevent unnecessary disturbance or displacement of fish and wildlife populations, or to maintain the compatibility of public recreation with the critical habitat area's purposes. The department will cooperate with user groups and other agencies on trail restoration projects as described in the Trails policy of this plan.

Definitions for this policy:

Vehicle weight- Gross vehicle weight is the weight of the vehicle with cargo and passengers. Weight of a trailer is not included in the vehicle's gross weight, but the weight of the loaded trailer should not exceed the ORV weight restriction identified in the permit.

Designated trail- trail identified on map included in permit and/or identified by ADF&G trail markers in the Willow Mountain CHA.

Off-road vehicle- wheeled, tracked, or other ground effect motorized vehicles including but not limited to: all-terrain vehicles such as four wheelers, dirt bikes, dune buggies, side-by-sides; full sized vehicles such as trucks or jeeps; utility vehicles with wheels, or tracks or a combination of both; or wheeled aircraft. Bicycles are not considered ORVs in this policy.

Evaluation

This policy would guide use of off-road vehicles in order to minimize disturbances to moose foraging patterns, as well as damage to vegetation and increased sedimentation in local watersheds. This policy would maintain current patterns of legal public access in the CHA, including fish and wildlife harvest and non-consumptive uses, provided that trail conditions are adequate. The department's management responsibilities could increase in an effort to inform the public and enforce off-road vehicle restrictions.

HABITAT ENHANCEMENT

Issue

Develop a policy that gives guidance for appropriate habitat enhancement in the Willow Mountain CHA and identify the impacts to consider when reviewing enhancement projects.

Background

Enhancement projects generally involve increasing the quality or quantity of existing habitat in order to promote the growth of a specific fish or wildlife population, with the ultimate goal of increasing the available harvest of that population. Enhancement projects may also create or expand habitat in order to mitigate the impacts of human development. In contrast, habitat projects that aim to restore a damaged habitat or a depleted population would be better described as habitat restoration efforts.

The widespread clearing of land (and the occasional wildfire) associated with the settlement of the Mat-Su Valley in the mid-20th century increased the quality of moose habitat in that region. Since that time, the availability of moose browse has decreased as the vegetation has gone through the natural stages of succession, and the area's moose population has begun to decline. Since 2003, the moose population has been on an increasing trend. Research indicates that Willow Mountain has remained an important area of post-rut habitat for moose from populations in the Matanuska and Susitna River Valleys.

Public scoping comments indicate that members of the public are generally supportive of habitat enhancement projects—such as trimming willow browse within the Willow Mountain CHA. Other considerations raised by the public include whether enhancement projects should be limited to moose habitat, and whether enhancement projects should include activities such as supplemental feeding. Also, questions arose in the public scoping meetings as to how an enhancement policy would interact with potential land clearing activities in the CHA, and whether enhancement projects would be implemented only in response to a specific event or problem. Finally, members of the public indicated a preference for habitat enhancement projects that are based on scientific research and that are conducted sustainably.

Proposed Policy

The department may, in its discretion, allow habitat enhancement projects—including vegetation clearing or prescribed fire—within the critical habitat area under the terms and conditions of a Special Area Permit. The department may also require that vegetation clearing or re-vegetation incidental to other permitted projects – such as timber clearing or trail restoration – be conducted in such a way as to enhance habitat. Any habitat enhancement projects must further the area's management goals, particularly with respect to moose habitat, and must take appropriate measures to avoid introducing non-indigenous species into the critical habitat area.

Evaluation

Enhancement of fish and wildlife habitats could result in increases in population numbers or densities that are the focus of enhancement efforts. Decreases or increases in some non-target species could also occur. Implementation of enhancement activities could limit public access in the short-term; however, long-term public access should be maintained. Enhancement activities would require increased management effort for planning, implementation, and monitoring projects.

TRAILS

Issue

Develop a policy that provides guidance on the management of trails within the Willow Mountain CHA.

Background

There are many recreational trails in the Willow Mountain area, used by ORVs, hikers, skiers, snowmachines, and dog mushers. Several of these trails cross into the Willow Mountain CHA: one from the south, three from the east, and two from the west. Of these, only two trails are authorized by General Permit for use by ORVs. These trails have been designated on maps accompanying the Willow Mountain General Permits since 1989.

Erosion and habitat degradation have been concerns on these trails since the establishment of the Willow Mountain CHA. Recent surveys of the trails in and near the critical habitat area indicate that some trails through boggy areas may have become impassible to ORVs that are small enough to travel into the CHA based on the General Permit restriction of 1,000 lbs. gross vehicle weight, and that habitat damage may be occurring.

Public comments indicate that access to the Willow Mountain area via existing trails is an important issue. The ORV community voiced strong support for the idea of improving and maintaining these trails for future use and indicated a desire to work with the department to seek funding for trail stabilization projects.

Proposed Policy

The department may, in its discretion, issue a Special Area Permit for the improvement, maintenance, and re-routing of authorized trails within the critical habitat area in order to minimize negative habitat impacts (e.g., damage to vegetation and alterations of surface hydrology) due to continued ORV traffic. The department may, in its discretion, restrict the use of trails within the critical habitat area when necessary in order to mitigate impacts to fish and wildlife or habitat damage. The department will restrict trail use within the critical habitat area on a seasonal basis when necessary. Construction of new trails may be authorized, under the terms and conditions of a Special Area Permit, if they are suitably designed to minimize habitat damage, and if the trails meet public need that is not otherwise addressed. This policy is intended to minimize the future proliferation of trails within the critical habitat area.

Evaluation

This policy would minimize impacts to fish and wildlife populations and their habitats by limiting the proliferation of trails within the CHA. This policy would maintain current or comparable public use patterns in the area for fish and wildlife harvest as well as non-consumptive use of fish and wildlife. The department's management and monitoring responsibilities may increase if trail restoration or new trail development projects are undertaken within the CHA.

STRUCTURES

Issue

Develop a policy to provide direction on whether or not commercial and non-commercial structures can be built in the Willow Mountain CHA.

Background

There are currently no private, non-commercial structures, within the Willow Mountain CHA. Three private cabins were removed from the area by ADF&G and DNR in early 1988, just before the CHA's enabling legislation was passed. Another private cabin was removed from the northern end of the CHA by its owner at the request of ADF&G and DNR in 2009. Tent platforms and tree stands have been built and used by moose hunters in the CHA during the fall.

There are currently no permanent or temporary commercial structures within the boundary of the Willow Mountain CHA. Since the CHA has little potential for resource development, the future need for infrastructure to support oil, gas, or large-scale mineral exploration is unlikely. Likewise, harvest records indicate that few, if any, guided hunters use the Willow Mountain area, and DNR records indicate that no commercial guide camp leases have been issued in or near the CHA. Public scoping comments expressed a concern that commercial infrastructure, such as cellular repeater towers or alternative energy production facilities, could become an issue in the future as the population of the Matanuska-Susitna Valley continues to grow. Additionally, the Public Review Draft of the Matanuska-Susitna Borough's Willow Area Comprehensive Plan indicates Peters Creek, just outside the CHA boundary, as a possible future site for a hydro-electric dam project. The need for commercial structures (such as buildings, processing facilities, towers, utilities, equipment storage) within the Willow Mountain CHA is minimal, though there may be some need associated with future habitat enhancement projects.

Proposed Policy

The construction of permanent commercial or private structures, including cabins, within the critical habitat area is prohibited.

The department may, in its discretion, allow for the construction of structures associated with an authorized habitat enhancement, trail improvement project, or other department management actions under the terms and conditions of a Special Area Permit.

The department may, in its discretion, authorize the construction and use of temporary, non-commercial structures, (such as tent platforms, bear bait stations and associated stands) that remain in place for up to six months, under the terms and conditions of a Special Area Permit.

The department may issue a general permit authorizing the installation of prefabricated, portable tree stands for less than 14 consecutive days in the same location. Tree stands that do not comply with a general or individual special area permit will be considered in trespass and may be removed at ADF&G's discretion.

Evaluation

This policy would minimize impacts to fish and wildlife populations and their habitats by limiting structures that could be built in the CHA to only temporary ones that are associated with a project that relates directly to the area's goals. Public access and fish and wildlife harvest levels would be maintained. The department's management and permitting responsibilities will not be significantly affected.

INFORMATION AND EDUCATION

Issue

Develop a policy to provide guidance to the department in developing information and educational materials about the Willow Mountain CHA and its fish and wildlife habitat value.

Proposed Policy

The department will provide information to critical habitat area users and the general public regarding its resources and use restrictions. The department will encourage educational projects involving critical habitat area resources and their uses.

Evaluation

This policy will lead to long-term benefits for the CHA's fish and wildlife populations and their habitat through increased user awareness of issues related to habitat conservation. Fish and wildlife harvest and non-consumptive uses of fish and wildlife will not be affected. The department's management responsibilities may increase slightly through efforts to post and maintain signs within the CHA.

MINING PETROLEUM RESOURCE EXTRACTION AND MATERIAL SALES

Issue

Develop a policy to provide guidance on the terms and conditions under which mining and petroleum resource extraction could be permitted within the Willow Mountain CHA.

Background

The potential for mineral resources within the Willow Mountain CHA is considered low. The area's geology is best described as a transition zone from the mineral-rich quartz deposits near Hatcher Pass to the coal-rich Susitna sedimentary basin to the west. Given the lack of quartz in the rock that underlays the CHA, and the relative shallowness of its sedimentary layer, it is unlikely that the area has significant mineral or coal deposits. During this plan development, there was one active mining claim within the CHA, located in its far southeastern corner on Peters Creek (T20N, R02W, Section 19). There is a Leasehold Location Order (LLO No. 9), along the length of Little Willow Creek that includes the northwest corner of the CHA, and a Mineral Order (MO No. 160) that closes lands along the western border of the CHA to mining. There is history of placer mining efforts near the CHA, and of more extensive and successful gold mining operations in other areas of the Hatcher Pass region. The state owns the sub-surface resources underlying lands in the CHA.

Members of the public may stake a mining claim on any state lands, including a critical habitat area, unless that location has been closed to mineral entry or placed under a Leasehold Location Order (LLO). The Commissioner of DNR has the authority to close up to 640 acres of land within the CHA to new mineral entry under AS 38.05.185-38.05.275, Closing the entire CHA would require approval from the legislature.

The Commissioner of DNR can also establish an LLO for the CHA that would only allow mining that is consistent with critical habitat area values, and that is compatible with the purposes for which the CHA was established. Under an LLO, an individual who makes a mineral discovery within the CHA would receive a *leasehold location* rather than a *mining claim*. A leasehold location is subject to mining under lease stipulations, in addition to the required permits and operational review by DNR.

Proposed Policy

Mining, including any activities on active mining claims or leaseholds within the critical habitat area, conducted without a Special Area permit is prohibited. Mining may only occur under the terms and conditions of a Special Area permit.

For the purposes of implementing this policy, conditions under which mining activity may be considered compatible with the critical habitat area's goals may include, but are not limited to, the following: not adversely affecting water quality, not introducing invasive plant species, not resulting in the construction of permanent or proprietary trails, not disrupting wildlife or recreational use patterns due to noise, and mitigating any land clearing activity by re-vegetating the affected area in a manner that enhances moose habitat.

Recreational mining using mechanically-powered equipment (for example, suction dredges and power sluices) is prohibited within the critical habitat area, except that mining may occur under the terms and conditions of a Special Area permit. Gold panning and other manual, minimally invasive mining activities are generally allowed without a Special Area permit within the critical habitat area.

Surface activities associated with petroleum resource extraction within the critical habitat area are prohibited. Material sales within the critical habitat area are prohibited.

Evaluation

The policy is consistent with past management practices of allowing small scale recreational mining activities within the CHA, under a special use area permit. This policy would minimize impacts to fish and wildlife populations and their habitats by limiting commercial mining within the CHA and minimizing the potential cumulative impacts of recreational mining. This policy would maintain current levels of public access and use, including non-consumptive uses of fish and wildlife, and would have no effect on the department's management responsibilities in the area.

ROADS AND AIRSTRIPS

Issue

Develop a policy that provides guidance for the construction, use, and maintenance of roads and airstrips within the Willow Mountain CHA.

Background

There are currently no roads, airstrips, or hardened trails within the Willow Mountain CHA. The Willow-Fishhook Road runs approximately two miles south of the CHA, and the gravel-topped Willer-Kash Road branches off that to run north-south approximately two miles west of the CHA. One dirt spur road branches off the Willer-Kash Road near the southwestern corner of the CHA boundary. These dirt roads were originally built to access timber stands at the base of Willow Mountain and are now used to gain access to ORV trails in the area, some of which lead into the CHA.

Proposed Policy

The construction of roads and airstrips within the critical habitat area is prohibited, except that the department may, in its discretion, allow for the construction of a new temporary road in conjunction with an authorized habitat enhancement project under the terms and conditions of a Special Area Permit.

Evaluation

This policy would avoid impacts to fish and wildlife populations and their habitats from new road construction. Current levels of public access, recreation, and fish and wildlife harvest activities would be maintained. There would be no significant changes in the department's management or permitting responsibilities, though some monitoring may be required if a temporary road associated with a habitat enhancement project is authorized.

UTILITY LINES

Issue

Develop a policy to provide guidance on the construction, use, and maintenance of utility corridors within the Willow Mountain CHA.

Background

There are currently no utility corridors in or through the CHA. A power line operated by the Matanuska Electrical Association runs just east of the George Parks Highway, approximately 10 miles west of the CHA. Lands immediately to the north and east of the CHA are undeveloped, but potentially are accessible via existing corridors along the Fishhook Road or the Parks Highway. Timber clearing necessary to construct and maintain utility corridors makes ORV travel into otherwise inaccessible areas possible. Powerline corridors and utility lines are popular routes of travel for ORVs in nearby State Game Refuges, and the increased traffic due to the construction of a utility line could impact fish and wildlife or their habitat on Willow Mountain.

Proposed Policy

The construction of any new utility lines in the critical habitat area is prohibited, except that the department may, in its discretion, allow for the construction of a utility line under the terms and conditions of a Special Area Permit, if no feasible alternative exists. Terms and conditions of the permit may include provisions to minimize the potential for creating unauthorized off-road vehicle access routes.

Evaluation

This policy would minimize impacts to fish and wildlife populations and their habitats from the construction of utility lines. Public access to the Willow Mountain CHA, as well as current levels of recreational and fish and wildlife harvest opportunities, would be maintained. There would be no significant increase to the department's management, permitting, or monitoring responsibilities.

WATER QUALITY

Issue

Develop a policy that provides guidance on water quality issues in the Willow Mountain CHA.

Background

Seven anadromous streams flow through or have their headwaters in or near the Willow Mountain CHA. These streams provide spawning and rearing habitat for Chinook, coho, chum, and pink salmon. High quality water is essential for the growth and propagation of fish and other aquatic life. Wildlife populations and terrestrial plant communities also rely on clean water.

Although there is minimal potential for contamination from industrial, residential, or other point sources in this location, extensive vegetation clearing, and burns can result in increased run-off and sedimentation if riparian buffers are not left intact. Improperly sited or designed trails and vehicular stream crossings can also increase the potential for erosion and sedimentation of streams. Water impoundments can alter the temperature and flow of downstream reaches.

Proposed Policy

Activities in the critical habitat area shall be conducted in a way that does not alter the natural occurring water quality and complies with state water quality standards.

Cumulative effects of discharges will be considered when determining whether to allow multiple activities within the critical habitat areas that individually meet the above specified standards, or whether to require mitigation such as riparian buffers or stream crossing structures.

Evaluation

This policy would avoid impacts to fish and wildlife populations and their habitats from poor water quality. Public access to the CHA, as well as current levels of recreational and fish and wildlife harvest opportunities, would be maintained. There would be no significant increase to the department's management, permitting, or monitoring responsibilities.

RECREATIONAL ACTIVITIES

Issue

Develop a policy that provides guidance for determining the appropriate types and levels of recreational activities in the Willow Mountain CHA.

Background

While the primary intent of the Willow Mountain CHA is to protect the area's exceptional fish and wildlife habitat, the secondary intent also mentions that the area should "provide opportunities for hunting, trapping, and other dispersed recreational activities." One of the primary public uses of the area is for moose hunting in the fall.

Proposed Policy

Lawful recreational activities—including wildlife viewing, fishing, trapping, hunting, and the gathering of wild resources—within the critical habitat area are generally allowed. Use levels may be managed through the issuance of Special Area Permits, if necessary, to avoid adverse impacts to fish and wildlife and their habitat. Activities for which Special Area Permits may be required to manage use levels include, but are not limited to, motorized access and camping.

Evaluation

This policy would minimize impacts to fish and wildlife populations and their habitats by requiring Special Area Permits if use reaches a deleterious level. Public access to the CHA, as well as current levels of recreational and fish and wildlife harvest opportunities, would be maintained. There would be no significant increase to the department's management, permitting, or monitoring responsibilities, currently.

FIRE MANAGEMENT

Issue

Develop a policy to provide guidance to staff to manage wildland fire response efforts or to use fire as a habitat enhancement technique.

Background

The lower slopes of Willow Mountain are covered with stands of mixed timber (white spruce, birch, cottonwood, and aspen). The north- and south-facing slopes of Willow Mountain tend to support more mature spruce communities, while the western aspect has mostly mixed deciduous and conifer forests transitioning upslope to gradually more open stands of scrub willow and alder. These stands of willow and alder have been described as unusually extensive for the area and are the primary reason the area is classified as important moose habitat.

Wildland fires could impact mature trees and controlled burns could also be used to manipulate species and age composition of trees to benefit moose, by promoting willow and alder growth, or spruce grouse by promoting more aspen growth. Fire can be managed in two ways: either through deliberate use of controlled burns or by selective responses to wildfires.

The Alaska Interagency Wildland Fire Management Plan dictates the level of response for the region around Willow Mountain, based on infrastructure and other factors. The Willow Mountain CHA includes a mixture of fire suppression areas: mostly of “limited” protection at higher elevations and “modified” protection at lower elevations. Extremely small portions of the “full” protection area cross the boundaries at the southern portion of the CHA. Limited protection is the lowest level of fire protection and is typified as areas where suppression cost exceeds the value of natural resources and areas with the best opportunities for fire to help achieve land and resource protection objectives. Modified protection is for areas where suppression costs should be minimized without compromising adjacent higher-valued resources and responses may vary by season. Full protection requires controlling the fire at the smallest acreage reasonably possible.

Proposed Policy

The department will coordinate with the protection agency or incident command to ensure that appropriate authorization and mitigation is implemented for fire suppression and operation activities in the critical habitat area. The department will review suppression repair plans for critical habitat area management concerns.

As designated in the Alaska Interagency Wildland Fire Management Plan, the fire management option for Willow Mountain CHA is mixed limited, modified, and full. The protection agency, during a wildland fire response, will determine whether conditions will allow for wildland fire use for habitat improvement. Where there is minimal risk to human life and property in limited and modified response areas, fires will be managed to improve wildlife habitat, with a priority for moose habitat (willow stands).

Emergency fire suppression may be authorized under 5 AAC 95.940. Actions to prevent and mitigate wildland fires shall be reviewed through the Special Area permitting procedures in 5 AAC 95.700-770.

Evaluation

This policy ensures that fire can be used as a habitat management tool when appropriate, which will have beneficial effects for habitat and fish and wildlife populations. Compatible harvest and non-consumptive uses of fish and wildlife will be maintained by this policy. This policy should not have any undue negative effects on public access, public use, or recreation, except temporarily during fire management activities. This policy will not substantially increase the department’s management responsibilities.

ALL OTHER USES

Issue

Develop a policy that guides permitting decisions within the critical habitat area for uses and activities that are not directly addressed by the policies in this plan.

Proposed Policy

To protect fish and wildlife populations and their habitats in the critical habitat area from the potential impacts of other uses not explicitly described in this plan, the department may allow, by

permit, only those activities compatible with the purposes for which the critical habitat area was established, the terms and standards of 5 AAC 95, and the goals and policies of the management plan. Activities other than those specifically identified in this management plan may be authorized by Special Area Permit only when consistent with the goals and policies of this plan.

Evaluation

This policy ensures that all projects authorized by the department in the CHA are reviewed in reference to the overarching habitat protection standards developed in this plan and contained in statute, even if the proposed use was not considered during the planning process. Compatible harvest and non-consumptive uses of fish and wildlife will be maintained by this policy. This policy should not have any undue negative effects on public access, public use, or recreation, except where they may be curtailed to protect fish and wildlife populations or habitat. This policy will not substantially increase the department's management responsibilities.

IMPLEMENTATION

The *Willow Mountain Critical Habitat Area Management Plan* will be implemented by the Alaska Department of Fish and Game through its day-to-day management activities, annual budgetary process, and Special Area Permits issued for land use activities in the Willow Mountain CHA.

SPECIAL AREA PERMITS

A Special Area Permit is required for any habitat-altering activity within the Willow Mountain Critical Habitat Area, including the construction of infrastructure, or any other activity that may disturb fish or wildlife other than lawful hunting, trapping, and fishing (5 AAC 95.420). Department biologists review applications for proposed projects in coordination with other department staff and use available data and their best professional judgement to determine if a proposed project will be permitted. Only those projects that are compatible with the statutory purpose of the CHA, as well as the goals and policies of this management plan, may be permitted. The policies in this plan also provide specific guidance to the permitting biologist on the terms, conditions, and limitations that should be incorporated in the permit's stipulations (5 AAC 95.720), to ensure that any impacts to fish and wildlife or their habitats caused by a permitted project are mitigated (5 AAC 95.900). The permitting biologist often reviews similar previously issued permits to maintain consistency. A Special Area Permit application form can be obtained from any Alaska Department of Fish and Game office or from the department's website.

The completed application shall be submitted to the Habitat Section Office in Palmer (5 AAC 95.700).

The department may also issue a General Permit (GP), allowing a specific activity that would otherwise be prohibited in the Willow Mountain CHA (5 AAC 95.770). A GP is issued in response to a public need in order to facilitate access to or uses of the CHA that would otherwise be too cumbersome to permit on an individual basis. The authorized activity is typically a small-scale activity with minimal impacts, such as the use of certain motorized vehicles on designated trails within the CHA. Each GP is issued to the general public, contains specific stipulations on the permitted activity, and is reviewed annually by the permitting biologist to determine if it should be issued again. Individual members of the public do not need to apply for a GP, but they are still responsible for abiding by the stipulations and restrictions described in the permit, as well as for securing other state, federal, and local permits that may be required for other associated uses. Copies of current GPs for the Willow Mountain CHA can be obtained from the department's website or by contacting the Habitat Section Office in Palmer. General Permits are required to be in the possession of the individual conducting the authorized activity.

Violations of permitting requirements, terms and conditions of permits and other Special Area statutes in AS 16.20 and regulations in 5 AAC 95 are class A misdemeanors under AS 16.05.925. A person who violates a provision of 5 AAC 95 is strictly liable for the offense, regardless of that person's intent. (5 AAC 95.902)

Certain violations may have bail amounts assigned under AS 16.05.165. Equipment and paraphernalia used in violation may be seized or disposed of as described in AS 16.05.190 and AS 16.05.195.

BOUNDARY ADJUSTMENTS

ADF&G's original proposal for the Willow Mountain CHA included all lands within the Willow Mountain Subunit of the 1986 Hatcher Pass Management Plan (approx. 125,000 acres). ADNR's concern that designation as a critical habitat area would conflict with multiple uses of the Willow Mountain Subunit, such as mining and grazing, prompted the proposal of a smaller area (approx. 22,400 acres) that protected only the most important moose habitat. That compromise led the legislature to designate the current size and shape of the CHA when it was created in 1989.

ADF&G's Special Area permitting authority only applies to lands included in the legal descriptions of special areas. Other state lands near the Willow Mountain CHA are subject to the restrictions of their land status designation in DNR's Hatcher Pass or Susitna Lowlands Area Plans; DNR has created a list of Generally Allowed Uses (GAUs), which describes activities that may occur on state lands without a permit or lease from DNR.

The GAUs are designed to minimize impacts to allow uses without permitting requirements on general state lands and are typically less restrictive than the policies of a critical habitat area which are designed to protect habitat.

ADF&G's Division of Wildlife Conservation biologists have expressed concern that the Willow Mountain CHA would better achieve its legislative purpose of protecting the area's important moose habitat, particularly areas of dense post-rut congregation, if it encompassed a larger area. ADF&G's original proposal referenced the entire Willow Mountain Subunit of the Hatcher Pass Management Area as important moose habitat, and research in the Lower Susitna river valley since that time has suggested that moose use more than just the timberline.

The department will coordinate with DNR to prepare a recommendation to the legislature to amend the Willow Mountain CHA's statutory boundary description to include important moose habitat in the vicinity of Willow Mountain.

MINING

The department may propose, after coordination with DNR, a Mineral Order (under AS 38.05.185-38.05.300) or a leasehold location order for the Willow Mountain CHA, recommending that the CHA be closed to new locatable mineral entry, mineral prospecting, and mineral leasing.

TRAILS

As funding and staffing levels allow, the department will coordinate with user group organizations and other agencies to maintain existing, authorized trails within the critical habitat area in order to minimize negative impacts to habitat, including the cumulative impacts of off-road highway vehicle (OHV) traffic. The department will cooperate with other agencies and organizations pursuing trail rehabilitation and restoration projects that are compatible with the CHA's goals and statutory intent, and other projects that promote stewardship of the CHA by its users.

ACTIONS OF FEDERAL, OTHER STATE, AND LOCAL AGENCIES

This plan may also be used as appropriate by other state, federal, and local decision-makers in planning for and making decisions for the CHA under their respective statutory authorities.

The Willow Mountain CHA overlaps with state lands managed by DNR under the Hatcher Pass Management Plan, Willow Mountain Management Unit. DNR and ADF&G act as co-managers of this area; both agencies retain their individual regulatory authorities. Authorizations must be obtained from both DNR and ADF&G for any activity that is regulated by both departments. Upon adoption of the Willow Mountain CHA Management Plan by ADF&G, DNR management will be conducted consistent with the CHA management plan. Uses not controlled by the CHA management plan are to be authorized by DNR, consistent with DNR's current land use plan for the area. In situations where department requirements are not the same, the most restrictive authorization must be obtained before the activity can proceed.

PROPOSED CHANGES TO 5 AAC 95

Amend 5 AAC 95 by adding new section to adopt the final management plan by reference, and to adopt some plan policies as individual regulations to facilitate implementation of the plan. Specific regulations based on the final draft of this plan will be adopted pursuant to the Administrative Procedures Act and will be included in the final draft of the plan.

Public Review Draft

**WILLOW MOUNTAIN
CRITICAL HABITAT AREA
MANAGEMENT PLAN**

APPENDIX A: RESOURCE INVENTORY

by

Habitat Section

and

Division of Wildlife Conservation



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INTRODUCTION

In 1989 the Alaska Legislature established the Willow Mountain Critical Habitat Area (CHA) in order to protect the exceptional moose habitat found on the western slopes of Willow Mountain (§ 2 ch 28 SLA 1989). The Willow Mountain CHA encompasses approximately 23,000 acres of state land in the southwestern Talkeetna Mountain Range, stretching from Willow Creek in the south up to the Kashwitna River in the north. The Willow Mountain CHA ranges from 1,000 to 2,600 feet in elevation and includes some of the highest quality moose habitat in the Matanuska-Susitna River valley. Large concentrations of moose gather in the dense willow thickets of Willow Mountain—particularly during the early winter post-rut period—to take advantage of the high quality forage found there.

In addition to preserving the habitat of the area, the Willow Mountain CHA is also intended to provide opportunities for the public to participate in hunting, trapping, and other dispersed recreational activities.

These purposes were noted by the Alaska Legislature in the session law associated with the establishment of the Willow Mountain CHA. The session law states that “The Willow Mountain Critical Habitat Area is established to (1) protect the area's exceptional fish and wildlife habitats and populations; (2) ensure that the area will be managed primarily to maintain the productivity of the habitat for moose and will provide opportunities for hunting, trapping, and other dispersed recreational activities.”

GENERAL AREA DESCRIPTION

Willow Mountain (3,168 ft. elevation) is the southwestern-most peak of the Talkeetna Mountain Range, and its western slopes look out over the Susitna River Valley. The Willow Mountain CHA runs north-south along the tree line of those slopes, approximately 10 miles east of the Parks Highway and 2 miles north of the Willow Fishhook Road. The CHA lies along the western edge of the Hatcher Pass Management Plan area, which is managed by the Alaska Department of Natural Resources (DNR). The town of Willow (population 2,156) lies approximately 10 miles south of the CHA, and the city of Wasilla (population 8,064) lies approximately 25 miles to the east.

PRE-HISTORY & HISTORY

The Talkeetna Mountain Range was formed at least 65 million years ago, during the mid-to late-Cretaceous period, as the result of the Talkeetna superterrane pushing against the ancient North American continental plate (Csejtey 1992). Receding glaciers and increasing streamflow created the Susitna River valley, which runs along the western edge of the Talkeetna Mountains, approximately 9,000 years ago. After glaciation, vegetative succession colonized the newly exposed landscape, which likely came to resemble current-day conditions as early as 2,000 years ago.

The area was first settled by the Dena'ina Athabascans, whose semi-nomadic lifestyle brought them to the Susitna River valley seasonally thousands of years ago (Stirling 1985). There is also evidence that the Alutiiq people inhabited the lowlands toward the mouth of

the Susitna River around the same time, though the Dena'ina came to dominate the upper Cook Inlet area some time before Russian explorers landed there in the late 1700s (Cohen 1982).

Robert Hatcher discovered gold in the Willow Creek Mining District in 1906, which ushered in an era of exploration and rapid development in the region (Stirling 1985). Most traffic into the area arrived by boat at the small port at Knik, branching out from there into the Hatcher Pass and Willow Mountain areas on a network of trails. In 1920, the Alaska Railroad built a station at what would become the location of the town of Willow and began laying tracks north toward Talkeetna (ADCCED 2012). The railroad made exploration easier, which brought even more miners to the area, and by the 1950s, Willow Creek was the most productive mining district in Alaska, having produced over 400,000 ounces of gold in just over 50 years (Cohen 1982).

Timber clearing during the early settlement of the Matanuska-Susitna Valley, as well as multiple large wildfires in the area, increased the browse available to herbivores, and the region quickly became known for its high density of moose (Peltier 2010). Recognizing the importance of these moose populations to the residents of the state, the Alaska Department of Fish and Game (ADF&G) recommended during DNR's development of the 1986 Hatcher Pass Management Plan that the Willow Mountain area be managed with habitat as the top priority. The Willow Mountain CHA was created by the Alaska Legislature in 1989, in recognition of the important role that this habitat plays in the productivity of the area's wildlife populations.

PHYSICAL ENVIRONMENT

The landscape encompassed by the Willow Mountain CHA lies at the heart of the transition from the maritime climate of upper Cook Inlet to the continental climate of the alpine peaks in the Talkeetna Mountain Range. At lower elevations, the landscape is characterized by mixed stands of conifers interspersed with boggy wetlands, while at higher elevations unusually large stands of willow and alder give way to grasslands on the ridges of Willow Mountain (Grauvogel 1988).

CLIMATE AND WEATHER

The upper slopes of Willow Mountain are influenced primarily by the continental climate of the Talkeetna Mountain Range, with warm summers and cold, dry winters. Winter temperatures can range from -33 to 33°F, while summer temperatures vary from 42 to 83°F. Annual rainfall is only 16 to 27 inches, though 48 to 150 inches of snow have been recorded, at nearby Willow, Alaska (ADCCED 2012).

GEOLOGY & SOILS

The western slopes of Willow Mountain are underlain by the eastern edge of a geological formation known as the Susitna sedimentary basin. Little is known about the geology of this formation, which is separated from the well-studied Cook Inlet basin to the south by a major fault line, but preliminary exploration indicates that both basins have similar upper strata of tertiary rock, which is composed of sediments deposited from ancient rivers and

lakes. This upper stratum is likely not more than 2,000 feet thick near Willow Mountain, in contrast to the tertiary rock of Cook Inlet basin, which is up to 25,000 feet thick in some areas. Beyond that, almost nothing is known about the Mesozoic rock that lies below the Susitna basin's tertiary layer.

To the east of the Susitna sedimentary basin, the geology is dominated by a crystalline complex of primarily quartz diorite that extends under most of the rest of the Hatcher Pass area. This quartz formation dates from the Middle Jurassic period and contains mineral deposits – such as gold, silver, and assorted ores – that have been extracted in the past century by mining activity in the area.

While coal deposits have been found within the upper stratum of the Susitna sedimentary basin in other locations, the Willow Mountain area is generally thought to have low potential for coal, or oil and gas. Similarly, while the nearby Willow Creek mining area has been found to be rich in gold, Willow Mountain itself appears to have little in the way of potential mineral deposits.

HYDROLOGY

The headwaters of several tributaries to the Susitna River flow from the western slopes of Willow Mountain. Purches Creek, as well as several other tributaries of Willow Creek, flow through or have their headwaters in the southern end of the Willow Mountain CHA. Likewise, Iron Creek and two unnamed tributaries of Little Willow Creek flow through the central section of the CHA. Little Willow Creek and three more of its tributaries run through the northern end of the CHA, and the Kashwitna River – the largest stream in the area – runs just north of the CHA's border.

BIOLOGICAL RESOURCES

ECOREGIONS & HABITAT TYPES

The Willow Mountain CHA lies at the north-eastern edge of the Cook Inlet Basin ecoregion, which is a transitional zone between the Aleutian and Alaska Mountain ranges, characterized by wetlands, glacially-fed rivers, and mixed black spruce forests (Nowacki 2001). The lower slopes of Willow Mountain are covered with stands of mixed timber (white spruce, birch, cottonwood, and aspen), and wetlands dominated by black spruce are found in the area's lowlands (Grauvogel 1988). The north- and south-facing slopes of Willow Mountain tend to support more mature spruce communities with understories dominated by shrubs and mosses, while the western aspect has mostly mixed deciduous conifer forests with herbaceous understories, transitioning upslope to gradually more open stands of scrub willow and alder (Map 4). These stands of willow and alder have been described as unusually extensive for the area and are the primary reason the area is classified as important moose habitat (Grauvogel 1988). Above tree line, the western slopes of Willow Mountain are covered with bluejoint-dominated forb meadows that are interspersed with dwarf shrubs and ericaceous heath. The upper slopes of Willow Mountain merge into the cooler continental climate of the Alaska Range ecoregion, but the Willow Mountain CHA itself does not extend into the steep, icy slopes of the Talkeetna

Mountains, and likely experiences milder temperatures than the peaks further inland (Nowacki 2001).

AMPHIBIANS & REPTILES

The Willow Mountain CHA lies well within the range of wood frogs (*Rana sylvatica*) in Alaska. Suitable habitat for wood frogs exists at lower elevations, although there have been no documented occurrences of wood frogs in the CHA. No other amphibians or reptiles are likely to occur in the vicinity of the CHA.

BIRDS

Migrant songbirds

The Willow Mountain CHA lies within the ranges of several species of migrant song birds, the following of which have been recorded in or near the CHA in various reports: common ravens (*Corvus corax*), black-billed magpies (*Pica hudsonia*), Stellar's jays (*Cyanocitta stelleri*), rosy finches (*Leucosticte arctoa*), white-crowned sparrows (*Zonotrichia leucophrys*), Wilson's warblers (*Wilsonia pusilla*), Swainson's thrushes (*Catharus ustulatus*), downy woodpeckers (*Picoides pubescens*), larks (*Eremophila alpestris*), American pipits (*Anthus rubescens*), gray-cheeked thrushes (*Catharus minimus*), hermit thrushes (*Catharus guttatus*), savannah sparrows (*Passerculus sandwichensis*), and golden-crowned sparrows (*Zonotrichia atricapilla*).

Raptors

Several species of raptor have been recorded in the Willow Mountain CHA, including: northern goshawks (*Accipiter gentilis*), sharp-shinned hawks (*Accipiter striatus*), merlins (*Falco columbarius*), red-tailed hawks (*Buteo jamaicensis*), gyrfalcons (*Falco rusticolus*), golden eagles (*Aquila chrysaetos*), and bald eagles (*Haliaeetus leucocephalus*).

Nesting shorebirds

There are no known species of nesting shorebirds that have been observed within the Willow Mountain CHA.

Migrant shorebirds

Two species of migrant shorebirds – whimbrels (*Numenius phaeopus*), and American golden plovers (*Pluvialis dominica*) – have been observed in the Willow Mountain CHA.

Upland game birds

The Willow Mountain CHA encompasses suitable habitat for at least two species of upland game birds; namely, ptarmigan (*Lagopus lagopus*) and spruce grouse (*Falcipennis canadensis*).

Other

Various other species of birds, including long-tailed jaegers (*Stercorarius longicaudus*, and American dippers (*Cinclus mexicanus*), have also been observed in or near the Willow Mountain CHA.

MAMMALS

Moose

Moose (*Alces alces*), the largest members of the deer family, are browsers and grazers that feed on the leaves and twigs of willow, birch, and aspen trees, as well as on various sedges, pond weeds, grasses, and equisetum. Most moose migrate seasonally between preferred calving, rutting, and wintering areas, which may be up to 60 miles apart.

Adult male moose engage in the "rut" each fall – typically during September and October – in which they joust with their antlers in order to establish dominance. This agonistic behavior rarely leads to mortal injuries, but the winner of these rutting battles typically goes on to mate with several females, to the exclusion of the less dominant males. The period just after the rut is an important time in the life history of moose, as it is their last opportunity to consume large quantities of food before the coldest weather and heaviest snows of winter set in. Males, their body conditions depleted by fasting and vigorous physical competition during the rut, need to replenish their energy stores, while females need to ensure that they have the metabolic resources necessary to sustain pregnancy overwinter. After a gestation period of just under eight months, female moose give birth to calves in the spring. These calves are generally weaned the following fall in time for the females to breed, and then chased off the following spring before the female gives birth again.

Areas like the upper slopes of Willow Mountain host dense congregations of moose during this important post-rut period each year (Grauvogel 1988). Research has shown that the willow browse found in the alpine regions like the Willow Mountain CHA is an important early winter food-source for moose from the Susitna and Matanuska River valleys (Modafferi 1995). Additionally, moose from the Palmer Hay Flats area have been found to migrate to Willow Mountain during the late fall and early winter (Mastellar n. d.).

The Willow Mountain CHA falls within Game Management Unit (GMU) 14B, which encompasses a total of 2,152 square miles (of which the CHA comprises only 35 square miles). A 1987 survey of GMU 14B estimated its moose population at between 2,566 and 3,062 moose at a confidence interval (CI) of 80% (Masteller 1995). A 1999 survey estimated that from 1,443 to 1,931 (80% CI) were present in GMU 14B (Masteller 1998). The most recent survey, conducted using a different method in 2005, estimated the moose population of GMU 14B at between 1,197 and 1,627 moose (80% CI) (Peltier 2006).

Wolves

Wolves (*Canis lupus*) are members of the Canidae family and range throughout mainland Alaska and most of the major islands in Southeast Alaska. They are highly social carnivores that typically live in packs that include parents and pups of the year. Social order in the pack is characterized by a separate dominance hierarchy among males and

females. Wolves normally breed in February or March, and a litter of 4 to 7 pups is usually born in May or early June. Young adult wolves disperse when they are yearlings and seek suitable, unoccupied habitat from 20 to 700 miles from their original range.

No exhaustive wolf studies have been conducted in the Willow Mountain CHA and no packs have been identified as using the Willow Mountain CHA exclusively. However, hunting and trapping harvest reports for the last ten years for the drainages between Willow Creek and Little Willow Creek, show a relatively consistent wolf harvest which indicates the area supports a sustainable wolf population.

Bear

Both black and brown bears are known to inhabit the Willow Mountain area (Clausen 1992); however, there is no current estimate for the population size of either species in GMU 14B, though the most recent management report notes that members of the public have been “concerned about an increase in the brown bear population” in GMU 14B (Peltier 2010). The Hatcher Pass Management Plan (HPMP 2010) notes that both species of bear are known to use the Willow Mountain area.

Furbearers

Furbearers found in the Willow Mountain area include mink, weasels, beavers, coyotes, lynx, and river otter (Grauvogel 1988). Beaver are relatively scarce and would only be found in the southern and northern portions of the CHA where large, low-gradient streams and adequate forage trees are located.

Small mammals

Other small mammals found in the Willow Mountain area are species that are typical to Southcentral Alaska, such as porcupine, voles, mice, pika, and snowshoe hare.

FISH

Seven streams that support salmon populations have their headwaters in, or pass through, the Willow Mountain CHA (Table 4). Of the three named streams, coho salmon spawn and rear in Peters Creek; both coho salmon and Chinook salmon rear in Iron Creek; chum salmon, coho salmon, Chinook salmon, and pink salmon spawn, rear, or are present in Little Willow Creek. The four unnamed streams host either rearing coho salmon or rearing Chinook salmon, or both.

HUMAN USE

ACCESS

Trails

There are several trails in the general area of the Willow Mountain CHA, and two designated trails that traverse the CHA. These trails receive OHV traffic during the summer and fall, and snowmachine use during the winter. A General Permit is currently

issued allowing OHVs of less than 1,000 lbs. gross vehicle weight to travel on designated trails, and allowing off-trail access to the CHA when there are at least 12 inches of snow. Additionally, there is an RS 2477 trail that runs north-south just east of the CHA boundary. This trail is known as the Talkeetna River trail (RST 1620) and is based on a route used by a USGS survey crew returning to Knick [sic] from a trip through the pass between the Chickaloon River and the Talkeetna River (USGS 1907).

Parking & Roads

There are no developed roads or parking areas within the boundaries of the Willow Mountain CHA. The Parks Highway runs north-south approximately 10 miles from the CHA's western border, and the Hatcher Pass Road runs approximately two miles south of the CHA.

Public Use Facilities

There are no developed public use facilities within the boundaries of the Willow Mountain CHA. The Independence Mine State Historical Park lies approximately 15 miles west of the southern end of the Willow Mountain CHA.

Cabins

There are currently no cabins located within the Willow Mountain CHA although records of three trespass structures exist. Two trespass cabins were removed from the CHA by DNR and ADF&G in the late 1980s, and another cabin was removed by the builders (at the request of ADF&G) in 2009.

RECREATION & HARVEST

Game Hunting

Hunting within the Willow Mountain CHA has historically been primarily for moose, though some bear may be taken opportunistically by moose hunters (Peltier 2010). Approximately 85% of the CHA lies within the subunit (UCU 801) defined as the drainages between Willow Creek and Little Willow Creek of Game Management Unit (GMU) 14B, which in turn represents approximately 15% of the area of subunit 801. From 2001 to 2010, 344 hunters used subunit 801. Of those 344, 78 of the hunters successfully harvested a moose. This means that approximately 34 hunters per year take approximately 8 moose per year in subunit 801; however, there is no reliable way to determine how many of those hunters or moose kills are within the Willow Mountain CHA boundary.

Between 2002 and 2011, 10 brown bear and 19 black bear were taken in UCU 801, and 10 black bear and 43 brown bear were taken in UCU 901. During the same time period 80 moose were taken in UCU 801 and 43 moose were taken in UCU 901.

Trapping

Trapping is known to occur in the Willow Mountain area, and between 2001 and 2011 there have been 110 beavers, 3 lynx, 9 otters, 18 wolves, 9 wolverines, and 186 martens reported as trapped in portions of GMU 14B that may include the CHA.

Sport Fishing

There is no known sport fishing within the boundaries of the Willow Mountain CHA, though the area is approximately 10 miles upstream from the popular Willow Creek Public Use Area.

Subsistence Fishing & Hunting

The Willow Mountain CHA does not fall within a subsistence use area.

Wildlife Viewing, Photography and Education

There is no known use of the Willow Mountain CHA for wildlife viewing, photography, or educational purposes.

EXISTING & HISTORICAL RESOURCE DEVELOPMENT

There are no known instances of resource development (e.g., oil and gas leases, pipelines or utilities, timber sales) or other infrastructure or commercial facilities within the Willow Mountain CHA. At various times since the 1960's, mining claims have been recorded in the area of the Willow Mountain CHA, (mostly along streambeds). All have been relinquished or expired without having been patented; only one remains currently. Leasehold Location Order is in place for the Little Willow Creek riparian corridor to the west of, and partially intersecting the Willow Mountain CHA. Mineral Opening Order 921, for the Iron Creek Remote Parcel Area overlaps a parcel in the northwest portion of the CHA (Map1).

LAND STATUS AND MANAGEMENT

The entirety of the Willow Mountain CHA lies within the Hatcher Pass Management Plan area, abutting the area's far western edge (HPMP 2010). As of 2011, all land within the boundary of the CHA has been transferred to state ownership. At the time this plan was developed, there was one mining claim (ADL 668724) that falls within the boundary of the Willow Mountain CHA, at its far south-eastern corner (Township 20N, Range 2 West, Section 19). The mining claim is subject to state laws and regulations. There are no known easements or rights of way, private inholdings, or water reservations.

RESEARCH AND PUBLICATIONS SPECIFIC TO AREA

There has been no research conducted specific to the Willow Mountain CHA, though two studies have been conducted on moose populations that likely make use of the habitat on Willow Mountain:

Modafferi, R. D. 1995. Lower Susitna Valley moose population identity and movement study. Alaska Department of Fish and Game, Division of Wildlife Conservation. Research Final Report, Anchorage.

Mastellar, M. A. n.d. Seasonal ranges and movements of cow moose wintering on Palmer Hay Flats State Game Refuge. Alaska Department of Fish and Game, Division of Wildlife Conservation, Anchorage.

INFORMATION NEEDS

There are two primary information needs regarding the Willow Mountain CHA. The first is an accurate assessment of the area's moose habitat quality and timing of use. The second is a better understanding of impacts of ORV traffic on the quality of moose habitat in the area.

TABLES

Table 1: Vegetation communities in the Willow Mountain CHA (per Viereck et al. 1992), see Map 4.
Alaska Vegetation Classification - Viereck

Level I	Level codes	Class name	Dominant species (by % ground cover)	Sub dominant species (by % ground cover)	Classified from
Scrub	IIB1	Closed tall scrub	Salix pulchra, S. alaxensis	Calamagrostis canadensis, ferns, Carex spp.	Site visit July 24-25, 2012
Herbaceous	IIIA2	Mesic graminoid herbaceous	Calamagrostis canadensis	Cornus canadensis, Spirea beauverdiana, moss	
Scrub	IID2	Ericaceous dwarf shrub	Empetrum nigrum, Vaccinium vitis-idaea	Ferns, moss, graminoids	
Herbaceous	IIIB	Forb herbaceous	Forbs (ferns & Epilobium angustifolium)	Calamagrostis canadensis	
Scrub	IIA2	Open dwarf tree scrub	Forbs	Alnus rubra & Salix spp. , Calamagrostis canadensis	
Scrub	IIA1	Closed dwarf tree scrub	Salix spp. & A. rubra	Graminoids	
Scrub	IIB1	Closed tall scrub	A. rubra & Salix spp.	Forbs, Populus trichocarpa	
Scrub	IIA2	Open dwarf tree scrub	A. rubra, Salix spp. & Picea spp.	Forbs, graminoids	
Forest	IC3	Mixed wood land	Forbs, moss	Cornus canadensis, Calamagrostis canadensis. Picea spp. & A. rubra	
Forest	IC1	Closed mixed forest	Picea glauca	mixed alder/willow/other broadleaf tress >10ft., understory with mixture of shrubs and herbaceous vegetation, with stands of Picea mariana	Satellite imagery (0.5m resolution)
Herbaceous	III A,B,C 2 or 3	Wet (graminoid/forb/bryoid) herbaceous	patchy, partially wet sites, low growing vegetation --possibly lichen, moss, or tussock tundra with ericaceous spp.		

Table 2: Bird species that may occur in the Willow Mountain CHA.

Common name	Scientific name
Ptarmigan	<i>Lagopus lagopus</i>
Northern goshawk	<i>Accipiter gentilis</i>
Sharp-shinned hawk	<i>Accipiter striatus</i>
Golden eagle	<i>Aquila chrysaetos</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Merlin	<i>Falco columbarius</i>
Gyr Falcon	<i>Falco rusticolus</i>
Whimbrel	<i>Numenius phaeopus</i>
American golden plover	<i>Pluvialis dominica</i>
Long-tailed jaeger	<i>Stercorarius longicaudus</i>
Downy woodpecker	<i>Picoides pubescens</i>
American pipit	<i>Anthus rubescens</i>
Hermit thrush	<i>Catharus guttatus</i>
Gray-cheeked thrush	<i>Catharus minimus</i>
Swainson's thrush	<i>Catharus ustulatus</i>
American dipper	<i>Cinclus mexicanus</i>
Common raven	<i>Corvus corax</i>
Stellar's jay	<i>Cyanocitta stelleri</i>
Horned lark	<i>Eremophila alpestris</i>
Rosy finch	<i>Leucosticte arctoa</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Black-billed magpie	<i>Pica hudsonia</i>
Wilson's warbler	<i>Cardellina pusilla</i>
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>

Table 3: Mammal species that may occur in the Willow Mountain CHA.

Common name	Scientific name
Moose	<i>Alces alces</i>
Brown bear	<i>Ursus arctos</i>
Black bear	<i>Ursus americanus</i>
Mink	<i>Mustela vison</i>
Weasel	<i>Mustela nivalis</i>
Beaver	<i>Castor canadensis</i>
Wolf	<i>Canis lupus</i>
Wolverine	<i>Gulo gulo</i>
Coyote	<i>Canis latrans</i>
Lynx	<i>Lynx canadensis</i>
River otter	<i>Lutra canadensis</i>
Porcupine	<i>Erethizon dorsatum</i>

Table 4. Anadromous streams in the Willow Mountain CHA.

Stream name	AWC number	Species
Peters Creek	247-41-10200-2120-3055	Coho salmon (rearing, spawning)
Unnamed stream 1	247-41-10200-2120-3043	Coho salmon (rearing)
Iron Creek	247-41-10200-2130-3030	Coho salmon (rearing), Chinook salmon (rearing)
Unnamed stream 2	247-41-10200-2130-3030-4025	Chinook salmon (rearing)
Unnamed stream 3	247-41-10200-2130-3036	Coho salmon (rearing), Chinook salmon (rearing)
Unnamed stream 4	247-41-10200-2130-3050	Chinook salmon (rearing)
Little Willow Creek	247-41-10200-2130	Chum salmon (present), coho salmon (spawning, rearing), Chinook salmon (spawning, rearing), pink salmon (spawning)

Table 5: Historical furbearer harvest in GMU 14B, UCU 801 and UCU 901, in and near the Willow Mountain CHA.

Year	Beaver	Lynx	Otter	Wolf	Wolverine	Marten	Grand Total
2001	3			2	2	16	23
2002	1						1
2003	14		1			3	18
2004	19				1	2	22
2005	43		2	1	1	31	78
2006	4		6			17	27
2007				6		20	26
2008	4			1	3	23	31
2009	13			7	1	30	51
2010	9	2		1		5	17
2011		1			1	39	41
Grand Total	110	3	9	18	9	186	335

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**APPENDIX B: PUBLIC SCOPING
MEETINGS FOR WILLOW MOUNTAIN
CRITICAL HABITAT AREA MANAGEMENT
PLAN**

SUMMARY OF PUBLIC SCOPING COMMENTS

Public scoping meetings were held in 2012 in the following communities: Willow (April 3), Wasilla (April 9), and Anchorage (April 11). These meetings were designed to inform critical habitat area (CHA) users about the planning process and to solicit their input on 1) how they use the CHA; 2) what they value about the CHA resources; and 3) what concerns they might have about future CHA management. The meetings were sparsely attended with between three and fifteen members of the public participating.

Each meeting began with a short introduction by ADF&G staff explaining the Special Areas Program, the management planning process, and what information we would like the public to share with us. The floor was then opened for public comments. All statements were paraphrased and recorded onto a large tablet visible to the entire group, as the meeting progressed. Staff facilitated discussion by introducing topics for comments.

Written questionnaires were distributed to meeting participants, and extra copies were left with a community representative for those unable to attend the meeting. Written and verbal comments from the public scoping meetings, as well as verbal comments from local residents outside the meeting session, were transcribed with minor edits for clarity and brevity; then sorted by the issue to which they pertain. This list is included below, and a copy of the written questionnaire has been included for reference.

Appendix B.—Summary of public scoping comments

Issue	Comment
Access	Potential future restrictions are a concern (currently managed under general permit)
Access	Is motorized access a sustainable use given the current trail conditions? For example the area to the east of the CHA has tons of trails on wetlands that are visible on Google Earth
Access	Atv trail users on east side during the summer have no need to go all the way to the top (in the CHA) in terms of view/recreation
Access	It would be nice to leave atv use open for hunting purposes
Access	Even one atv pass can create long term evidence/ruts in wet, alpine tundra
Access	Wheeled vehicles that create ruts, disturb the ground and deposit seeds from other areas, allowing invasive plants to spread
Access	Motorized access affects hunting
Access	Want to maintain current use of trails
Access	Motorized access is necessary because the average person can't access all of the CHA for hunting and early season trapping otherwise
Access	Use motorized vehicles other than atvs in the vicinity (trucks, snow machines, etc.)
Access	Weight restrictions are too low, they need to be reconsidered
Access	Restrictions should be based on psi of any vehicle rather than gvw and restricted to atvs
Access	Suggest standard for generally allowed uses on state lands be used as limit for vehicles (namely as long as it doesn't cause a deeper than 6" rut)
Access	There is no air or water access to the WMCHA and the area is too large for foot only access, so vehicles should be permitted
Access	Citing the equal access clause of the state constitution, the commenter would consider closing the CHA to vehicle access would eliminate his right to hunt in the area
Access	Should be allowed for Alaskans with disabilities
Access	Want to preserve access via rst1620 to Little Willow Creek, or have alternate access established to reach the stream crossing and beyond.
Access	Want access at a level consistent with the state generally allowed uses

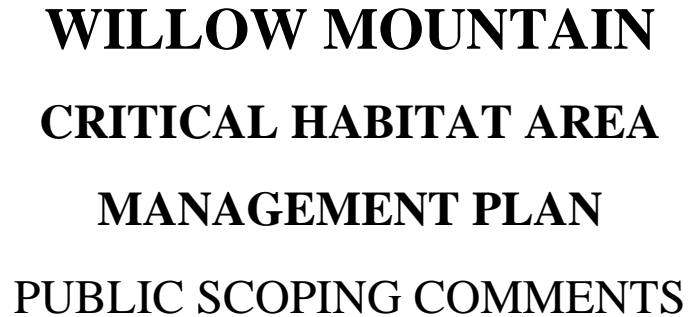
Issue	Comment
Access	1000 lb weight limit in gp is not sufficient for today's vehicles. It should be increased.
Admin	There should be an appropriately vetted and established standard of what is considered habitat damage
Admin	The damage standard should be described in the plan and be specific to WMCHA
Admin	"management plans have a hidden agenda to close access" and they shouldn't
Admin	There should be an advisory council of members of the public either on the planning team or for the WMCHA
Admin	Want a guarantee written into the plan that any stream crossing permits will be renewed annually (specific to vehicle crossings of salmon streams)
Admin	How effective is the current level of management in terms of helping the moose population? Does the management need to be changed?
Admin/ goals	Plan should stick to the statutory purpose and not include other goals
Aircraft	Aircraft landings are a non-issue for this area, though frequent flyovers occur during the hunting season
Cabins	Public use cabins have been beneficial in other areas in emergency situations
Cabins	No cabins in the CHA, it leads to too much intensive use. There are already cabins available in the general vicinity
Cabins	If a private individual wants to build a cabin and make it available to public, they should be allowed to do so, with restrictions on never locking the cabin, where the cabin is located, and the total number of cabins allowed in the CHA
Cabins	Trapper cabins should be allowed
Camping	14 days in one site, non-exclusive use. Typical generally allowed state land use rules for camping are reasonable.
Camping	No restrictions to camping, i.e. The same as generally allowed uses, no more than 14 days in the same location
Commercial facilities	Any commercial project needs to provide hardened trail access to the public
Education/outreach	Overall increased awareness of CHA would be good. Specifically, trail markers, signs and kiosk at trail/head, something beyond warning in hunting regs.
General	F&G should be aware of the potential and trend for population expansion and subdivision growth in the willow area
General	Any development that is disruptive to moose habitat should be prohibited

Issue	Comment
General	Target shooting should be regulated somehow based on bad experiences with people shooting into nearby mining claim but others think that it would interfere with hunting
Grazing	Grazing is detrimental to habitat on large or commercial scales, use of pack animals while hunting could be an acceptable use
Grazing	All domestic animals have to the potential to introduce weeds to the CHA; using heat processed feed only before and while in the CHA can stop seed transfer
Grazing	Only allowed if free range (no fences installed, etc.)
Habitat enhancement	Habitat enhancement should be allowed, but only if it is 1) useful to moose meaning it is an appropriate type of feed and reflects seasonal habitat use 2) the enhancement does not harm other species or the ecosystem
Habitat enhancement	One time willow cutting (and allowing moose to maintain willow height by browsing) would be the only useful habitat enhancement that could be done.
Habitat enhancement	Any intensive habitat enhancement would cause more damage... enhancement should be "minimal" such as selective tree felling using hand tools and done by crews on foot.
Habitat enhancement	Fish habitat could be enhanced by projects
Habitat enhancement	No - why fix something that is already working
Habitat enhancement	Yes-but only with access improvements
Habitat enhancement	Only species re-introductions
Habitat enhancement	Should only occur in response to a specific problem (for example if disease wiped out population and it needed to be rebuilt)
Habitat enhancement	Any enhancement that occurs should be focused on maximizing moose utility of the area for it designated purpose (e.g. Seasonality and browse types)
Implementation	Plan should make the recommendation that any data gathered in the CHA (as part of larger studies) be set aside for CHA management

Issue	Comment
Info education	Concern that there is no publication of fact that regulations change from general dnr land to adf&g regulations at the boundary of the area. Also, concerned that it is difficult to manage an "island" of stricter regulations within the larger area
Info outreach	Signs with responsible trail use tips might be good, especially at main trail heads
Info outreach	Trails should be marked at boundaries
Info outreach	There should be one spot on a website where someone could find all the permits for an area
Invasive species	Has there been any research on the effects of invasive weeds consumed by wildlife? For example, squirrel grass seed heads lead to infections in dogs, what do they do to moose?
Invasive species	Clover was introduced and has spread from a recent DOT road corridor project in the Nancy Lakes Rec area
Invasive species	Could be a huge problem and the state should eradicate invasive weeds asap
Land use	Special area planning should review and address conflicts with other nearby land designations and set asides
Mining	Recreational mining, such as that done with gold pans is not a big impact
Mining	Commercial mining, or any mining on a large scale would lead to habitat damage
Mining	Purchases Creek is popular for recreational miners
Mining	No new mining claims should be allowed
Mining	No additional mining restriction beyond what is already in place immediately outside the CHA
Moose	There may be a tie between when atv access was restricted (early 1990's) and a decrease in the number of moose harvested, but could also be attributed to increased road kill and/or survey intensity. Numbers available are for all of GMU 14b, not just the CHA.
Planning	Prior planning efforts have taken place in the Willow community, specifically the willow comprehensive plan, how will these be incorporated into the SA plan? (provided copy of comprehensive plan)
Structures	No cell towers (or any towers) should be allowed to be constructed in the CHA. But this may not be a big issue
Structures	No permanent tree stands should be allowed
Structures	Wind towers might be okay, but not if they require road construction.
Structures	Permanent tent platforms would have the same issues as privately built publicly open cabins
Structures	No structures that are not beneficial to all the users of the CHA

Issue	Comment
Structures	No towers
Structures	Hydroelectric projects should be held to same standard of review as other development projects
Structures	Dams should not be allowed at the expense of fish habitat
Timber	No commercial timber harvest
Timber	Firewood cutting by the public would be okay
Timber harvest	No clear cuts - if any thinning needs to happen it should be guided by a biologist for habitat value
Timber harvest	No commercial harvests
Trails	Trails in CHA are linked to others nearby, mapping and marking trails is an ongoing effort, but helpful to trail users
Trails	Atv trail use is heaviest during hunting season
Trails	Mat-su Trails Council has had success getting grants to install more trail markers on other trails
Trails	Continued use of atv trails leads to trail spreading around mud holes and ruts, wide spread damage to habitat is a concern from this
Trails	Within CHA, between treeline and boundary, wet conditions and boulders prevent less skilled atv users from using it. Trail conditions below CHA (i.e. On timber roads) are good other than wet areas in meadow.
Trails	Trails in the general vicinity often cross wet terrain, but have layers of gravel 2 -3 feet below surface. If atvs can be kept on trails that are flooded but have solid bottoms than spreading can be minimized
Trails	Increased education of atv users on allowed trails and how to use responsibly would be useful
Trails	From the air, it is really apparent that the atv trails in the vicinity branch a lot and that new trails are being made. Many of these may be unintentional as someone may have made one pass through a wet area but created a noticeable "trail" that someone else may try to follow later.
Trails	Don't want trails improved/ want them to be kept in primitive condition
Trails	Improvements to trails to correct safety and erosion problems should be allowed
Trails	Okay with the main trails being the "designated" trails but still would want to be able to use vehicles to retrieve downed moose off the trail
Trails	Updated trail maps would be useful
Trails	Trail markers specifically identifying the designated trails would also be good

Issue	Comment
Trails	Restricting traffic to designated trails only may concentrate use to a detrimental degree
Trails	Non-profit organizations should be allowed to work on trails
Trails	State should be required to consider mitigating damages from trails before closing the trails
Trails	Rst 1620 - the far end of the trail (north) is better suited to travel with larger than atv vehicles as well as longer distance requiring transport of more supplies
Trails	Trail improvements keep people on the trails
Trails	Trail realignment to more suitable terrain should be allowed
Trails	Trail closures due to habitat damage should be advertised to give other groups the opportunity to fix the trail
Trails	Corduroy trails using local timber would be a dual habitat improvement / trail improvement project
Vegetation clearing	Clearing should not harm bird habitat
Water	The local community may have a future need for impoundments for drinking water. Purches & Little Willow Creeks have been identified before as a possible location for dams. Hydroelectric projects are also a possible need
Water quality	Water quality for fish habitat should be protected and maintained



We would like to know how you use the area and its resources and are looking for ideas on how to manage activities and public uses that are compatible with the CHA's mission to protect fish, wildlife, and their habitats. Some issues that have been addressed in other CHA Management Plans are: access, motorized vehicle use, trails, structures, commercial uses, public facilities, mining, and habitat enhancement projects.

- 1) What are your concerns and interests about the future of the Willow Mountain Critical Habitat Area? Are there other topics you feel we should consider?
- 2) What actions would you like to see us consider taking to address the issues or to deal with other concerns you have about the Critical Habitat Area?

3) Finally, what is it about the Critical Habitat Areas, their resources and uses that you value the most? Are these values being protected or do you feel they are threatened?

4) Do you have any other comments?

For more information contact:

Habitat Division –Tammy Massie (907)-267-2342

<http://www.adfg.alaska.gov/index.cfm?adfg=willowmountain.main>

Please send comments by:

Fax: 907-267-2499

Email: dfg.hab.specialarea@alaska.gov

Or mail to: Habitat Division, ADF&G

333 Raspberry Rd.

Anchorage, AK 99518-1555

WILLOW MOUNTAIN CRITICAL HABITAT AREA MANAGEMENT PLAN

APPENDIX C: MAPS

By Frances Inoue

and

Jason Graham

Division of Sport Fish, Region V

Alaska Department of Fish and GameHabitat Section and Division of Wildlife Conservation



Maps of the Willow Mountain Critical Habitat Area

Maps

Map 1. Willow Mountain Critical Habitat Area Land Status

Map 2. Willow Mountain Critical Habitat Area Wildlife Habitat

Map 3. Willow Mountain Critical Habitat Area Fish Habitat

Map 4. Willow Mountain Critical Habitat Area Mineral Estate

Map 5. Willow Mountain Critical Habitat Area Vegetation Communities

Land Status & Mineral Estate: Base land status for this project comes from the DNR¹. This coverage has been edited to reflect the land status information on DNR's status plats², BLM's MTP's², the states records office³, and documented case reports⁴. Because Alaska is a non-recordation state, there is no guarantee that additional undocumented land transfers have occurred that could potentially alter the data we have compiled. Land ownership is not static, consequently, even in the time it took to compile this information, some parcels may have changed ownership.

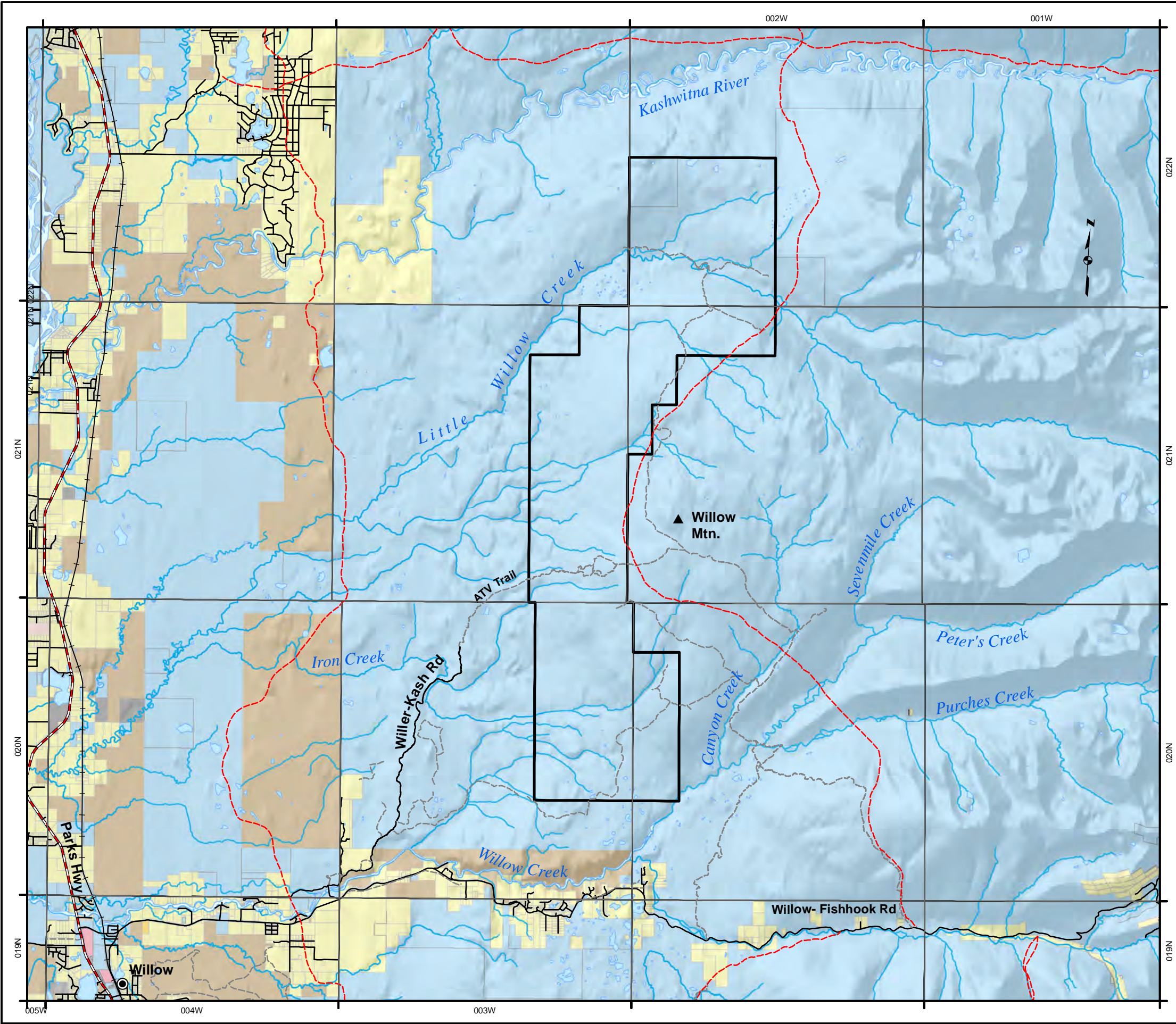
1. http://www.asgdc.state.ak.us/metadata/vector/landstat/statewide/akstat_c63.html
2. <http://www.dnr.state.ak.us/cgi-bin/lris/landrecords>
3. <http://www.dnr.state.ak.us/ssd/recoff/search.cfm>
4. <http://www.dnr.state.ak.us/las/lasmenu.cfm>
5. http://sdms.ak.blm.gov/acres/acres_menu

Wildlife Habitat: Data sets were compiled from the following sources and edited by ADF&G biologists (Tim Peltier, 2012, personal communication).

1. Alaska Habitat Management Guide 1986. South central Region: Reference maps. Habitat Division, Alaska Department of Fish and Game, Juneau
2. Most Environmentally Sensitive Area Atlas 2000. Habitat and Restoration Division, Alaska Department of Fish and Game, Anchorage
<http://www.adfg.alaska.gov/index.cfm?adfg=maps.mesamaps>
3. <http://dnr.alaska.gov/mlw/planning/mgtplans/hatcher/>

Fish Habitat: Johnson, J. and P. Blanche. 2012. Catalog of waters important for the spawning, rearing, or migration of anadromous fishes – Southcentral Region, Effective June 1, 2012. Alaska Department of Fish and Game, Special Publication No. 12-09, Anchorage.

Vegetation Classes: ADF&G staff developed this classification from pansharpned (0.5 m) RGB (1 m) GeoEye imagery (captured July 2007) using supervised classification based on ground sampled plots (July 2012). The vegetation plots were classified under the Viereck (1992) Alaska Vegetation Classification system. Additional categories for “closed mixed forest” and “wet graminoid/forb/bryoid herbaceous” were added during the classification process based on point sampling and ground photography to better refine the final classification.

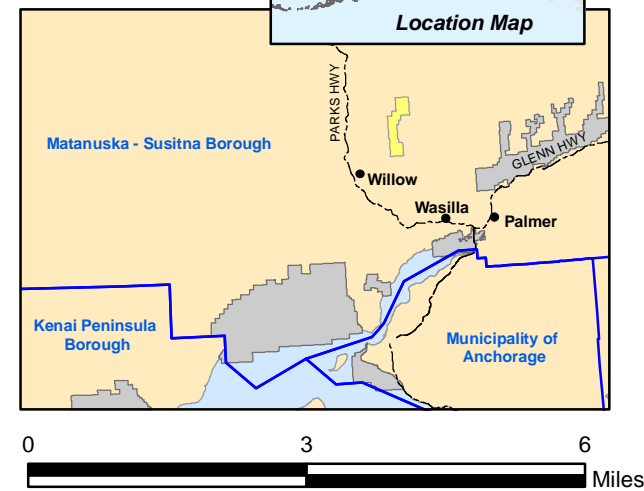


WILLOW MOUNTAIN State Critical Habitat Area **Legend**

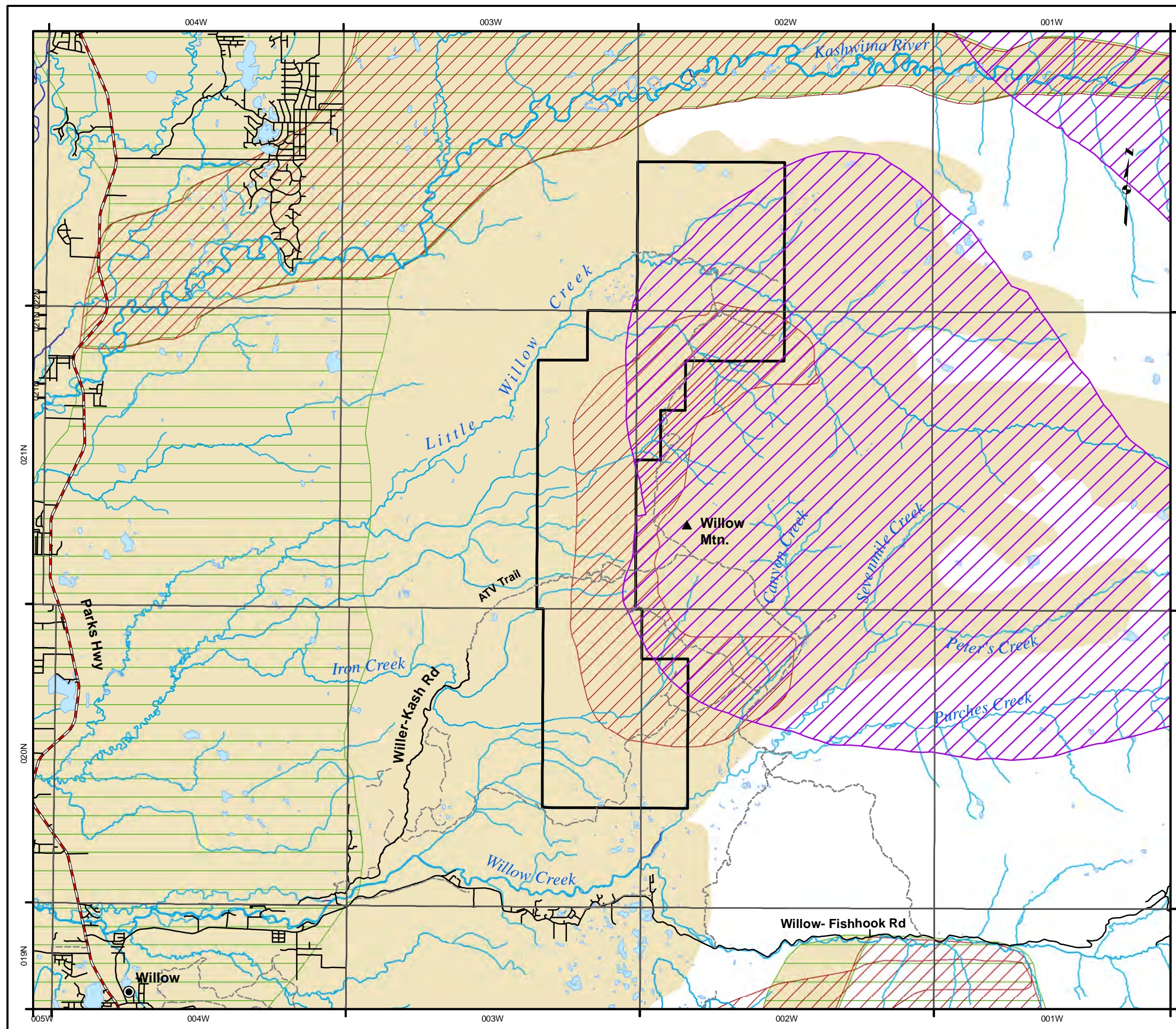
--- Estimated RS 2477

State	Other
■ State	■ Native
■ BLM	■ Private
	■ Borough

Willow Mountain CHA Boundary



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WILLOW MOUNTAIN State Critical Habitat Area Legend

 **Caribou**

Moose

 Rutting

 Calving

 Winter



Both black and brown bear are known to inhabit the Willow Mountain area. There is no current estimate for the population size of either species.



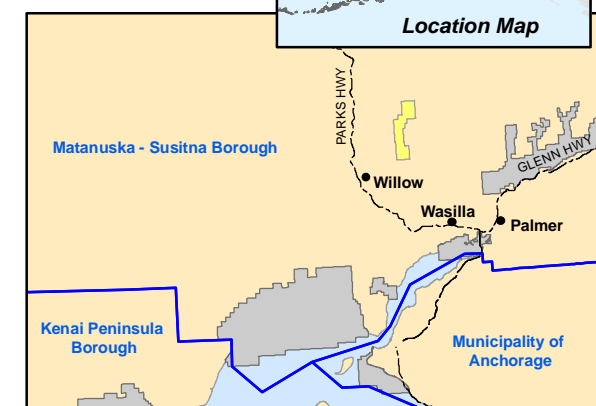
Furbearers found in the Willow Mountain area include mink, weasels, beavers, coyotes, lynx, otter and wolves.



Numerous species of birds have been observed in the Willow Mountain area including hawks, merlin, dippers, ravens, ptarmigan, plovers and eagles.



Willow Mountain CHA Boundary






0 3 6 Miles



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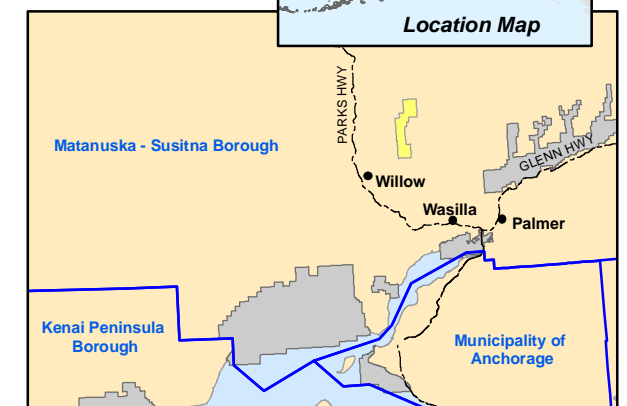
WILLOW MOUNTAIN State Critical Habitat Area Legend

Anadromous Fish

-  Streams
-  Short Streams (less than 660 ft.)
-  Lakes

CH - Chum Salmon p - present
CO - Coho Salmon r - rearing
K - King Salmon s - spawning
P - Pink Salmon
DV - Dolly Varden

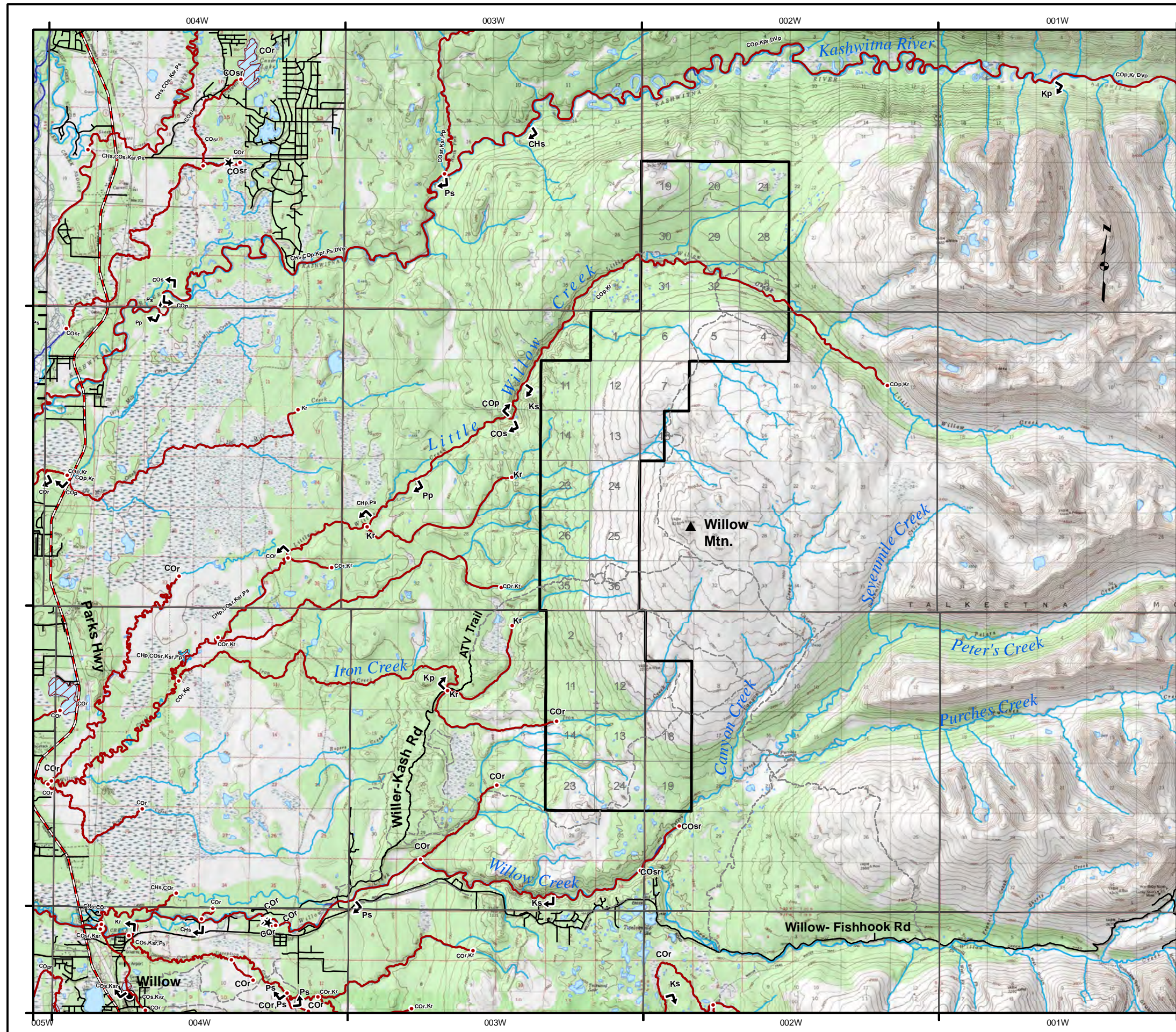
 Willow Mountain CHA Boundary



0 3 6
Miles








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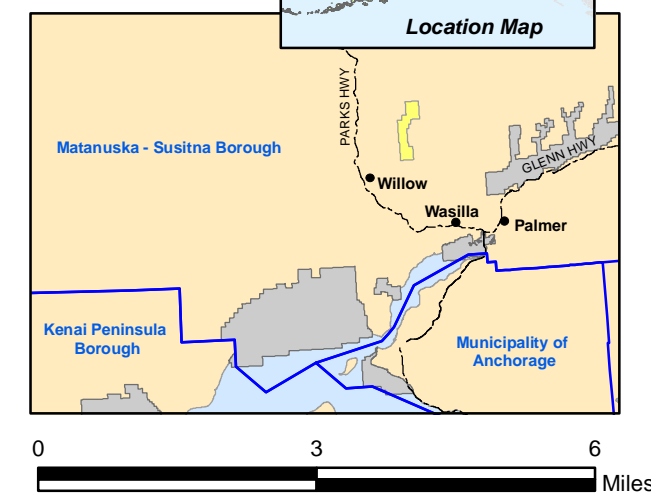


WILLOW MOUNTAIN State Critical Habitat Area Legend

Mineral Estate

-  Mineral Order
-  Permit or Lease
-  State Mining Claim
-  Lease Hold Location

 Willow Mountain CHA Boundary



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