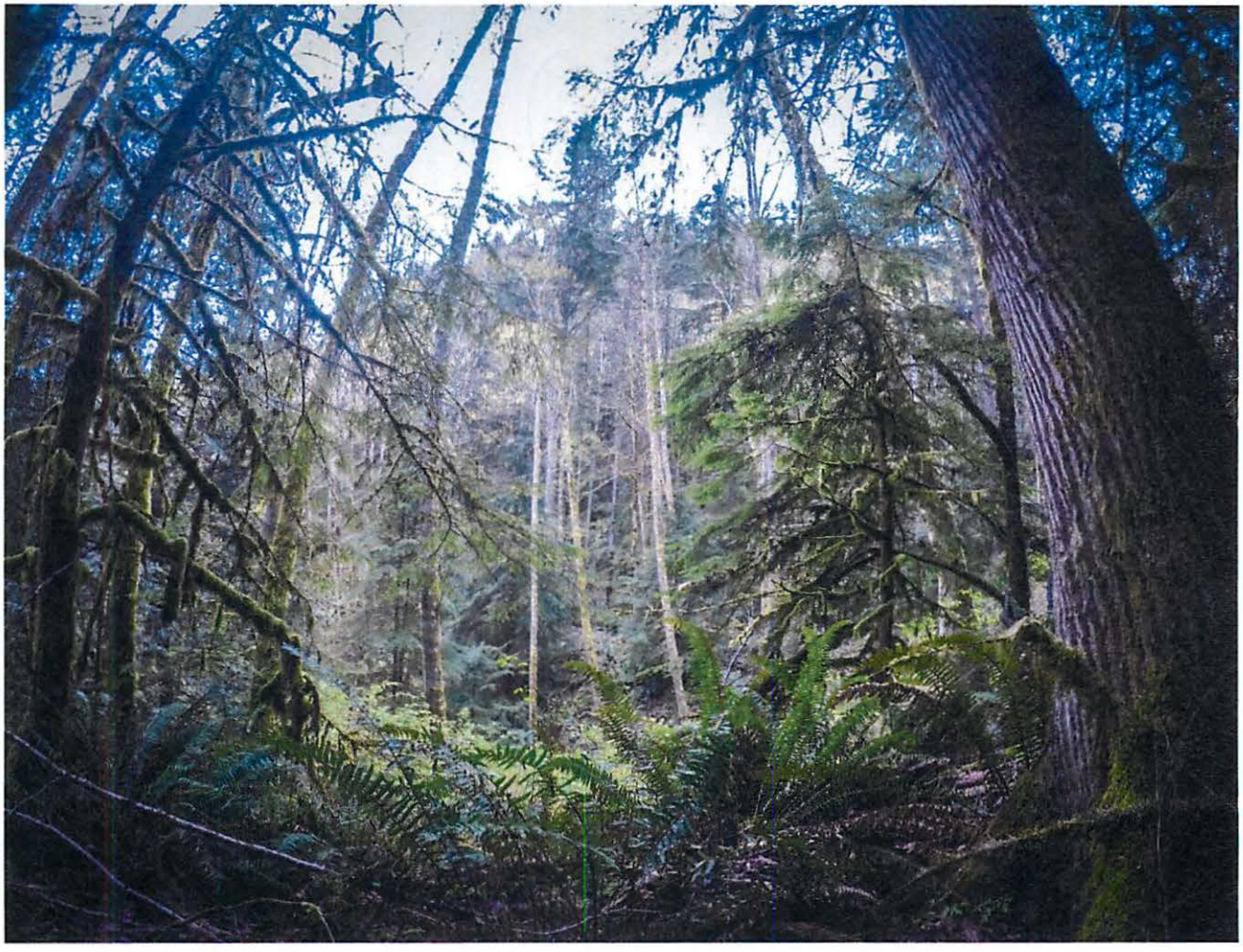
Cougar/Squak Corridor
Site Management Guidelines

January 2017



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Cougar Squak Corridor
Site Management Guidelines

January 2017

Kevin Brown, Division Director

King County Parks and Recreation Division

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Acknowledgements

The Cougar/Squak Corridor Site Management Guidelines were developed through a community engagement process that brought together citizens, stakeholders, non-profit organizations, neighbors, state and local government representatives and environmental educators. These guidelines direct management, public access and use at Cougar/Squak Corridor. The following individuals and organizations contributed to the development of this document.

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Suggested citation for this report:
King County. 2017. Cougar Squak Corridor Site Management Guidelines. King County Department of Natural Resources and Parks, Parks and Recreation Division. Seattle, Washington.

Cougar/Squak Corridor
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Introduction

King County's park system includes approximately 28,000 acres of open space. The 2016 King County Open Space Plan classifies open space lands to provide a framework for the use, stewardship and management of those lands. All King County open space sites are classified within the following categories: 1) recreation site, 2) trail, 3) natural area park, 4) working forest land and 5) multi-use site. Open space sites are classified based on the primary intended purpose, while acknowledging that many sites may have multiple benefits and/or functions.

Cougar/Squak Corridor is a 735-acre multi-use site owned by King County. Multi-use sites include lands that may have areas of environmental value, but also may accommodate public access, recreation opportunities and forest stewardship. Each portion of a multi-use site is to be developed and managed to support the level of use or conservation appropriate to that portion of the site.

Cougar/Squak Corridor is located in the heart of the Mountains to Sound Greenway and the Issaquah Alps, between Cougar Mountain Regional Wildland Park and Squak Mountain State Park. It has a diverse forest ecosystem, wetlands, streams, wildlife habitat, trails and amenities to support public use, environmental education and recreation. Currently there is a gravel parking lot for approximately 35 cars and 10 miles of hiking trails. Cougar/Squak Corridor can accommodate multiple uses including hiking, walking, trail running, environmental education, forest stewardship and other activities.

The site management guidelines were developed through a site assessment and analysis, a community engagement process, input from Parks employees, guidance established in the King County Water and Land Resources Division Ecological Lands Handbook, the 2010 King County Open Space Plan, King County Code and direction provided by the various funding sources used to purchase the property and the conservation easement. This document was made available for public review and comment in compliance with the State Environmental Policy Act.

This document provides information about Cougar/Squak Corridor including acquisition history, funding sources, deed restrictions, and a description of the ecological and physical setting, land use and infrastructure. It includes an analysis section, management goals and recommendations for Cougar/Squak Corridor. This document is intended to guide the management and use of Cougar/Squak Corridor for the next ten years. As changes occur such as acquiring new lands at Cougar/Squak Corridor this document can be amended to reflect new conditions.

Part 1. General Property Information

Cougar/Squak Corridor consists of 11 parcels owned in fee by King County and 1 access easement across land owned by Pacific Topsoils, Inc. It is located approximately 3.5 miles south of I-90 near Issaquah off of SR900 in unincorporated King County. It is in the heart of the Issaquah Alps and the Mountains to Sound Greenway between King County's Cougar Mountain Regional Wildland Park and Squak Mountain State Park. See Figure 1 for a vicinity map and Figure 2 for a site map depicting parcel numbers. Land use zoning at Cougar/Squak Corridor is mostly RA-5 with a small portion zoned M in accordance with the King County Comprehensive Plan. Table 1 provides general information about the location of Cougar/Squak Corridor. Table 2 provides specific information for each parcel of the site.

Table 1. Cougar/Squak Corridor General Information

Acreage	735 acres
Drainage Basin	May Creek, Tibbetts Creek
WRIA	8, Cedar-Sammamish
Council District	9
King County Sensitive Areas	Wetlands, erosion hazards, streams, critical aquifer recharge areas, 100-year floodplain

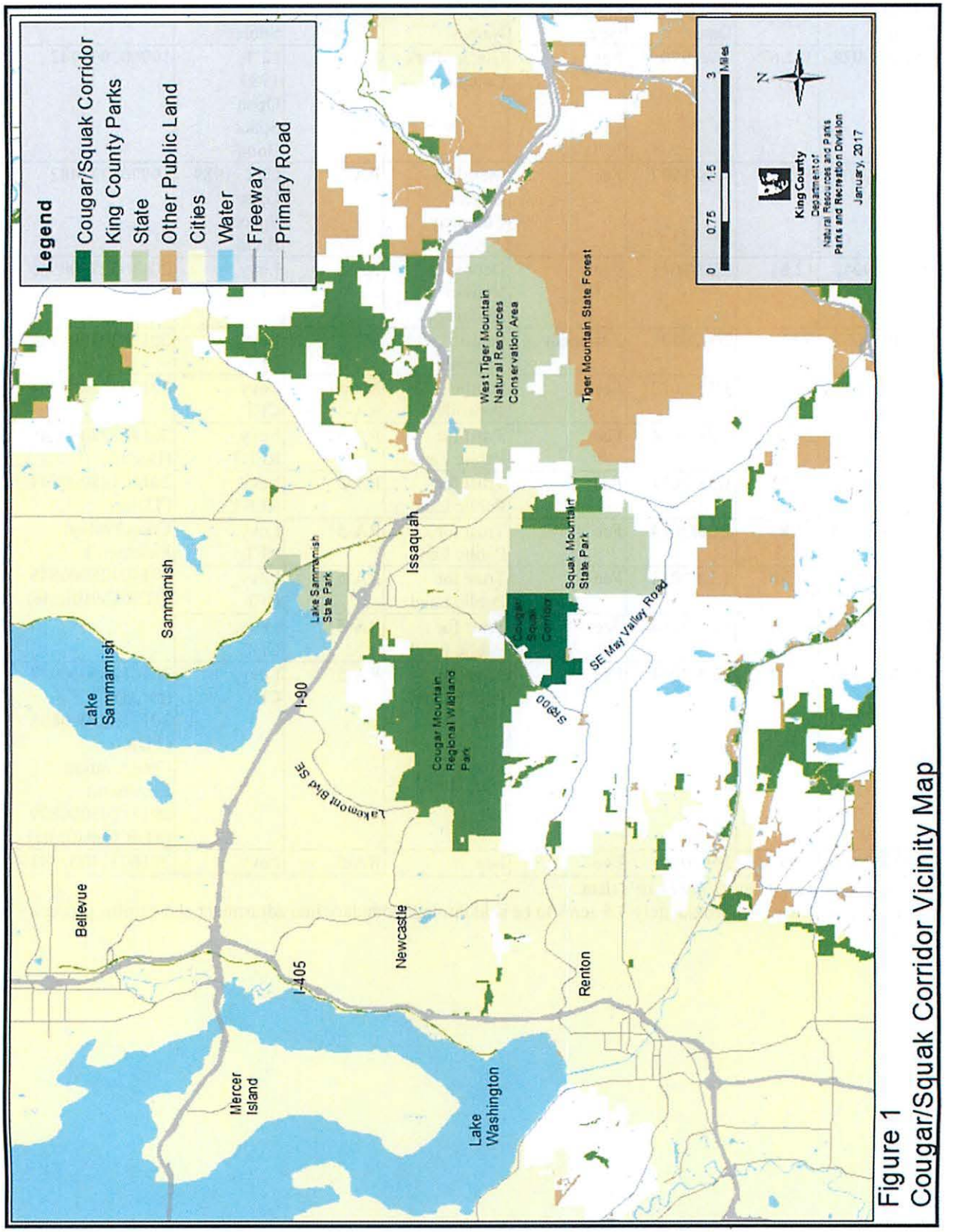
Table 2. Cougar/Squak Corridor Parcel Information

Parcel Number	Acres*	Purchase Date	Ownership type	Previous Names	Zoning	Funding Source	Recording Number
0523069028	382.67	7/9/1990	Fee	Glacier Park Company	RA-5	CFT, 1989 Open Space Bond	199007091442
0523069001	71.64	4/30/1997	Fee	Meridian Granite Company	RA-5	CFT, 1989 Open Space Bond	199705231482
0823069042	12.81	5/27/2011	Fee	Debbie's View-Hitchings	RA-5	Levy, CFT	20110527000585
0523069032	0.51	2/7/2012	Easement	Pacific Topsoils	M	Levy, CFT	20120207001144
0523069031	38.00	3/15/2012	Fee	Pacific Topsoils	M and RA-5	Levy, CFT	20120315001484
0623069052	20.90	1/28/2014	Fee	Trust for Public Land	RA-5	Levy, REET	20140128000846 (Deed) 20140128000844 (TDR Conservation Easement) 20140128000845 (TDR Certificate)
0623069031	25.87	1/28/2014	Fee	Trust for Public Land	RA-5	Levy, REET	
0723069020	13.87	1/28/2014	Fee	Trust for Public Land	RA-5	Levy, CFT	
0723069001	24.30	1/28/2014	Fee	Trust for Public Land	RA-5	Levy, CFT	
0623069014	37.26	1/28/2014	Fee	Trust for Public Land	RA-5	Levy, CFT	
0523069030	103.02	12/5/2014	Fee	Trust for Public Land-TDR site	RA-5	Levy, CFT	20141205000957 (Deed) 20141205000808 (TDR Conservation Easement) 20141205000809 (TDR Certificate)
0823069052	5.60 **	3/9/2016	Fee	Issa	RA-5	Levy	20160314001343

*Acreage from King County Assessor's data.

**Not shown on map. Approximately 3.5 acres to be sold through boundary line adjustment and surplus process.

Figure 1. Vicinity Map



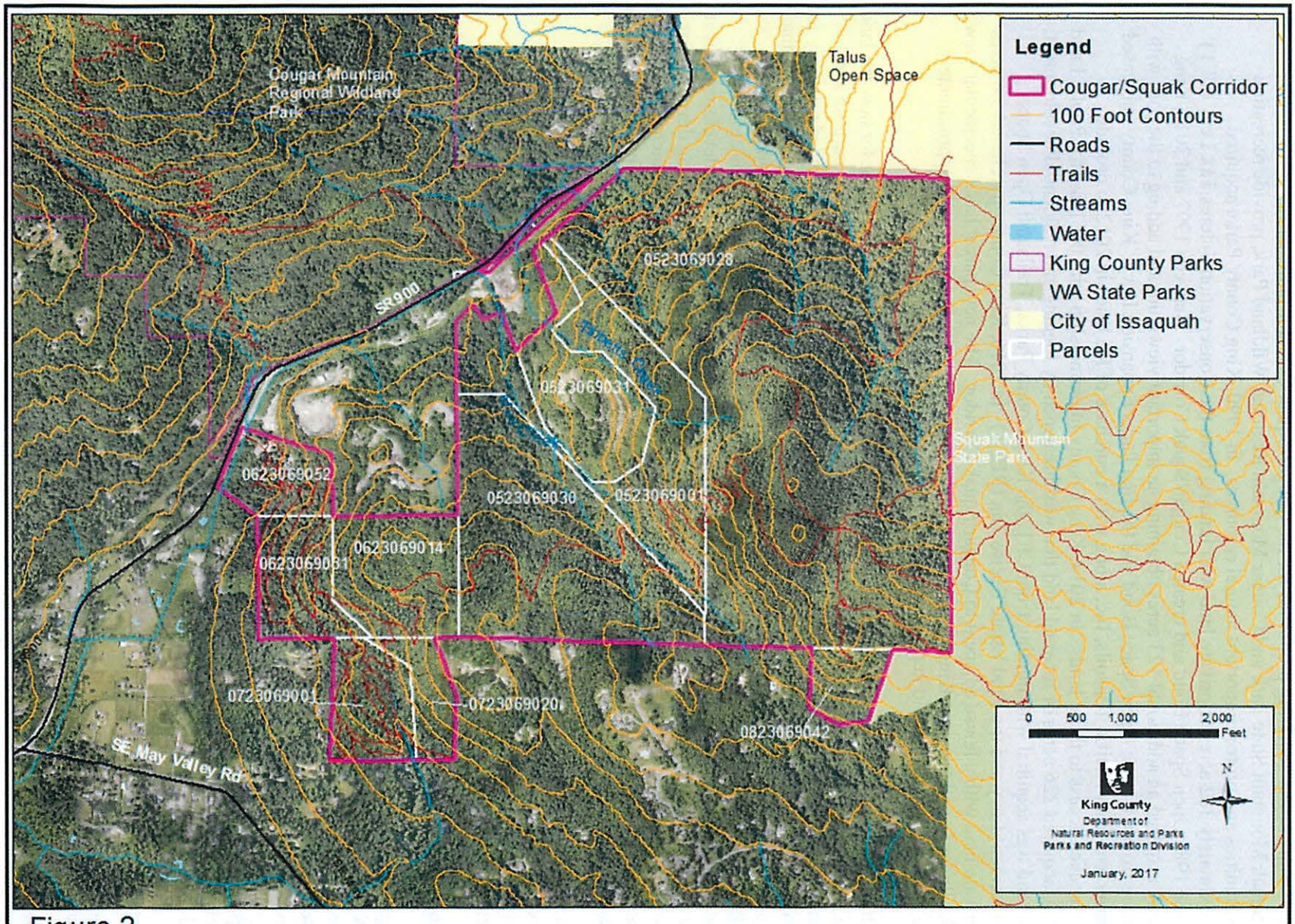


Figure 2
Cougar/Squak Corridor Site Map

Figure 2. Site Map

Part 2. Acquisition History, Funding and Deed Restrictions

King County began acquiring properties for the Cougar/Squak Corridor in the early 1990's to connect the Squak Mountain State Park and Cougar Mountain Regional Wildland Park, provide recreation opportunities and protect important natural resources. In 1990, King County Parks acquired approximately 382 acres of private land with funding from the Conservation Futures Tax Levy (CFT) and the 1989 Open Space Bond and created Cougar/Squak Corridor. Between 1997 and 2012, King County acquired an additional 123 acres obtaining an important viewpoint and adding to the park with funding from CFT, the Open Space Bond and the first Parks Expansion Levy. King County purchased an easement from Pacific Topsoils, Inc. along with a purchase of fee lands in 2012 to provide maintenance access to those lands. In 2014, King County in partnership with the Trust for Public Land (TPL), acquired 226 acres of forested land that was threatened by logging and residential development. That land was acquired with funding from CFT, the King County Parks, Trails and Open Space Replacement Levy and the Real Estate Excise Tax (REET). In 2016, King County purchased 5.6 acres of private land with a house adjacent to Cougar/Squak Corridor. The new parcel has a spectacular view of the Puget Sound Region. King County conducted a boundary line adjustment, sold approximately 3.56 acres with the house and kept the undeveloped portion of the property.

Each funding source used to acquire land at Cougar/Squak Corridor has a specific intent for how the land is to be managed. Management and public use of the land must be compatible with the purpose and restrictions of the funding sources. Funding from the Open Space Bond and CFT is intended primarily for open space and conservation purposes. Both sources allow low-impact passive recreation as long as that use does not impact the natural resources of the site. REET funding allows some development of facilities to support park goals and management. King County purchased the two parcels closest to SR900 (0623069052, 0623069031) with REET funding to allow recreation and facility development that may not fit with restrictions of the other funding sources. These two parcels have existing development impacts and these funding sources allow the most flexibility to accommodate the recommendations in this plan. Any development of park amenities to support the goals of this plan must meet King County permit requirements and regulations.

Figure 3 is a map of Cougar/Squak Corridor and shows which funding sources were used on each parcel. Table 2 provides information about funding sources used to acquire the properties at Cougar/Squak Corridor. The following information provides an overview of the purpose and restrictions associated with those funding sources.

1989 Open Space Bond

King County voters approved $117,640,000 in Open Space Bond funds in November 1989, as authorized by King County Ordinance 9071. Funds were intended for "the acquisition, development, renovation and improvement of public green spaces, green belts, open space, parks and trails."[1] Specific goals included preserving wildlife, enhancing scenic vistas, providing access to water, provide open spaces in urban areas, and providing trail connections from cities to regional trails, and trails within suburban cities.[2]

Property acquired with this funding source must be managed in keeping with "all terms, conditions and restrictions in Ordinance 9071, including that the [owner] covenants that the Property will continue to be used for the purposes contemplated by Ordinance 9071, which prohibits both active recreation[3] and

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[1] Ordinance 9071, preamble.

[2] Goals are cited in an accompanying publication "King County Open Space Bond Issue" dated 1989 by the King County Open Space Citizens Committee.

[3] King County Comprehensive Plan Glossary defines "Active Recreation Site" as: "Active recreation sites recognize a higher level of public use, and will require developed areas for organized or intense recreation. Active recreation site includes both the active recreation uses and all necessary support services and facilities."
http://www.metrokc.gov/ddes/compplan/2004/PDFs/Glossary-Adopted.pdf

motorized recreation such as off-road recreational vehicles but allows passive recreation,[4] that the Property shall not be transferred or conveyed except by agreement providing that the Property shall continue to be used for the purposes contemplated by Ordinance 9071, and that the Property shall not be converted to a different use unless other equivalent lands and facilities…shall be received in exchange therefore."[5]

King County Parks Expansion Levy 2007-2013

Properties acquired under Prop. 2 must meet the definition of "open space" in RCW 84.34.020. To qualify for funding under Prop 2, an acquisition proposal should acquire open space or natural lands which are critical to the preservation of regional watersheds and regional streams, and which enhance public recreation opportunities. As described in Ordinance 12809, potential acquisitions may support habitat/salmon recovery projects, forestry preservation, farmlands preservation (if appropriate public access is provided), projects that secure the urban/rural interface and perhaps provide incentives for cities to accommodate TDR receiving sites, and opportunities for passive recreation.

King County Parks, Trails and Open Space Replacement Levy 2014-2019

This project was funded in part by and is subject to the terms of the Parks Levy authorized by King County Ordinance 17568 and approved by voters in August 2013. The County covenants that the property will be used for the purposes contemplated by Ordinance 17568, that the property shall not be transferred or conveyed except by deed providing that the property shall continue to be used for the purposes contemplated by Ordinance 17568, and that the property shall not be converted to a different use unless other equivalent property within the County shall be received in exchange therefore.

Conservation Futures Tax Levy

RCW 84.34.230 authorizes Washington counties to place a CFT levy on all taxable property within their jurisdiction to acquire open space land or rights to future development (termed "conservation futures" in RCW 84.34.220). King County Ordinances 10750, 11068, and 13717 authorize Conservation Futures funding; King County Code Section 26.12 addresses Conservation Futures.

Ordinance 10750 Attachments A and B stipulate that "Future use of the property is restricted to passive-use recreation. This is determined to mean that development of facilities to support organized/structured athletic activities such as ballfields, courts, and gyms is not allowed. Future use is further limited to non-motorized use, except as is necessary for maintenance or staging areas, including entrance roads and parking to provide public access. A maximum of 15 percent of the total surface area of the proposed acquisition project area may be developed with non-vegetative impervious surfaces [unless additional parking or staging areas are specially authorized by the King County Council]. Trail surfaces are not included in the calculation of this restriction."

Property acquired with this funding source must be managed in keeping with "all terms, conditions and restrictions in Ordinances 10750 and 13717, including that the [owner] covenants that the Property will continue to be used for the purposes contemplated by these Ordinances, which prohibit both active recreation and motorized recreation such as off-road recreational vehicles but allow passive recreation, and in strict conformance with the uses authorized under RCW 84.34.230, that the Property shall not be transferred or conveyed except by agreement providing that the Property shall continue to be used for the purposes contemplated by these Ordinances and in strict conformance with the uses authorized under RCW 84.34.230, and that the Property shall not be converted to a different use unless other equivalent lands and facilities …shall be received in exchange therefore." (From King County's template

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[4] King County Comprehensive Plan Glossary defines "Passive Recreation Site" as: "Passive recreation sites require a lower level of development and provide areas for informal, self-directed activities for individuals and groups." http://www.metrokc.gov/ddes/compplan/2004/PDFs/Glossary-Adopted.pdf

[5] From King County's template "Intergovernmental Land Transfer Agreement Between King County and Cities," dated 2/21/2003.

"Intergovernmental Land Transfer Agreement between King County and Cities," dated 2/21/2003; and from Ordinance 10750).

The Real Estate Excise Tax

King County Code establishes two separate Real Estate Excise Taxes (REET) known as REET 1 and REET 2. These taxes are levied at a rate of one quarter of one percent of the selling price of all real property in unincorporated King County. REET funds may be spent on specified types of capital projects for King County Parks. The types of capital projects that are eligible to be funded with REET 1 and REET 2 overlap but are not identical. REET 1 can be used for park land acquisitions serving the unincorporated area of the county (King County Codes 4A.200.580, 4A510.100 and 4A.510 .105). REET 2 can only be used for planning, construction, reconstruction, repair, rehabilitation or improvement of parks located in or providing a benefit and open to residents of the unincorporated area of King County (King County Codes 4A.200.590 and 4A.510.120). REET 1 was used to acquire land at Cougar/Squak Corridor.

Deed Restrictions

Cougar/Squak Corridor is subject to various deed restrictions including covenants, easements for utilities and access and a Transfer of Development Rights Conservation Easement summarized below. Table 3 provides information about all of the deed restrictions that apply to properties within Cougar/Squak Corridor.

Table 3. Deed Restrictions and Conditions

Parcel Number	Restrictions and conditions
0523069028	Covenant to bear equal share of the cost of the construction, maintenance or repair of an access road across adjacent land (AFN 8211120431).
0523069001	Covenant to bear equal share of the cost of the construction, maintenance or repair of an access road across adjacent land (AFN 8211120431).
0823069042	Covenant pertains to sharing in the costs of maintenance and repair of adjacent private roads. Requires the owners of lots served by the easement to maintain the road in a reasonable state of repair. Recording #6007463. Well covenant, AFN 930310-1688. Well is located 100 feet ne of the sw line and 150 feet east of the west line of the property. Prohibits placement of private facilities for the disposal of sanitary sewage within 100 feet of the well. Well covenant, AFN 20051103-000676, 20070426-000222 Agreement AFN 940110-1534. Pertains to approval of a permit to use county ROW for construction of improvements.
0523069032	Access easement agreement #20120207001144 for vehicular and pedestrian ingress and egress over and across easement area.
0523069031	Covenant to bear equal share of the cost of the construction, maintenance or repair of an access road across adjacent land (AFN 8211120431).
0623069052	Well covenant (AFN 7311130466). Located 150 feet south of the nw corner and 120 feet from the road. Prohibits placement of private facilities for the disposal of sanitary sewage within 100 feet of the well. Easement, Puget Sound Power & Light for underground electric transmission and distribution system (AFN 7802060559) Easement, Puget Sound Power & Light for underground electric transmission and distribution system (AFN 8009230530) Easement, Pacific Northwest Bell Telephone Company (AFN 8101270668) includes underground communication lines, with wires, cables, fixtures and access thereto. Easement, Pacific Northwest Bell Telephone Company (AFN 8103090535) includes underground communication lines, with wires, cables, fixtures and access thereto.
0623069031	Easement for ingress, egress and utilities (AFN 5077937). This is a real estate contract conveying a portion of the property lying within the south 460 feet and includes the south 460 feet of the property. The exact location is unspecified. Easement, Puget Sound Power & Light for underground electric transmission and distribution system (AFN 8009230530, 8704030573) Easement, Pacific Northwest Bell Telephone Company (AFN 8103090535) includes underground communication lines, with wires, cables, fixtures and access thereto. Easement for ingress, egress and utilities (AFN8712311763)
0723069020	Easement, Puget Sound Power & Light for underground electric transmission and distribution system (AFN 8009230530) Easement, Pacific Northwest Bell Telephone Company (AFN 8103090535) includes underground communication lines, with wires, cables, fixtures and access thereto. View agreement establishing a 150-ft wide view corridor affecting the northeasterly property line for the benefit of the properties to the northeast (tax parcels 9052 and 9092). The view corridor contains some "retained trees" which if removed by property owner will incur a $1,500 penalty per tree removed.
0723069001	Easement, Puget Sound Power & Light for underground electric transmission and distribution system (AFN 8009230530) Easement, Pacific Northwest Bell Telephone Company (AFN 8103090535) includes underground communication lines, with wires, cables, fixtures and access thereto.
0623069014	Easement, Puget Sound Power & Light for underground electric transmission and distribution system (AFN 8009230530) Easement, Pacific Northwest Bell Telephone Company (AFN 8103090535) includes underground communication lines, with wires, cables, fixtures and access thereto.
0523069030 0623069014 0723069001 0723069020 0623069031 0623069052	Certified as a sending site through the Transfer of Development Rights (TDR) Program. The development rights were transferred off of the property and a TDR Conservation Easement was placed on the property ensuring the conservation values of the property are conserved and maintained in perpetuity. The only land uses allowed are those that do not interfere with the conservation values. Allowed land uses include sustainable forestry, permitted exceptions and reserved rights described in Section 5 of the easement. Section 4 describes prohibited uses including but not limited to residential development, alteration of wetlands, mineral extraction and intensive recreation. Trails and passive recreation are allowed.

Transfer of Development Rights Deed of Conservation Easement

The six westernmost parcels of Cougar/Squak Corridor are enrolled in the Transfer of Development Rights Program (TDR) and subject to a Transfer of Development Rights Deed of Conservation Easement (Easement). See Figure 3 for area subject to TDR Easement. The Easement was granted to King County by the TPL. TPL purchased the western portion of Cougar/Squak Corridor in 2014, transferred the development rights to King County, recorded the Easement and then sold the property to King County Parks. The Easement is a recorded deed on the property and ensures the conservation values of the property will be conserved and maintained in perpetuity.

Under TDR Certificate #246, twenty Rural Transferable Development Rights were transferred to the King County TDR Bank pursuant to King County Code Section 21A.37. The intent of the Easement is to confine the use of the protected property to sustainable forestry management and other reserved rights. There are two recorded easements for two phases of the acquisition and they contain identical language. Significant sections are described as follows in the recitals:

> "C. Grantor and Grantee agree that the Protected Property will be managed for passive recreation, habitat conservation, and forest stewardship.
> E. The Grantor is conveying the easement interest conveyed by the Deed for the purpose of ensuring that, under the Grantee's perpetual monitoring, the Conservation Values of the Protected Property will be conserved and maintained in perpetuity. The parties agree that only those land uses on the Protected Property that are an aspect of or do not interfere with the Conservation Values will be allowed, which Conservation Values and allowed uses include those land uses relating to "Sustainable Forestry," and the Permitted Exceptions" existing at the time of this grant, and "Reserved Rights," defined and described in Section 5."

Under the Easement the property is subject to the prohibited uses, reserved rights and permitted exceptions as described in Exhibit C of the Easement. Prohibited uses include (except those allowed under reserved rights and permitted exceptions) residential development, subdivision, construction and improvements, paving and road and trail construction, commercial development, surface alteration and mineral resource extraction, soil degradation and water pollution, altering wetlands, ponds, watercourses and wells, alteration of surface water, subsurface water or channeling water, introduced vegetation (except activities associated with sustainable forestry and as reasonably necessary for activities allowed under reserved rights) waste disposal, signs (commercial and advertising), intensive recreation, and vehicles.

Specific language regarding recreation includes the following:

> "4(n) Intensive Recreation. Except in connection with Grantor's Reserved Rights set as forth in Section 5(c), and 5(g) conducting or knowingly permitting a use or activity engaging in Intensive Recreation is prohibited. "Intensive Recreation" is defined as any recreational use or activity involving organized athletic games such as golf, baseball, soccer, football, motorized sports of any kind, commercial hunting or trapping, commercial shooting, formal shooting ranges, camping or overnight use without a permit, activities and uses that require land development or clearing or grading in excess of that authorized for Limited Impact Recreational Use, developed athletic fields spectator viewing areas or any support facility. Motorized recreation is prohibited unless in conjunction with approved Americans with Disabilities Act uses of trails."

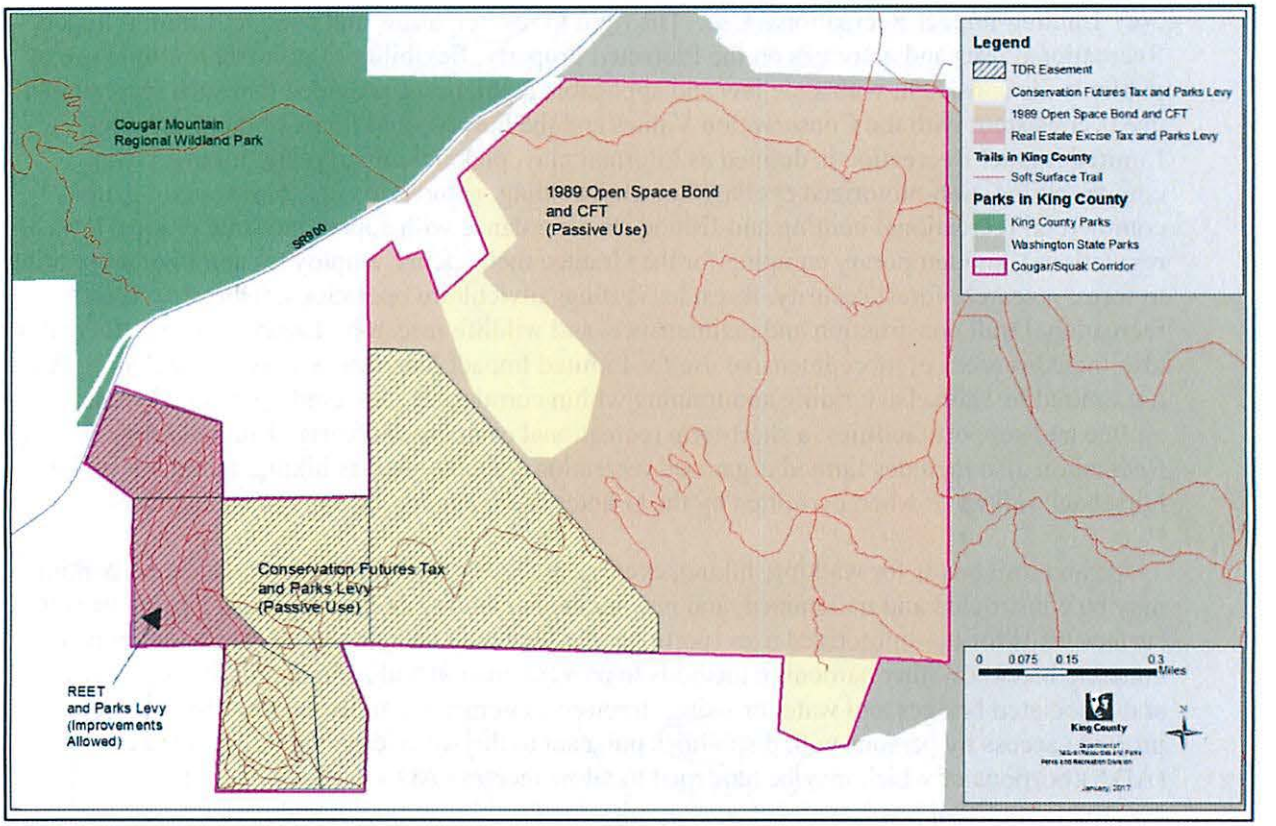
Reserved rights include sustainable forestry, responding to emergencies, limited impact recreational use, other resource land uses, controlling access and granting easements, use and maintenance of existing roads, repair, remove and maintain existing nonresidential improvements related to reserved rights and/or related to park maintenance needs, construction and maintenance of utilities within existing roads and rights-of-way, public access, development of commercial wireless communication development, and ecosystem service values and attributes.

Specific language regarding reserved rights associated with recreation includes the following:

> 5(c) Limited Impact Recreational Use. The right to restrict, allow and conduct Limited Impact Recreational uses and activities on the Protected Property, flexibility to promote multiple use of public lands consistent with state law and applicable regulations, provided that such recreational use is consistent with the Conservation Values and the Purpose and terms of this Easement. Limited Impact Recreation is defined as informal play, picknicking, jogging, hiking, cross country skiing, non-motorized cycling, horseback riding, nature viewing, bird watching, non-commercial recreational hunting and fishing (in accordance with applicable state or local laws or regulations), and temporary camping for the Grantee their agents, employees and invitees relating to forest research, forest security, forest harvesting, silviculture operations, fisheries research recreational trail construction and maintenance, and wildlife research. Limited Impact Recreation also includes areas of more intensive use for Limited Impact Recreation activities including but not limited to: horseback riding and training within corrals and a covered open-sided arena; a zipline and support facilities; a short-term recreational campground/yurts. Limited Impact Recreation also includes limited organized recreational events such as hiking, mountain biking, horseback riding, or when permitted by the Grantee, their agents, employees and invitees.
>
> Trails and trail heads for walking, hiking, cycling, and horseback riding, and associated parking may be constructed and maintained, and may include: clearing or grading, construction of soft surface trails for non-motorized uses (portions of which may be hardened with plastic, gravel, concrete block, or other hardening methods to prevent erosion and sediment delivery to streams) and associated bridges and water crossing structures, interpretive trails near trailheads that promote access by persons with disabilities pursuant to the Americans with Disabilities Act (ADA)(portions of which may be hardened to allow meeting ADA access standards), construction of trail heads with accompanying structures for sanitation and parking. Structures associated with limited impact recreational use also includes bathrooms, signs and informational boards."

Permitted exceptions include those listed on the Stewart Title Company Title Report #01148-28409 are summarized above in Table 3.

Figure 3. Funding Sources and TDR Easement at Cougar/Squak Corridor



Part 3. Ecological and Physical Setting

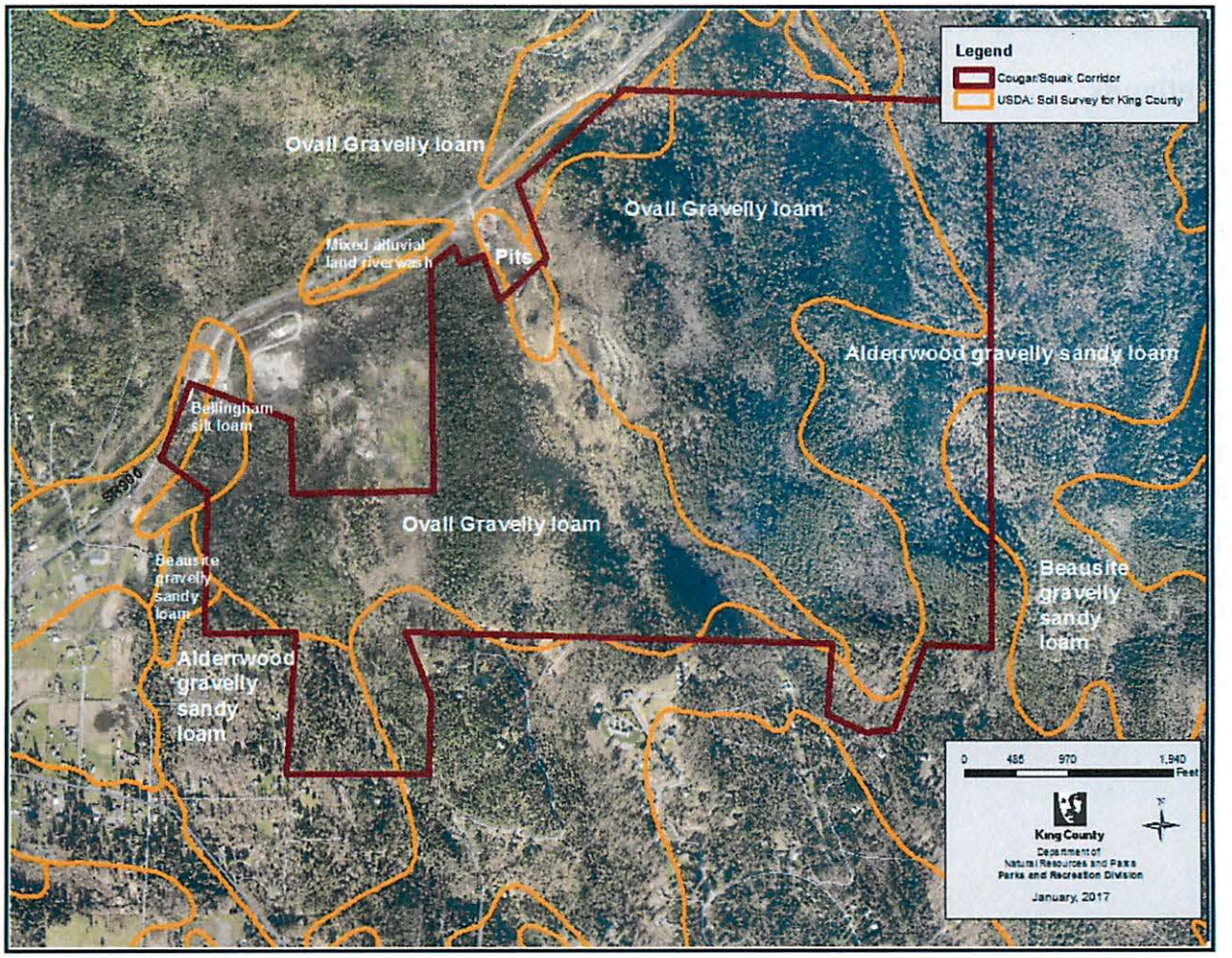
Topography and Soils

Cougar/Squak Corridor, as its name suggests, is a corridor of land between Squak and Cougar Mountains. It is in the heart of the Issaquah Alps, the unofficial name for the highlands near Issaquah including Cougar, Squak and Tiger Mountains. The elevation at Cougar/Squak Corridor ranges from 360 feet above sea level at the park entrance near State Route 900 (SR900) to 1,940 feet in the southeast corner of the park.

Soil types in Cougar/Squak Corridor are predominantly Ovall soils with Alderwood soils around the periphery. There is a small area of Beausite soil at the eastern and extreme south-western boundaries, as well as Everett and Bellingham soils also at the south-western boundary. The Bellingham silt loam is a hydric soil found near wetlands. There is a small incursion of "MPI" (mine or quarry). See Figure 4 for map of soils.

Because of the steep terrain and soils at Cougar/Squak Corridor, the majority of the park is mapped as an erosion hazard area. Erosion hazard areas are defined in the Critical Areas Ordinance to include those areas thought to be underlain by soils that are subject to severe erosion when exposed.

Figure 4. Soils



Hydrology

The Cougar/Squak Corridor includes parts of three creek basins: Tibbetts Creek, May Creek, and Issaquah Creek. All three basins are located in the Cedar-Sammamish Watershed. The Tibbetts Creek and May Creek basins occupy nearly half of the park each, with Issaquah Creek covering only small portions in the southeast corner.

The Tibbetts Creek Basin drains to Lake Sammamish. Tibbetts Creek is approximately 4.3 miles long, and its headwaters originate within Cougar/Squak Corridor. Five tributaries to Tibbetts Creek also originate in the park. The headwaters of Tibbetts Creek flow through a category II Critical Aquifer Recharge Area and an Area Susceptible to Groundwater Contamination.

The May Creek Basin drains to Lake Washington. A tributary to May Creek originates just outside the southern boundary of the park and flows through the property in a northwesterly direction until it exits the park. After exiting the property, the tributary flows along SR900 (Renton-Issaquah Rd. SE) in a ditch just beyond the County's property and eventually meets up with May Creek at stream mile 7. Another tributary to May Creek, originates in the southwest corner of Cougar/Squak Corridor. It flows in a southern direction exiting the property, then hooks west, flows under SE May Valley Rd., and drains into May Creek at approximately stream mile 7.2.

The portion of Cougar/Squak Corridor covered by the Issaquah Basin is insignificant in terms of hydrology: only a very small portion (0.1 percent) of Issaquah Basin is in the park, no streams are present in that area and no Critical Aquifer Recharge Areas are in that area.

The 100-year floodplain within the Cougar/Squak Corridor is located in only one location: along a tributary to May Creek. The extent of the floodplain in this location is 100 feet to the east and 60 feet to the west of May Creek, all immediately adjacent and to the east of SR900.

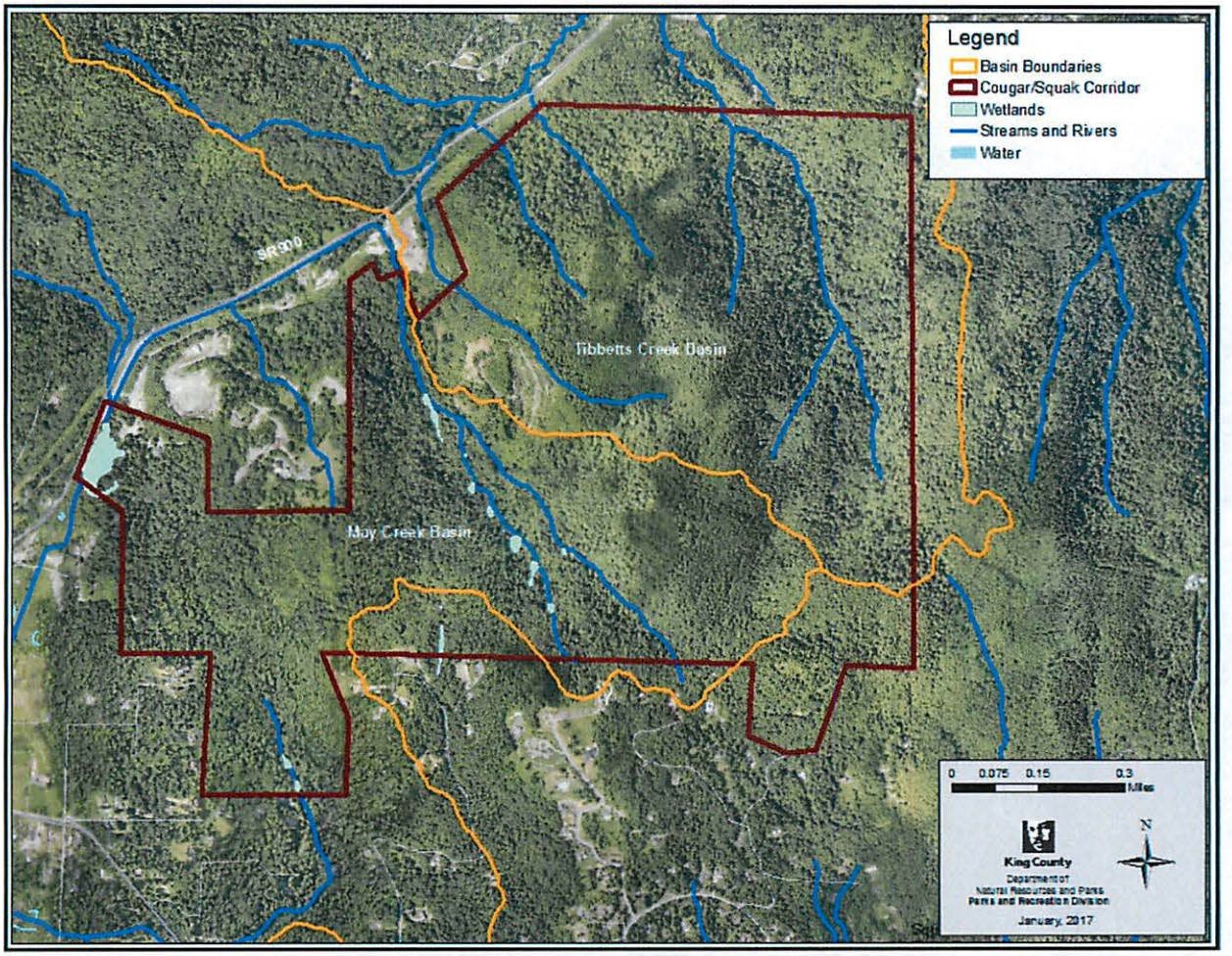
Wetlands

Before King County acquired the western portion of Cougar/Squak Corridor in 2014, a previous land owner had intended to develop it, and as part of the permitting process, they hired Habitat Technologies in 2003 to do a critical areas report. For that report, Habitat Technologies conducted a wetland functions and values rating for the wetlands on site; they updated the 2003 report in 2005. Then in 2006, The Watershed Company was hired to supplement the Habitat Technologies (2005) report with updated wetland information. All surveys were conducted in only the six parcels acquired by King County in 2014.

The Watershed Company (2006) verified the presence of seven wetlands identified in the original (Habitat Technologies 2005) report. The Watershed Company (2006) also identified seven additional wetlands. Figure 5 shows wetlands mapped during site surveys from The Watershed Company (2005) and Habitat Technologies (2006) in the Cougar/Squak Corridor. The wetlands in this figure are not intended to reflect the exact delineations but just an approximation for planning purposes.

There is a large wetland near the entrance to Cougar/Squak Corridor and along SR900. The majority of this large wetland is not on King County property. It is a Category I wetland using 2004 rating system or Category II wetland using the 2014 version of the rating system. This wetland generally follows a perennial stream along the eastern edge of SR 900. According to Habitat Technologies (2005), this wetland was dominated by a mixed forest and shrub community that formed following forest harvest activities.

Figure 5. Wetlands and Streams.



Vegetation

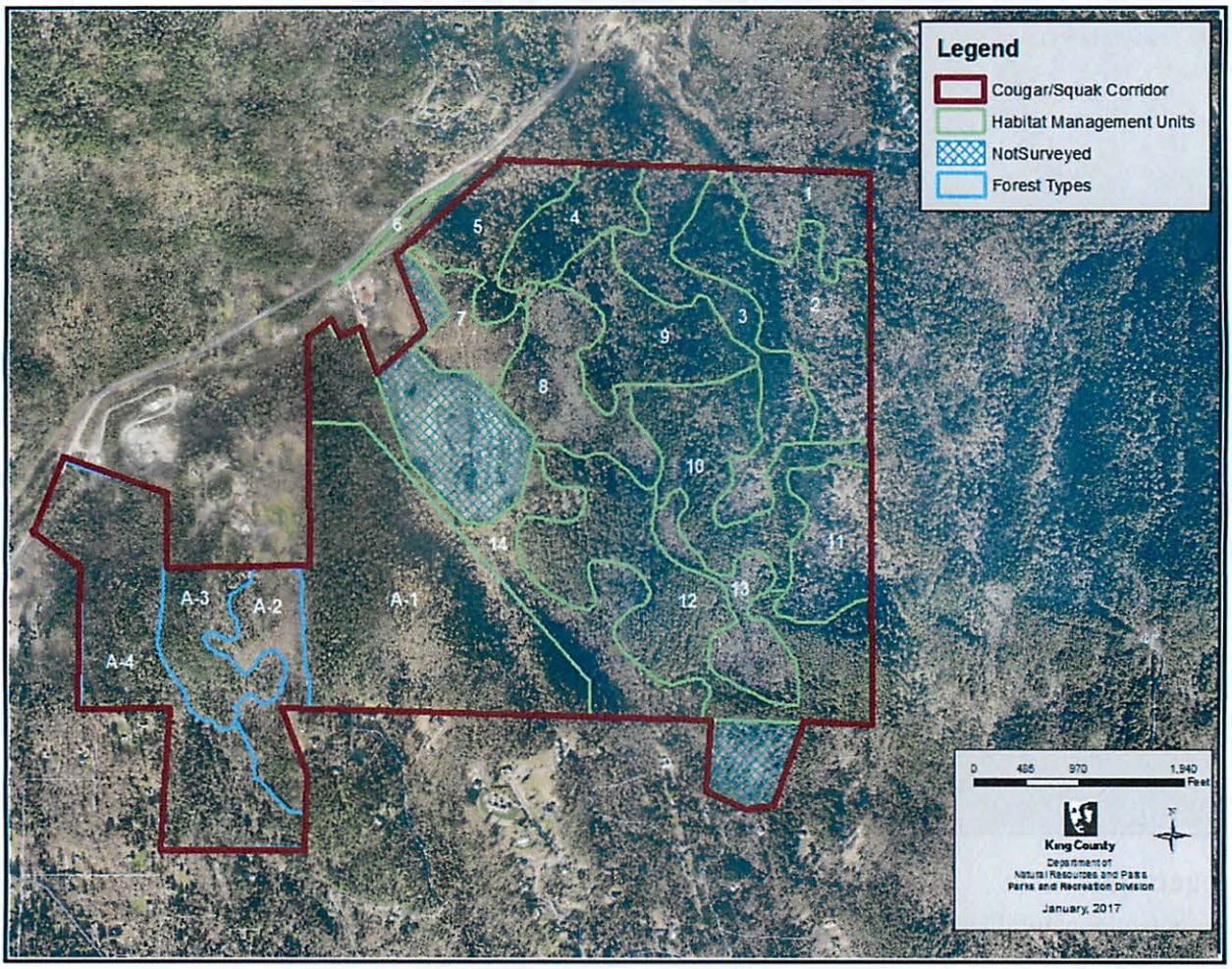
The potential natural vegetation for both the Western Cascades Lowlands and Valleys and the Eastern Puget Uplands Ecoregion where Cougar/Squak Corridor is located is western hemlock, western redcedar, and Douglas-fir (Pater et al. 1998). Under natural conditions, these are the species we would expect to dominate the mature forest communities. Although western hemlock and Douglas-fir are both present and dominant in some locations at Cougar/Squak Corridor, western red cedar is present but not common, and red alder and bigleaf maple are dominant in some areas. These variances from potential natural vegetation are likely the result of past logging activities: like most of King County, the Cougar/Squak Corridor has been logged historically. Judging from aerial photos and the age of different forest stands on site, parts of Cougar/Squak Corridor have been logged once and some areas have been logged twice. Most of the forest ranges from 50 to 100 years old, although one forest stand in the addition is only approximately 20 years old. Dominant understory species include sword fern, salal, vine maple, salmonberry, and Oregon grape. More detailed descriptions of the forest communities present in Cougar/Squak Corridor are found in this section. Invasive species are relatively minimal and discussed at the end of the section.

Upland Forest

Cougar/Squak Corridor was surveyed in 2010, prior to King County's 2014 acquisitions, using the Forest Landscape Assessment Tool (FLAT) assessment method (Bazinet et al. 2013). The FLAT is a set of procedures and tools used to rapidly determine forest ecological conditions and potential threats. Field surveys provide data on baseline forest conditions grouped in habitat management units, or HMUs. Figure 6 shows forest types in the western portion of Cougar/Squak Corridor (numbered A-1 to A-4) and

habitat management units (HMUs) in the original park (numbered 1 to 14). Data from the western portion of the park came from a forest stewardship plan conducted by the previous land owner. The aerial image was taken in winter (leaf-off) 2015; non-surveyed areas are shown in cross-hatch.

Figure 6. Forest types



Because the FLAT assessment was conducted in 2010, data were only collected on portions of the park. The following descriptions refer to the habitat management units (HMU) 1 to 14, labeled in Figure 6. Age class in all HMUs was 50-99 with the exception of HMU 6, which was 30-49 years of age, and HMU 7, which was 0-39 years of age. Red alder dominated both of these younger stands, and the trees had DBHs of 6-10". Douglas-fir and bigleaf maple were also found in the youngest stand (HMU 7) with similar sizes.

Red alder was also found to be dominant in HMUs 1, 8, 11, and 13, and all had DBHs in the 11-20" size class. Bigleaf maple and Douglas-fir were present in each of these stands as well at the 11-20" sizes class, except for the western hemlock in HMUs 11 and 13, which were had DBHs greater than 21". Canopy cover in these stands was 40-69 percent in HMUs 1, 8, and 11, and over 70 percent in HMU 13.

Bigleaf maple was the dominant tree species in HMUs 3, 5, and 14. Trees in HMUs 3 and 5 were of the largest size class in the assessment range at over 21", and canopy cover was in the 40-69 percent class . Red alder was also present in these two HMUs in the 11-20" size class. Western hemlock was present in HMU 3, and Douglas-fir was present in HMU 5, both in the >21" size class. Other tree species present in HMU 14 were western hemlock and western redcedar, both in the 11-20" size class, and canopy cover in this HMU was over 70 percent. Root rot was found in HMU 5, the only location it was identified in the original part of the park.

Western hemlock was the dominant tree species in HMUs 2 and 10, in the largest size class (>21") in both HMUs, and the canopy cover in these stands was over 70 percent. Red alder (11-20") and bigleaf maple (>21") were present in HMU 2, and Douglas-fir (>21") and red alder (11-20") were present in HMU 10.

Douglas-fir was the dominant tree species in HMUs 4, 9, and 12 at the largest size class, and western hemlock was also present in these stands at the largest size class. The largest size class in the FLAT assessment is greater than 21", and many of these trees actually have DBHs in the range of 30 to 40". Canopy cover in these HMUs was over 70 percent.

All of the HMUs were recorded as having trees without low vigor; that is, all observed trees had live crown ratios greater than 40 percent. Mistletoe[6] was not recorded in any of the HMUs, nor was any breakage of tree trunks.

The FLAT assessment collects data on regeneration trees – those canopy species under 20 feet tall that may become dominant and co-dominant species as the forest matures. Western hemlock was identified as the most abundant regeneration species in ten of the HMUs and the second most abundant in the remaining four. In only HMUs 6 and 7 were red alder the most abundant regeneration species (and western hemlock the second most abundant). In HMUs 5 and 14, western redcedar was the most abundant regeneration species, and in all remaining HMUs it was the second most abundant.

The most abundant native shrub and herb species in the original part of the Cougar/Squak Corridor were sword fern, vine maple, and salal. The second-most abundant native shrub and herb species included salmonberry, Oregon grape, red elderberry, and sword fern and salal in some locations.

A Forest Stewardship Plan (Rourke 2011) was developed in 2010 and revised in 2011 in conjunction with a plat application for the property prior to King County ownership. That plan provides summaries of the forest communities in the western portion of Cougar/Squak Corridor. Each "type" they describe is shown in Figure 6 and summarized below; forest ages reported below are unchanged from the 2011 estimates, and the 4-year time lag is likely within the range of approximations with the exception of Type 2, which would be 20 years old now, approximately.

Type 1 (A-1) is an approximately 100 year old mixed species stand of timber. Average stocking is approximately 115 trees per acre. Big leaf maple, western hemlock, and red alder make up 85 percent of the stand, with the remainder being a light mix of Douglas-fir and western redcedar. Diameter at breast height (DBH, measured at 4.5' above ground level) averages 18 inches. Dominant and co-dominant tree heights range from 75 to over 115 feet tall depending on the localized species mix. Understory species are typical for the area consisting of sword fern, salmonberry, lady fern, salal, trailing blackberry, red huckleberry, vine maple, and wild rose. Understory vegetation is moderately well developed with vine maple, shrubs ferns, and occasional shade tolerant trees in the understory. Root rot was identified in the western part of A-1.

Type 2 (A-2) is a 16 year old mixed species stand. Tree species include red alder, bigleaf maple, Douglas-fir, and western hemlock. DBH ranges between 3 and 8 inches. Stocking range is between 300 and 600 trees per acre depending on the location within the stand. The northern extent of the stand has generally higher stocking than the southern portion, and could be thought of as two sub types within the overall forest type. In the denser areas, the Douglas-fir has been particularly overtopped and is experiencing conditions of mortality and low vigor.

Type 3 (A-3) is an approximately 50 year old mixes species stand. Big leaf maple is the most abundant species, and there is a significant component of Douglas-fir. There is a light mixture of red alder, western redcedar, and western hemlock in the stand. There are approximately 190 trees per acre. The average

[6] Mistletoe presences is recorded in the FLAT surveys in order to record all of the various stand conditions that in total or in combination could indicate there may be a forest condition requiring some action.

DBH of all species found is 14 inches, with dominant and co-dominant conifers reaching 90 feet tall. Understory shrub species include oceanspray, salal, red huckleberry, Oregon grape, trailing blackberry, cascara, and vine maple. The understory is generally moderately to well-developed between tree crowns.

Type 4 (A-4,) is an approximately 60 year old second growth even-aged mixed species stand. Dominant species include bigleaf maple and western redcedar, with a light mixture of Douglas-fir, western hemlock, and red alder. Average stocking is approximately 115 trees per acre. The average diameter of the stand is 19 inches DBH, and dominant heights of conifers reach 110 feet tall. The hardwoods are in decline throughout much of the stand. The understory is typical for the area.

No insect or bear damage was identified in any portion of the Cougar/Squak Corridor from any of the studies or site visits. Laminated root rot has been identified at Cougar/Squak Corridor and is discussed in the analysis section of this document.

Riparian Vegetation

Riparian vegetation surveys have not been conducted. However, during a field visit in July 2015, the length of Margaret's Trail, which is mapped to cross four streams at their headwaters, was walked by a King County ecologist. Incidental observations were made of the riparian vegetation at the three locations where a stream could be identified, as well as in one area along the Chybinski Loop Trail along a small stream. Devil's club was found growing along the streams. Piggy-back plant was also observed in some of the locations. Otherwise, at these headwater locations, hydrophilic plants such as devil's club was growing right alongside upland species, and often upland species such as sword fern grew all the way to the small stream channels.

Invasive Plant Species

In 2008 a noxious weeds survey of County lands was conducted for the King County Noxious Weed Control Program (ESA Adolfson 2008[7]). The report and accompanying data included the percent of invasive species presence on public lands. This survey was conducted prior to the 2014 acquisition of the western portion of Cougar/Squak Corridor, so none of the land in the western third of the property was surveyed. Lands within the Cougar/Squak Corridor that were surveyed were reported as having almost no infestation of invasive plants: the majority of the area was rated as having 0-0.4 percent invasive species, and according to the data files, no invasive species on the survey list of 27 species (a selection of Class B, Class C, and weeds of concern) were recorded as having been observed. English holly was identified in certain locations throughout the addition at the 0-0.4 percent level. Additionally, the King County Noxious Weeds Group documented tansy ragwort, a Class B weed, along SR900.

In 2010, as part of the FLAT assessment (Bazinet et al. 2013), invasive species data were collected. Invasive species cover was rated as low (less than 5 percent cover) in all areas except HMU 6 (0), where it was rated as high (greater than 50 percent cover). HMU 6 is a narrow strip of land between SR900 and a powerline corridor, and the most abundant invasive species was Himalayan blackberry. The second-most abundant invasive species in HMU 6 was reed canarygrass. Scot's broom, evergreen blackberry, and butterfly bush were all present in this HMU.

The other two HMUs with Himalayan blackberry as the most abundant invasive species were HMUs 5 and 7. For all other HMUs, English holly was the most abundant invasive species, and in HMU 7 it was the second-most abundant. The rest of the HMUs had herb-Robert (*Geranium robertianum*) as the second-most abundant invasive species. HMU 7 also had butterfly bush, evergreen blackberry, and Clematis, and HMU 14 also had reed canarygrass, Himalayan blackberry, and tansy ragwort, a Class B noxious weed in Washington State.

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[7] See CLIPS report and map data: http://www.kingcounty.gov/environment/animalsAndPlants/noxious-weeds/brochures-reports/reports.aspx#CLIPSReport

Prior to the County acquiring the western portion of Cougar/Squak Corridor in 2014, Habitat Technologies conducted a critical areas study in 2003. In that report (Habitat Technologies 2005), they describe the vegetation in the addition as including Himilayan blackberry, Scot's broom, and evergreen blackberry. They reported that recently cleared areas supported thickets of blackberry. During a field visit in July 2015, English holly and butterfly bush were observed in one location each in the addition along Margaret's Trail. Herb-Robert was seen commonly along the trail in places where the trail was previously a part of the road system and therefore more disturbed than some of the foot trails at higher elevations further to the east.

During a field visit in August, 2015, Himalayan blackberry and reed canarygrass were observed mixed in with native but sometimes invasive horsetail (*Equisetum*) along SR900 and within the wetland and stream corridor (tributary 0294) that runs parallel to the road. The most heavily impacted area of invasive species is not within the park but directly adjacent to park property, within the PSE power line right-of-way, where Himalayan blackberry grows thickly, and morning glory and field bindweed cover small areas. Purple loosestrife was observed within a small unmapped wetland between park parcels within the PSE corridor. Other invasive plants within the PSE corridor include evergreen blackberry and butterfly bush.

Fish and Wildlife

This section covers fish and wildlife species that are known to be in the study area, have historically been in the area, or may potentially be in the area.

Fish

No fish studies have been conducted in streams inside the Cougar/Squak Corridor. However, as part of the "Salmon and Steelhead Habitat Limiting Factors Report for the Cedar – Sammamish Basin (Water Resource Inventory Area 8)" (Kerwin 2001), fish data were compiled from numerous sources, and sites just outside the park boundary were included. Data from Kerwin (2001) and SalmonScape[8] are used for fish distribution information.

No records of the presence of non-salmonids are available from Cougar/Squak Corridor. However, fish surveys have been conducted downstream in Tibbetts Creek. Those results are discussed below.

May Creek Basin

SalmonScape documents Chinook salmon in the lower-most 2 miles of May Creek, and Kerwin (2001) reports Chinook to approximately stream mile 3.5, both reports several miles downstream from the park. Fall Chinook are modeled to be in May Creek tributary 0294, which runs through the northwest part of the park along SR900, but presence is unconfirmed (SalmonScape).

Sockeye are documented in the lower-most 5.4 miles of May Creek (SalmonScape and Kerwin 2001), approximately 2 miles downstream from the park. Sockeye are modeled to be in May Creek tributary 0294, which runs through the northwest part of the park along SR900, but presence is unconfirmed (SalmonScape).

May Creek Tributary 0294 has documented coho salmon spawning use throughout its length in Cougar/Squak Corridor and coho presence further upstream into Tributary 0295 within Cougar Mountain Regional Wildland Park, across SR900 from Cougar/Squak Corridor (SalmonScape). During an August 2015 field visit, a small fish believed to be a salmonid was observed in this tributary; no fish trapping was conducted, so species identification was not possible.

Tibbetts Creek Basin

[8] The Washington Department of Fish and Wildlife's interactive computer mapping system, http://wdfw.wa.gov/mapping/salmonscape/index.html, accessed June 30, 2015.

Coho, sockeye, and cutthroat have been observed in Tibbetts Creek to approximately stream mile 3, approximately a mile downstream of where Tibbetts Creek enters the Cougar/Squak Corridor (Kerwin 2001). Cutthroat trout are assumed to be present further in the system, including at least in the level-2 tributary to Tibbetts Creek that originates inside the park (see Hydrology section above).

Fall Chinook are modeled by SalmonScape to be in Tibbetts Creek just downstream of the County property line but are unconfirmed in this stream, and Kerwin (2001) shows no record of them in Tibbetts Creek. Tabor et al. (2011) shows juvenile Chinook in Tibbetts Creek near the mouth; however, the lead author said he doubted they would ever go upstream of I-90 (R. Tabor, pers. comm. 205), which is only a few hundred meters upstream of the mouth.

Kokanee are documented in the lower-most approximately 1.3 miles in Kerwin (2001), although Salmonscape reports presence as far as stream mile 1.87. During kokanee surveys conducted weekly during spawning season since approximately 2012, kokanee have been seen up to Tibbetts Manor (approx. stream mile 1.5) but not upstream; however, the upstream area has not been surveyed extensively (R. Tabor, pers. comm. 2015).

In their assessment of Streams 1 and 2, Habitat Technologies (2005) reported that those streams may provide suitable habitat for anadromous and resident salmonids. However, The Watershed Company (2006) refuted that speculative assessment regarding anadromous fish by pointing out that the contributing basin is less than 50 acres and the stream gradient is greater than 20 percent (at 25 percent), both of which are conditions that would make it a Type N stream – meaning that no fish are likely present.

Sculpin surveys extending to approximately stream mile 2 in Tibbetts Creek revealed the presence of three species of sculpin: coastrange (*Cottus alecticus*), prickly (*C. asper*), and riffle (*C. gulosus*) (Tabor et al. 2007). It is possible but unverified that these species may be present further upstream in Cougar/Squak Corridor.

Wildlife

The Cougar/Squak Corridor is largely forested in second- and third- growth mixed forest and shrub with interspersed riparian and wetland habitat. Wildlife species that use these habitat types will be expected to be present.

Birds

During site visits in August-October 2003 and November-December 2004, Habitat Technologies (2005) recorded wildlife observations within the western portion of Cougar/Squak Corridor acquired in 2014. They reported a total of 22 bird species. Because of the times of year they did the study, some of these species could be migrants, some could be nesting birds, and some could be over-wintering birds. In other words, they likely captured a small but wide swath of bird use for the area.

Nearby Squak Mountain State Park, immediately to the east of the Cougar/Squak Corridor, and Cougar Mountain Regional Wildland Park, immediately to the west, are both eBird sites. That is, when people go birding at these two locations, they are able to report their sightings on an online database at eBird.com. Because of the proximity and similar vegetation communities and topography, many birds seen at these adjacent lands are likely to also be present at Cougar/Squak Corridor. The eBird database was queried, and 51 species have been recorded at Squak Mountain State Park, and 64 species were recorded for Cougar Mountain Regional Wildland Park.

Combining all three sources of bird information brings the total unique bird species seen in this area to 75. A compilation of all the birds reported at Cougar/Squak Corridor from Habitat Technologies (2005) as well as Cougar Mountain Park and Squak Mountain State Park (eBird.com) is in Appendix A. Note that some bird species reported on eBird may have been seen flying overhead (e.g., bald eagle) only and not actually using the parks.

In 2016, a survey group from the Eastside Audubon Society walked approximately 2 miles of the Margaret's trail to count birds that were seen and heard. The team found 47 species of birds that use the park as residents, breeders, migrants or vagrants. An additional eight species were seen flying over or near the park bringing the total to 55 bird species seen in and around the park.

Breeding birds were identified by the presence of breeding pairs, males singing on territory, adults feeding young, or the presence of an active nest. Breeding birds included both residents which were seen in every month, and migrants which were seen during the summer months. Birds with indisputable evidence of breeding include Pacific-slope Flycatcher (singing males), Brown Creeper (active nest), Pacific Wren (adults feeding young), and Wilson's Warbler (mated pairs and aggressive males defending territory).

A number of resident birds were seen in nearly every month or every season and we think they are likely to breed in or close to the park. These species include Barred Owl, Hairy Woodpecker, Northern Flicker, Pileated Woodpecker, Black-capped Chickadee, Chestnut-backed Chickadee, Brown Creeper, Pacific Wren, Golden-crowned Kinglet, American Robin, Song Sparrow, and Spotted Towhee.

Several additional migrating birds were seen over several months during the breeding period and are also thought to breed in the park, although their presence alone does not confirm breeding. However, the habitat is considered appropriate for these species: Rufous Hummingbird, Band-tailed Pigeon, Townsend's Warbler, and Black-throated Gray Warbler.

Other migrating birds were seen in the park and may use it as a rest stop during their spring flight north. These neo-tropical migrants include Hutton's Vireo, Cassin's Vireo, Warbling Vireo, Swainson's Thrush, Cedar Waxwing, Yellow Warbler, Orange-crowned Warbler, and Western Tanager.

Winter migrants are birds that seek shelter during the winter and several species use the park this way. Ruby-crowned Kinglet and Varied Thrush are two such species. There were seen along with resident birds in the winter months.

A number of resident species used different parts of the park in breeding and non-breeding season. These birds are considered altitudinal migrants which go to higher elevation in summer where it is cooler and to lower elevation in winter where it is warmer. Spotted Towhee, Pacific Wren, Red-breasted Nuthatch, Black-capped Chickadees, Chestnut-backed Chickadees, and Dark-Eyed Juncos used the park this way. Vaux's Swift was seen during the survey period. A pair of the swifts was seen in August foraging above the trees in the parking area.

Mammals

Mammals observed during surveys by Habitat Technologies (2005) include small species such as deer mouse and an unidentified shrew species. Douglas squirrel, mountain beaver, and raccoon were reported, as were coyote and black tailed deer. Introduced Virginia opossum and Eastern gray squirrel were present.

Mammals not recorded by available reports but likely present because of habitat present include bat species, moles, voles, raccoon, and large predators such as bobcat, cougar, and black bear. A list of observed and potential mammal species is in Appendix B.

Amphibians

No formal amphibian surveys have occurred at the wetlands in the park, so amphibian data is extremely limited. During a field visit in August 2015, two red-legged frogs were observed using the stream and forested wetland (wetland G) near the parking lot entrance to the park. A western toad was observed just east of the

property line on Squak Mountain in 2008 (WDFW PHS data[9]). Pacific treefrogs were observed in the wetland areas of the western portion of Cougar/Squak Corridor acquired in 2014 (Habitat Technologies 2005).

King County Regulated Wildlife Species

The Washington State Growth Management Act requires the designation and protection of critical areas, which include wildlife habitat conservation areas as defined in the 2012 King County Comprehensive Plan (King County 2012a). Wildlife habitat in King County is regulated through the King County Critical Areas Ordinance (CAO; King County Code Section 21A.24). In particular, the CAO specifies the protection requirements of breeding sites for nine terrestrial species that are state or federal threatened, endangered, sensitive, or candidate species or is a King County Species of Local Importance. The status of each of these nine species in the Cougar/Squak Corridor is described below.

- Great Blue Heron: Great blue heron is a King County Species of Local Importance. Nest sites are often in tall trees and in open areas and often close to water. No great blue heron rookeries are known to be in the Cougar/Squak Corridor. The closest known rookery is at Lake Sammamish (WDFW PHS data).
- Bald Eagle: Bald eagle is a State Sensitive Species in Washington. Breeding bald eagles in Washington primarily consume live or dead marine and fresh-water fishes and also waterfowl and seabirds. Although they may eat non-aquatic species, aquatic species are preferred. No large open water bodies are present on or adjacent to the park, so bald eagle nests would not be expected. The closest known bald eagle nests are two miles away to the south, near the Cedar River.
- Vaux's Swift : Vaux's swift is a State Candidate Species in Washington. According to birdweb.org[10] "They usually nest in natural cavities with vertical entranceways, such as hollow trees. However, with the loss of major snags, Vaux's Swifts have been increasingly observed roosting during migration in large numbers in man-made structures such as large industrial chimneys. Foraging habitat is open sky over woodlands, lakes, and rivers, where flying insects are abundant. Nesting habitat is forest, either coniferous or mixed, but primarily old growth with snags for nesting and roosting." They have been reported at Squak Mountain State Park (see Appendix A) and are therefore potentially present in the Cougar/Squak Corridor.
- Osprey: Osprey is a King County Species of Local Importance. Osprey nest in tall snags that are often located near water. They typically hunt in large bodies of water. And in fact, the nearest recorded osprey nests are located to the north in Tibbetts Valley Park. No osprey have been observed at the Cougar/Squak Corridor.
- Northern Goshawk: Northern Goshawk is a State Candidate Species in Washington. Northern Goshawks inhabit mature coniferous forests, often on moderate slopes, especially at mid- to high elevations. Two northern goshawks were reported at Cougar Mountain Regional Wildland Park in 2004 on eBird (see Appendix A), so there is no way to know how reliable this report is.
- Marbled Murrelet, Spotted Owl, Peregrine Falcon: Marbled murrelets and spotted owls, both Federally listed threatened species, require old-growth forest for nesting, and peregrine falcons, a State Sensitive species, require cliffs or cliff-like buildings. Marbled murrelets, spotted owls, and

[9] From the WDFW web site: The PHS List is a catalog of habitats and species considered to be priorities for conservation and management. Priority habitats are those habitat types or elements with unique or significant value to a diverse assemblage of species. See http://wdfw.wa.gov/hab/phslist.htm.

[10] Seattle Audubon's Guide to the Birds of Washington State: http://birdweb.org/birdweb/

peregrine falcons are not expected to breed here. These three species have specific habitat requirements that are not present in the Cougar/Squak Corridor.

- Townsend's Big-eared Bat: Townsend's Big-eared Bat is a State Candidate Species in Washington. Townsend's big-eared bats require caves or mines for breeding habitat, and they may roost in caves, mines, buildings, bridges, and tunnels (Pierson and Rainey 1998). A mine hazard area is mapped to the north of the Cougar/Squak Corridor and actually covers the extreme northeast corner of the park. It is possible Townsend's big-eared bats forage near or in the area.

Other King County Regulated Species

The CAO requires the protection of habitat for all remaining state or federally listed threatened, endangered, and sensitive species. No state or federally listed threatened, endangered, or sensitive species in addition to those specified above are expected to be found on Cougar/Squak Corridor.

The CAO also states that habitat should be protected for remaining state candidate species and King County Species of Local Importance (specified in Chapter 4 of the King County Comprehensive Plan). Species from both of these groupings are likely found within the Cougar/Squak Corridor. State candidate[11] species very likely in the area include the pileated woodpecker, and in fact feeding holes were observed by Habitat Technologies (2005). Species of Local Importance reported in the Cougar/Squak Corridor include the hairy woodpecker. Some examples of Species of Local Importance observed in the adjacent Cougar Mountain Regional Wildland Park and Squak Mountain State Park include band-tailed pigeon, olive-sided flycatcher, and purple finch.

Part 4. Land Use and Infrastructure

Public Use

Since King County acquired lands at Cougar/Squak Corridor in the early 1990s, and likely before, people have used the trails connecting Cougar Mountain Regional Wildland Park and Squak Mountain State Park. From the 1990s until King County purchased the western parcels in 2014, hikers parked on a small roadside shoulder and crossed a right of way owned by Puget Sound Energy (PSE) to access the trails on the north end of Cougar/Squak Corridor. In 2012, King County purchased land from Pacific Topsoils and secured a maintenance easement, but has been unable to reach agreement with PSE to provide legal access for hikers to the trails in Cougar/Squak Corridor.

In 2014, King County opened a new access point after acquiring the western portion of Cougar/Squak Corridor. This western portion of Cougar/Squak Corridor adjacent to SR900 was privately owned and operated as a campground in the 1970s until King County purchased the property in 2014. The campground included a large community lodge with swimming pool, gravel parking lot, a small office near the parking lot, over 100 drive-in campsites with electricity and water service to each campsite, a network of gravel roads used to access campsites, bathroom facilities, a swimming pool and tennis court.

After acquiring the western property, King County removed the bathroom facilities and decommissioned the associated septic tanks, and shut off the electricity and water to all but the lower campsites. Additional work included filling in the swimming pool with soil and native plants, planting trees and shrubs in many of the campsites, clearing a large amount of debris and invasive plants and conducting assessments on the well, septic system and lodge. King County Parks Division employees are currently using a mobile trailer for a satellite office, but do not intend to continue using that location.

[11] State Candidate Species is defined in WDFW Policy M-6001 to include fish and wildlife species that WDFW will review for possible listing as State Endangered, Threatened, or Sensitive. A species will be considered for designation as a State Candidate if sufficient evidence suggests that its status may meet the listing criteria defined for State Endangered, Threatened, or Sensitive.

King County closed the lodge to public use while an assessment was completed to decide if the lodge should be kept and renovated for use or deconstructed and removed. After an assessment of the lodge, due to its poor condition, lack of compliance with the Americans with Disabilities Act and anticipated costs for improvements, King County decided to deconstruct/demolish the lodge and is currently preparing a site design that includes an education shelter, outdoor play and gathering areas, and trails that support environmental education and other recommendations in this plan. The lodge will remain closed and will be demolished when feasible. Figure 7 shows trails and amenities at Cougar/Squak Corridor.

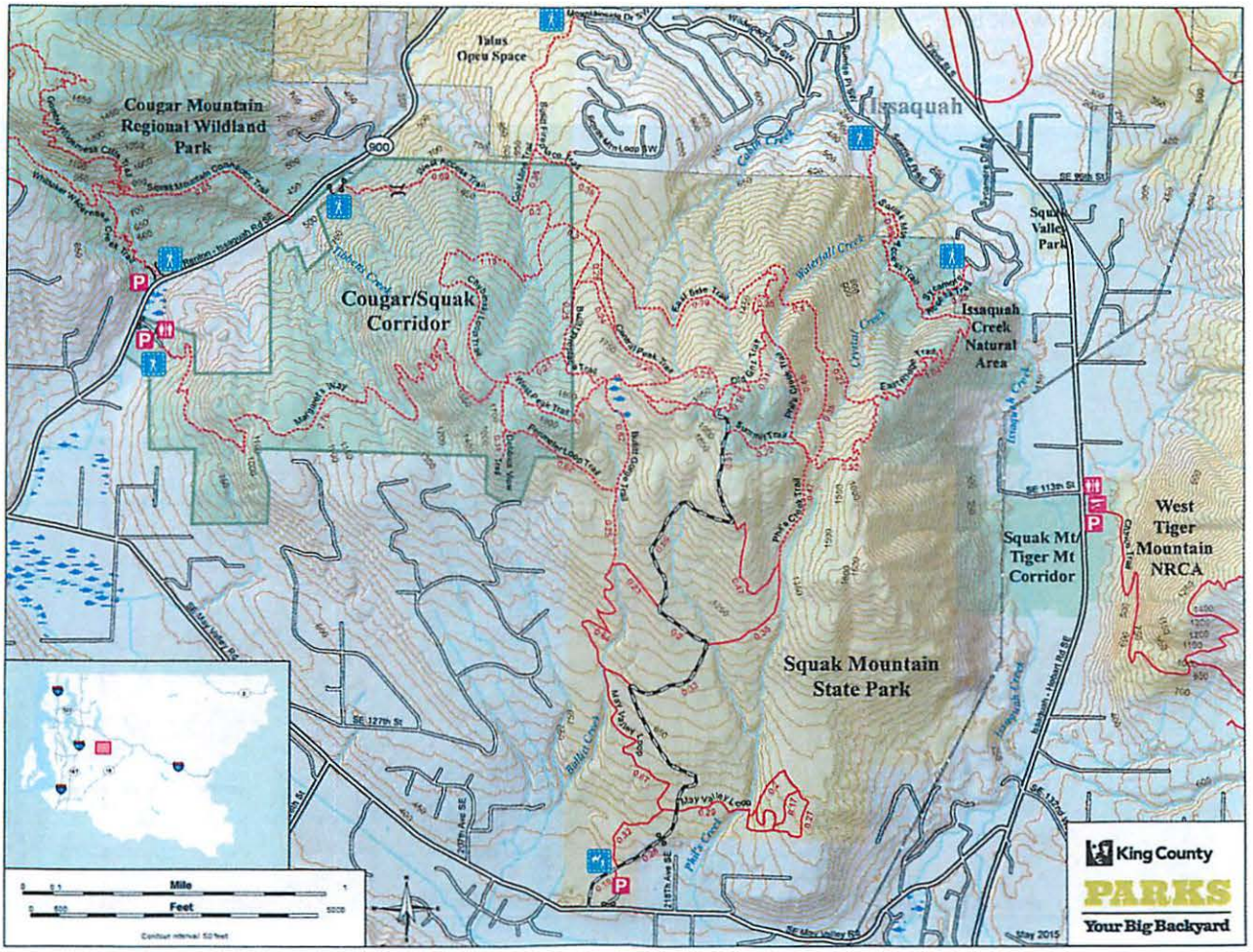
Current public use at Cougar/Squak Corridor includes hiking, walking or running on Margaret's Way, Chybinski Loop Trail, the West Access Trail, Coal Mine Trail, West Peak Trail, Perimeter Loop Trail and Debbie's View Trail to a scenic viewpoint. Property acquired in 2016 provides a scenic viewpoint off of Margaret's Way. Where appropriate and feasible, King County maintains trail viewpoints in parks. King County is currently developing trail standards and policies that will guide future maintenance standards.

Prior to King County's acquisition of the western portion of Cougar/Squak Corridor in 2014, there was some limited equestrian use from residents in adjacent neighborhoods on the gravel road system in the private camping club. This use is no longer occurring since residents of the adjacent neighborhood must cross private land to access Cougar/Squak Corridor and that is not an authorized use.

Cougar/Squak Corridor connects and is adjacent to Cougar Mountain Regional Wildland Park and Squak Mountain State Park. King County has an adopted master plan for Cougar Mountain (1994) and Squak Mountain State Park is managed under the Lake Sammamish State Park Area Management Plan (2003) that guides the management and public use of these lands. The trails in Cougar Mountain Regional Wildland Park and Squak Mountain State Park adjacent to Cougar/Squak Corridor are designated as hiking-only. Figure 7 shows adjacent public lands with trail use designations. Additionally, the Squak Mountain property that lies directly east of Cougar/Squak Corridor was donated to Washington State Parks by the Bullitt Foundation. Those lands are designated as Natural Area. Deed restrictions on that property allow only hiking and no other public uses. The Washington State Parks Land Classification System is explained in Washington Administrative Code 352-16-020. The WAC states the following:

> "(3) Natural areas are designated for preservation, restoration, and interpretation of natural processes and/or features of significant ecological, geological or paleontological value while providing for low-intensity outdoor recreation activities as subordinate uses."

Figure 7. Trails, Access Points and Public Use Landscape Context



Access and Roads

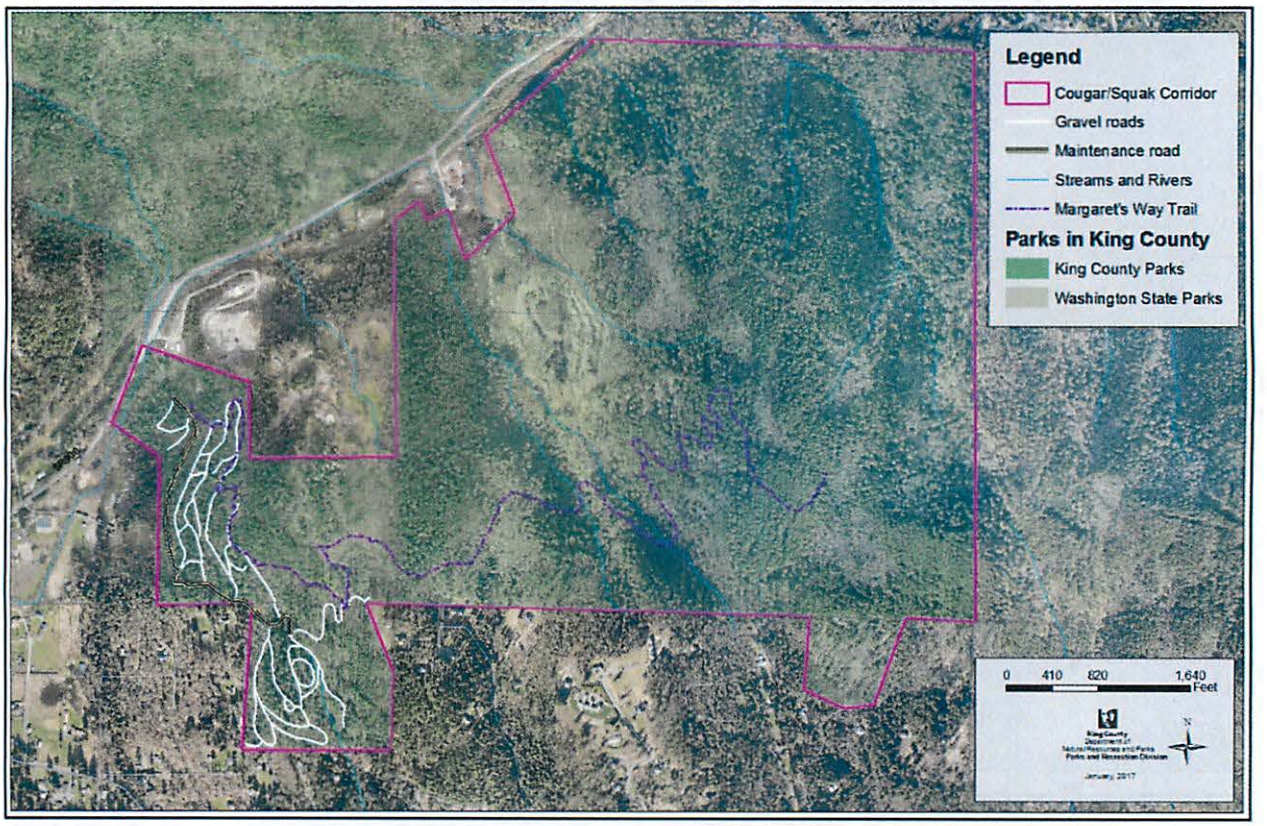
The main public access point to Cougar/Squak Corridor is from the gated entrance off of SR900. The park is open from dawn to dusk. At this entrance, there is a gravel parking lot, commercially-rented accessible portable bathroom, informational kiosk and trails. From the main parking lot the public can hike the network of old gravel roads and Margaret's Way Trail. Margaret's Way connects to other trails on Cougar/Squak Corridor and Squak Mountain State Park. Hikers can access Cougar/Squak Corridor from trails in Squak Mountain State Park and parks owned by the City of Issaquah.

There is no public access from the High Valley neighborhood to the south of Cougar/Squak Corridor off of SE May Valley Road. The roads in that neighborhood are private and there is no public parking provided. There is a small trail access point to Cougar/Squak Corridor at the beginning of the West Access Trail off of SR900. There is no formalized parking or amenities at this location. Hikers do access the trails in the north part of the park by crossing the PSE right of way, although PSE has not granted King County permission to allow hikers to use this route.

There are approximately 3 miles of gravel roads in the western portion of Cougar/Squak Corridor that were used by the previous owner to access private camp sites. Figure 8 shows approximate road locations. The main road crosses two sections of private land adjacent to Cougar/Squak Corridor. In 2016 King County purchased easements for both of those locations from the landowner to resolve those encroachments. King County Parks will maintain the central spine of the road network for maintenance and fire access. The lower section of Margaret's Way overlaps with some of the old gravel roads. The remaining roads that are not being used for maintenance and fire access may be used for hiking or future

forest stewardship activities. Some of the short segments of road have been planted with native plants to restore them to natural conditions. King County is currently conducting an inventory of culverts on the gravel road network and will develop a plan to either remove or upgrade the culverts as needed.

Figure 8. Roads



Cultural Resources

In August 2015, King County conducted a cultural resources review of Cougar/Squak Corridor. This review concluded there are no known archaeological resources or significant above-ground historic resources in or immediately adjacent to the park. The existing lodge and office buildings are of sufficient age and have enough integrity to document prior to demolition. The lodge and office buildings should be photographed and input into King County HPI database prior to demolition. A King County GIS model predicts a high probability of archaeological resources in low-slope areas along creeks, and a low probability of prehistoric archaeological resources and moderate probability of historic archaeological resources in steeper areas of the park. Any projects that will disturb the ground must be reviewed by the King County Historic Preservation Program per King County's Cultural Procedures (Administrative Executive Policy LUD 16-1). Projects that will disturb the ground may require a field survey by a professional archaeologist, a plan for actions when resources are discovered, or trained county staff presence during project construction.

Part 5. Analysis

Topography and Soils

Almost the entire park is within the mapped erosion hazard area. There is an extensive system of trails across Cougar/Squak Corridor. Many of the trails were previously logging roads that would have been converted to residential streets had the property been built as a housing development, as previously planned. Decommissioning and replanting the roads that are not a part of the active trail network or needed for forest stewardship would likely help stabilize the slopes and reduce the chances for or severity

of erosion on the property. King County should assess and locate any blocked or undersized culverts on the permanent road network.

Hydrology

Across the Cougar/Squak Corridor, "surface water generally runs off the site in the form of sheet flow across broadly sloped areas. This means that localized runoff does not become concentrated in channels" (Associated Earth Sciences 2011). This hydrology should make the likelihood of erosion within stream channels less likely should peak flows increase (see "Climate Change Adaptation" below). Old logging and haul roads (some of which are now a part of the trail system) "may capture slope sheet flows and channel the flow across the slope until the water escapes the ruts at low points. The low points generally occur at the natural slope swales which, on this site, do not appear to receive concentrated flows. The concentrated flow then saturates slope soils and may result in new landslide activity and increased erosion" (Associated Earth Sciences 2011).

Wetlands

Forested wetlands are present in the lowest elevations of the park adjacent to SR900. Access into the wetland area is very easy from the parking lot; in fact, the area directly south of the driveway appears to have been used for camping or parking in the recent past, as it is flat, devoid of trees and shrubs, and the only plants growing are herbs such as buttercup (*Ranunculus repens*). Red-legged frogs were seen in this wetland, and coho are known to use the stream through this area. This area would be a good candidate for invasive species removal and tree planting. Retaining the fish and wildlife habitat functions should be a goal for any restoration, public education, or recreation projects done in this area.

Because this stream and wetland complex is relatively large, heavily forested, and has running water, beavers could be reasonably expected to move in at some point and dam the stream. Any restoration, public education, or recreation projects near the wetland complex should be planned with the assumption that beavers will eventually move in, cut down some of the trees, build one or more dams, and raise water levels. Any planting projects or infrastructure should be installed with the flexibility to accommodate for or manage beaver activity.

An old tennis court is located just south of the parking lot within the wetland/riparian buffer. This tennis court could be removed and the buffer planted in native vegetation. This area might also be used for low-impact public education opportunities.

Small forested wetlands have been identified in the uplands along the streams. There are likely many small wetlands dotting the entire park along the various stream corridors. Field surveys and wetland delineations in the remainder of the park that hasn't yet been surveyed would provide valuable information for the management of the park, including trail maintenance, improvement, and decommissioning if necessary; planning and placement of other recreational amenities; tracking forest health over time; and planning for and maintaining the park's ecological function, including wildlife habitat and biodiversity.

Forest Stewardship

The forest ecosystem at Cougar/Squak Corridor is generally of good quality and health. It is a patchwork of tree stands of varying ages and differing species composition. It is composed of second- and sometimes third-growth forest. Upland forest stands are interwoven with riparian vegetation that lines small streams and wetlands that form the headwaters of Tibbetts Creek and tributaries to May Creek. Mature trees that appear to be over 100 years old will begin to take on old-growth qualities in a few decades, and seedlings, saplings, and young trees are growing up through the forb and shrub layer. The shrub layer also shows a lot of variation across the site. This structural and species plant diversity creates habitat for a far more diverse wildlife species community than are found in even-aged stands of comparable age and elevation that are common in the foothills and mountains of Puget Sound.

Frequently in Puget Sound forests, as a result of past logging practices, snags and logs are either completely absent or are only very small and offer little wildlife habitat value. Very large snags and logs are present at Cougar/Squak Corridor and contribute significantly to the structural diversity and therefore the biodiversity of the site. Pileated Woodpeckers, a state Species of Concern, are present in the park and make use of the large snags.

The wildlife habitat quality of a second-growth forest is generally improves with increases in structural complexity and plant species diversity. Structural diversity is measured by (1) a variety of ages of individual species; (2) the presence of tree, shrub, and forb layers; and (3) the presence of large wood in the form of snags and logs. The forest of Cougar/Squak Corridor rates relatively well with all three elements.

Snags and logs, the third element of structural diversity, are found throughout Cougar/Squak Corridor. Snags are standing dead trees and are well documented to be important to a large variety of wildlife species (Neitro et al. 1985; Bull 1978; Bull and Meslow 1977; Cline 1977; Mannan et al. 1980). Snags, as well as downed trees (i.e., logs), are critical elements of healthy, productive, and biologically diverse forests (Bull 2002). In Washington and Oregon, at least 93 wildlife species are associated with snags in forest ecosystems, including 4 amphibian, 63 bird, and 26 mammal species. Of the 93 species, 21 are associated with hard snags (decay class 1 and 2), and of those 21 species, 5 species are associated only with hard snags, including the pileated woodpecker (Marcot 2002). Larger diameter snags are typically more valuable to a greater number of species than smaller diameter snags (Bull 2002). Further, snags are primarily used by birds and bats, whereas the majority of species using downed trees include small mammals, amphibians, and reptiles (Bull 2002).

Root disease, or laminated root rot, was reported in 2010 during the FLAT assessment in the forest stand located in the most northwestern portion of the property in HSU 5 (Figure 6). It was also reported by Rourke (2011) in a few pockets in the southwest area of A-1 (Figure 6). The trees with root disease in A-1 are 100-year-old Douglas-fir and western hemlock (Loeber, B., pers. comm. 2015). Root disease is caused by a fungal pathogen (often *Phellinus weirii*) that can only be eliminated by removing the tree by its roots (Loeber, B., pers. comm. 2015). Other trees can then be planted in place of the removed trees. According to Roarke (2011): "Typically, [red] alder is recommended to replace the susceptible host Douglas-fir. Western red cedar is a host but is generally not susceptible to the disease. The use of chemicals is not a recommended or viable course of action to treat root diseases." Root disease often attacks trees that are already stressed; stressors may include drought, low or high water table, excessively porous soils or over-stocked dense forest stands. Any activities that rely on the use of healthy live trees may be at risk in areas with root disease.

The US Forest Service suggests the following to minimize the risk of adverse effects of laminated root rot:

One approach involves favoring less susceptible species, or a mixture of less susceptible and immune species, on sites infected with laminated root rot. This approach does not eliminate the pathogen from the site, but reduces the effects of disease upon the stand. This approach is usually preferred on heavily infested sites, because it is generally cost effective, and maintains conifer cover on the site. Less susceptible or immune species may be planted.

Another approach that has been employed is to create a buffer between an expanding laminated root rot infection center and the adjacent portion of the stand that is judged to be healthy. This may be accomplished in several ways, from complete removal of trees for a prescribed distance, usually 15 m (49 ft.), surrounding the center, to removing only host trees from the buffer area. This approach requires accurate information on the spatial distribution of the root disease in the stand, obtained by conducting a root disease survey, before implementation is considered, and is appropriate only in situations where distribution of the fungus is discreet and not diffuse.

King County is currently under contract with the forestry consultant firm Stewardship Forestry and Science. The consultant conducted a review of these site management guidelines and recommended the following: "We encourage planting red cedar as part of a diverse, root rot resistant species mix. Root rot is a native pathogen. Low levels of root rot are a natural mortality pathway that encourages snag creation. Forests with high species diversity reduce the risk of widespread mortality."

The consultant also recommended that King County identify red alder decline as a critical forest stewardship issue:

> "Red alder have relatively short life spans (80-100 years) and rather than transition to canopies of longer-lived tree species, red alder stands degrade to shrub openings due to the dense shrub thickets that commonly thrive below red alder canopies. We recommend discussing red alder's relatively short lifespan and its tendency to decline (broken tops and branches, heart rot) in stands older than around 60 years. HMUs 1, 8, 11 and 13 are in this condition. The lower canopy cover reported for these units may indicate dying crowns.
>
> While the FLAT data did not record damage, broken tops and branches, heart rot, and declining growth rates are common in red alder forests similar to those at Cougar/Squak Corridor. Regenerating these forests involves planting, shrub control, and/or creating canopy openings through overstory tree removal. The County should develop desired future conditions for each forest type, such as species composition, density and spatial pattern, and desired ecological functions. Finally, we encourage the County to consider maintaining road access into forested areas to allow the option of future tree removal."

King County is planning to conduct forest assessments at the landscape level and develop forest stewardship plans with recommendations for improvements to forest health. Cougar/Squak Corridor will likely be part of a landscape-level forest assessment and stewardship plan. This document is intended to serve as a forest stewardship plan for Cougar/Squak Corridor until a larger landscape forest stewardship plan is developed.

Invasive Plants

Invasive plant species, especially when they grow into a large monoculture, have the ability to severely restrict ecological processes, including blocking fish passage, killing trees, and out-competing native biodiversity. Fortunately, the invasive species within the interior of this park are relatively minimal and currently containable. As is typical, invasive plants were observed most commonly in the most heavily disturbed areas on site – the most impacted being along SR900 and in the PSE power line right-of-way, where Himalayan blackberry grows thickly, and morning glory blankets small areas. Purple loosestrife was observed within a small unmapped wetland between park parcels within the PSE corridor. Other invasive plants within the PSE corridor include evergreen blackberry and butterfly bush. Although the PSE corridor is not park property, it is adjacent to and between parcels that make up this park, and the heavy amount of invasive species in the right-of-way may invade the native forest of the park if not prevented. Prevention techniques may include removal of some of the invasive shrubs and replanting with native shrubs at a thick density to help prevent the encroachment of the non-natives.

Along SR900 and within the wetland and stream corridors that run parallel to the road, Himalayan blackberry and reed canarygrass are mixed in with native but sometimes invasive horsetail (*Equisetum*). And at the entrance to the park, English ivy and holly are sprouting; they are currently small enough they can be removed by hand. Because of the likelihood for ongoing dispersal of seeds, removal of these species will likely need to be an on-going part of park maintenance.

Non-native herb species such as herb-Robert are interspersed among the larger interior trails that were formerly roads. Although these species are a smaller threat to native biodiversity, removal and replacement with native herb species would improve the park's biodiversity and aesthetic and also help minimize the further spread of invasive species in the park.

Wildlife Habitat Connectivity

Cougar/Squak Corridor connects Cougar Mountain Regional Wildland Park and Squak Mountain State Park. The "Corridor" is approximately 1.6 miles wide. Most definitions of wildlife corridors in the literature define corridors as linear dispersal conduits that link isolated habitat patches (Saunders and Hobbs 1991; Rosenberg et. al. 1997), and the corridor itself, if wide enough and vegetated, may also provide habitat where resident organisms live and reproduce (Rosenberg et. al. 1997; Noss 1983; Brooker et al. 1999). Clearly Cougar/Squak functions as more than just a conduit between other lands – it provides habitat itself. To call Cougar/Squak Corridor only a corridor would be to discount the habitat value it provides. However, it is worth acknowledging its corridor functions to ensure it is managed appropriately.

Corridors can provide a variety of functions for flora and fauna at both the local and regional landscape spatial scale including:

- Providing a means for animals to move between habitats (home range) daily and seasonally (Noss 1983);
- Enabling animals to disperse from one patch to another;
- Reducing species extinction rates by ensuring that populations or individuals are not isolated from others in the landscape (population sink);
- Guarding against detrimental genetic effects (inbreeding depression and random genetic drift);
- Providing increased foraging habitat for a variety of species;
- Providing predator escape cover for animals as they move between patches; and
- Providing an avenue for vegetative communities to maintain reproduction viability and colonize new areas (Tewksbury et. al. 2002; Stephen and Hallett 1999; Rosenberg, et. al. 1997).

Cougar/Squak Corridor provides these corridor functions. But on a much larger scale this property contributes to the connectivity of a very large area of forest collectively referred to as the "Issaquah Alps," which includes Cougar Mountain Regional Wildland Park and Squak Mountain State Park, the Talus Open Space, as well as the West Tiger Mountain Natural Resources Conservation Area and Washington State DNR lands within the Forest Production District. Retaining and improving connectivity of Cougar/Squak Corridor within this larger area is important.

The narrowest width of Cougar/Squak Corridor between Cougar Mountain Regional Wildland Park and Squak Mountain State Park is about 80 feet across. The width is considered adequate for corridors intended for wildlife connectivity. However, there are other partial barriers to wildlife movement at this location: SR900 and, less significantly, the Puget Sound Energy right-of-way. SR900 cuts a 40-foot gap between Cougar Mountain Regional Wildland Park and Cougar/Squak Corridor. Wildlife crossing SR900 risk being hit by cars on this heavily used road. The PSE right-of-way is 120 feet deep and vegetated largely in a thick growth of Himalayan blackberry. In general, wildlife species should be able to move through this corridor; however the blackberries are thick enough that they may impede movement in some instances. The blackberry may attract some wildlife; black bear scat (composed largely of blackberries) was observed on the trail going through the right-of-way in this location.

Several in-holdings (homes and businesses) are present along SR900 between park property boundaries. If these parcels (totaling 69.8 acres) were to be acquired and revegetated, the connection between Cougar/Squak Corridor and Cougar Mountain Regional Wildland Park would be much more robust.

Recreational trails within the park can both promote and reduce connectivity for wildlife. Some animals such as bear, deer, cougars, coyotes, and raccoons may use the trails as they move through the forest just like they would otherwise use "game" trails. However, as people also use the trails, depending on the level of activity, the recreational use of the trails may inhibit wildlife presence. The property is large enough that some areas could remain intact and without trails, which would help ensure the viability of

wildlife populations on a site such as this with recreational use. Future site and trail development should be designed to include Best Management Practices for co-existing with wildlife.

Colorado State Parks (1998) released a guide called "Planning trails with wildlife in mind," which offers several useful things to keep in mind:

> Sometimes the response of wildlife to a trail doesn't last long, as when a bird stops feeding as a hiker approaches, only to continue eating after the hiker has passed. With increasing levels of use and changes in the type of use, there may be sufficient disturbance along a trail that some wildlife may move away permanently. Predictability can be a major factor in how much disturbance a trail user causes. If trail users stay on a trail they are more likely to be perceived as acting in a predictable fashion and therefore as less of a threat.
>
> Dogs can cause considerable disturbance (because they may chase and kill wildlife), but less so if they are on a leash and don't leave the trail. Generally, it is better to concentrate recreational use rather than disperse it.
>
> Paradoxically, bird watching and other forms of nature viewing that intentionally seek out close encounters with wildlife may have a significant impact.
>
> Factors affecting the short-term impact of human disturbance on wildlife include:
>
> - Type of species and flushing distances
> - Type and intensity of human activity
> - Time of year and time of day; and
> - Type of wildlife activity (feeding, nesting, roosting, migrating)

The 2004 King County Critical Areas Ordinance[12] codifies and protects a Wildlife Habitat Network (WHN) throughout the county. The WHN, which is mapped in the King County Comprehensive Plan[13] (King County 2012), is composed of contiguous vegetated corridors that are intended to link larger blocks of wildlife habitat with critical areas and their buffers, priority habitats, open space, and other areas to provide for wildlife movement and to alleviate habitat fragmentation and species isolation. The WHN is mapped through Cougar/Squak Corridor and connects with both Cougar Mountain Regional Wildland Park and Squak Mountain State Park.

Climate Change

Climate change impacts to the streams at Cougar/Squak Corridor may include increased water temperatures, reduced base flows and increased peak flows, potentially increased erosion with increased peak flows, and potentially decreased forest cover in upland and riparian areas as a result of changing water regimes (National Wildlife Federation 2009). Of these possibilities, reduced summer flows in the small headwater streams and possible transition from riparian vegetation to upland vegetation may be the most likely. There could be loss of wetland size and function of both the small wetlands at higher elevations in the park as well as the larger scrub-shrub/forested wetlands near SR900. Loss of these wetlands, especially the larger scrub-shrub/forested wetlands in the low elevations of the park, could mean a decreased ability to reduce peak floods, a loss of riparian habitat for wildlife (especially birds), and loss of their water quality function.

Warmer summers and decreased precipitation may equate to dryer forests and an increased risk of susceptibility to pests such as bark beetles as well as to forest fires. Age and species of trees make a difference in how resistant to fire a forest is. Older, larger trees are more fire resistant than small trees and shrubs. Mature Douglas-fir trees have very thick bark, which increases fire resistance (Bennett 2010).

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[12] http://www.kingcounty.gov/property/permits/codes/CAO.aspx
[13] http://www.kingcounty.gov/depts/executive/psb/regional-planning/king-county-comprehensive-plan.aspx

Additionally, hardwood species such as bigleaf maple and red alder have a relatively high moisture content, which also increases fire resistance (Bennett 2010). Retaining these mature trees as well as planting more fire-resistant species when doing restoration planting may provide benefits and increased resilience.

In a review of this document by Stewardship Forestry & Science consultants dated May 16, 2016, the authors suggested that "forest managers should prioritize tree species resistance to drought conditions over fire resilience in climate change adaptation. "Focus on maintaining forest cover and long-lived, drought-tolerant species that can survive the projected longer, hotter summers. Red alder and to a lesser extent bigleaf maple require more moisture than other species and survive poorly in droughty conditions predicted in climate change models." The authors recommend using drought-tolerant species including Douglas-fir and western white pine as part of a diverse species planting mix. "Forest fire mitigation strategies should focus on reducing the spread of fire through fuel breaks and defensible spaces, though promoting fire-tolerant species is prudent as well."

Improving and ensuring habitat connectivity is one of the most important overall approaches to fostering resiliency, as connectivity helps facilitate population range shifts and adaptive migrations – often into areas outside their historic or current ranges. Cougar/Squak Corridor is one piece of a much larger connected area of protected land, and this entire area, often called the "Issaquah Alps," is well-suited to serve this connectivity function. Minimizing disturbances and fragmentation to this park will help to retain and support important connectivity functions.

Restoration

The 2016 King County Open Space Plan directs King County to "integrate habitat management and enhancement as a major component of its stewardship." This can include restoration of degraded natural areas to increase their ecological, wildlife habitat, climate change adaptation and resiliency, and educational values. King County should maintain the ecological integrity of Cougar/Squak Corridor through the protection and restoration of natural processes, structure and functions.

Restoration plantings should be conducted along with weed control and eradication projects as well as other restoration efforts. Examples of planting programs that would benefit the park include planting native plants in areas where non-native invasive species would preclude native shrub and tree regeneration, plantings of native shrubs in powerline corridors, and throughout the park in areas lacking in native vegetation.

The King County Comprehensive Plan specifies that King County can increase resiliency and adapt to climate change through "Comprehensive approaches to conserving biodiversity that may make habitats more resilient to climate change impacts." The restoration efforts at Cougar/Squak Corridor should consider the potential impacts of climate change.

Public Use

The Puget Sound Regional Council currently projects that by 2040, King County will be home to 2.4 million people. It can be assumed that any public use of Cougar/Squak Corridor and other parks will continue to increase as King County's population increases. Cougar/Squak Corridor is centrally located and can be easily reached by citizens from all over King County. Located along SR900 it has an existing parking lot that can accommodate cars, vans and school buses. Infrastructure from the former private camping club could potentially be improved for future park amenities to support public use and environmental education.

Cougar/Squak Corridor can accommodate multiple uses and retain the environmental values for which the park was purchased and included in King County's system of open space. The steep forested slopes, wetlands, creeks and existing infrastructure in the park provide many opportunities for public enjoyment of nature, recreation and environmental education. Site assessment and community input determined the uses best suited for Cougar/Squak Corridor are hiking, trail running, environmental education, forest

stewardship, a treetop adventure course and wildlife habitat protection. The trail system at Cougar/Squak Corridor is connected to a larger network that spreads into Cougar Mountain Regional Wildland Park, Squak Mountain State Park, and beyond. Public use at Cougar/Squak Corridor must be compatible with uses allowed on adjacent public lands, which is hiking only. If additional land is acquired and added to Cougar/Squak Corridor, additional uses such as equestrian and mountain bike use may be considered.

In July 2016 the King County Council adopted an ordinance authorizing the King County executive to enter into a ten-year concession agreement between King County and Go Ape Cougar-Squak LLC for construction and operation of a treetop adventure course at Cougar/Squak Corridor. This use is allowed by the funding sources used to purchase the land and the conservation easement. The challenge course would only be allowed in the two parcels closest to SR 900 that were acquired with REET funding. In January, 2017 Go Ape decided not to sign and implement the concession agreement.

Acquisition

Acquisition of properties and/or conservation easements of private land adjacent to or near Cougar/Squak Corridor should be pursued to enhance public use, parking and access opportunities and maintain the ecological value and wildlife connectivity the park provides. A goal of the 2016 King County Open Space Plan is "Grow and connect regional open space and natural lands, in order to protect habitat important for fish and wildlife and to provide recreation opportunities." Objective 2.1 states the following:

> Focus on securing lands in strategic acquisition zones that build upon prior public land and conservation easement investments, connect to existing sites, provide multiple benefits (recreation, public access, habitat protection) and protect regional watersheds and streams (informed by Salmon Recovery Plans, the Open Space Plan, and Conservation Futures Tax criteria).

Acquisitions will be prioritized based on guidance provided in the 2016 King County Open Space Plan Appendix V: Acquisition Guidance. The following guidance is applicable to Cougar/Squak Corridor:

> The King County Parks and Recreation Division further considers the following elements when evaluating and selecting sites for acquisition:
>
> - Consistent with applicable open space policies and goals
> - Provides connectivity, such as an in-holding in an existing King County-owned site, adjacent to an existing King County-owned site, adjacent to another publicly-owned or a privately-owned recreation/conservation land
> - Provides multiple benefits/functions, such as active recreation, passive recreation, habitat protection, forest conservation, revenue generation, greenbelt/greenspace view corridor
> - Provides for increased recreation opportunities that are regional in scope, such as allowing for a recreation use that is not available elsewhere in the system and/or allowing for a recreation use that is underserved elsewhere in the system
> - Able to become financially sustainable through direct and indirect revenue generation, partnerships, efficiencies, or other means
> - Provides an opportunity for a public/private partnership in development, management and maintenance of the site
> - Accommodates, or able to accommodate a backcountry trail that adds to /enhances a backcountry trail network on an existing King County-owned site; would allow for a trailhead and/or parking facility, provides trail connection to a regional trail; is located

within a designated equestrian community, and/or provides trail linkages between public lands

- Resolves a land/resource management issue, such as providing maintenance access, providing public access, resolving an encroachment and/or allowing for a higher impact recreation use, thus conserving other more sensitive sites
- Addresses needs for cost efficiency/savings including leveraging of other acquisition stewardship and/or development funds, providing public benefit in proportion to cost of acquisition/ownership, and not providing significant out-of-the-ordinary long-term maintenance or capital expense

Sustainable Funding and Partnerships

Sustainable funding is essential to meeting agency goals of providing quality public recreation opportunities. It supports facility and trail maintenance, development, and improvements. The 2010 King County Open Space Plan recognizes the need for sustainable funding and partnerships as follows:

> "As the parks and Recreation Division is not fully funded by tax revenue, development of strategic revenue-generating partnerships is a core component to ensuring that the open space system remains available to the public, even in difficult economic times.
>
> Moreover, partnerships maximize the value of public funds and are often a catalyst for substantial levels of additional community-based investments and resources. Partnerships can ultimately result in a greater scope and number of recreational and conservation opportunities than any one entity can achieve alone. Partnerships can also nurture a sense of ownership and stewardship, which contributes to the open space system's long-term health and vitality."

In 2013, King County voters approved the 6-year Parks, Trails, and Open Space Replacement Levy by more than 70%. The measure funds the operation and maintenance of King County's parks, regional trails and open space as well as the Community Partnerships and Grants Program.

King County's Community Partnerships and Grants Program works with a variety of partners, local groups, non-profit organizations and recreation clubs to construct, develop and maintain new or enhanced public recreation facilities on King County land while keeping publicly funded operating and maintenance costs neutral. King County contributes use of land and capital improvement grants for successful partnership proposals. Community partners contribute the necessary additional capital and in-kind resources to develop the new or enhanced facility, as well as the operations and programming, which are typically accomplished through volunteers, revenue-based programs and other resources.

Part 6. Community Engagement

The community has been very engaged at Cougar/Squak Corridor for a long time. Key stakeholders including members of Issaquah Alps Trails Club, Save Squak Mountain, Washington Trails Association (WTA), Washington Native Plant Society, The Mountains to Sound Greenway Trust, and TPL have been involved at Cougar/Squak Corridor since the 1990s with some playing a significant role in advocating for protection of the property when it was threatened by logging and development, helping to acquire the land, building trails, cleaning up the property, providing an inventory of plants and controlling invasive plants. WTA and other non-profit organizations have contributed hundreds of volunteer hours to build and renovate Margaret's Way and other trails at Cougar/Squak Corridor.

In 2014 King County Parks committed to engage with the community to solicit ideas and develop site management guidelines for the park. Parks hired the Pomegranate Center to train employees on effective community engagement, build skills and develop meaningful tools for including the community in planning for parks. The Pomegranate Center is a local non-profit organization that offers intensive training programs in community engagement. King County Parks and the Pomegranate Center selected

Cougar/Squak Corridor as a pilot project. The Pomegranate Center Team assisted King County in developing the community engagement process, facilitating a design workshop and hosting community meetings. King County Parks conducted the community engagement process from early spring through the fall of 2015. That process consisted of the following:

- Convening a 16 member steering group to help prepare for the for two public community meetings. The group met on April 29, 2015 and June 10, 2015 to review project details, provide feedback and verify findings.
- Hosting an initial community meeting on May 27, 2015 to present information about the park and to solicit ideas from the community about appropriate uses and amenities.
- Facilitating a design workshop on May 28, 2015 to synthesize information gathered at the community meeting and help King County Parks prepare draft recommendations for uses and amenities at the park. Design workshop participants included King County employees, two members of the steering group along with staff from the Pomegranate Center.
- Holding a second community meeting on June 17, 2015 to review information about the park and present draft recommendations for uses and amenities at the park.
- Drafting Site Management Guidelines based on feedback from the process and additional research.
- Soliciting feedback on the draft Site Management Guidelines by posting on the King County Parks Division website and issuing a Determination of Non-Significance (DNS) in compliance with the State Environmental Policy Act (SEPA). The SEPA public review and comment period is two weeks from the time the DNS is issued.

The steering group included 16 people representing major recreational interests, stakeholders and non-profit organizations, the City of Issaquah, Washington State Parks, citizens and environmental educators from the Issaquah and Tahoma School Districts (See Acknowledgements at the beginning of the document). The role of the steering group was to help define a future vision and uses for Cougar/Squak Corridor. They helped refine project criteria developed by the Parks Division, assisted in convening the community to generate ideas for uses at the park and to verified findings. The role of the community was to provide ideas for uses and amenities at the park. King County's role in this process was to listen to community input, lead a design workshop and develop the site management guidelines.

The project criteria developed and reviewed by the steering group provided a foundation for the community to generate ideas for the future vision of Cougar/Squak Corridor focused on uses and amenities at the park. Project criteria are as follows:

Public uses and amenities at Cougar/Squak Corridor will:

- Attract people to the park
- Encourage partnerships
- Be scaled to fit with available parking
- Be compatible with uses at neighboring parks
- Fit with the intent and purpose of the original land purchase
- Be maintenance friendly and safe
- Fit within policy guidance
- Protect the environment
- Benefit future generations

As mentioned above, King County received a proposal for a tree-top canopy tour/challenge course at Cougar/Squak Corridor during the community engagement process. That proposal was considered with all the ideas generated and was included in draft recommendations presented at the second community meeting and in this document. Immediately following the first community meeting, members of the steering group, employees from King County Parks and the Pomegranate Center conducted a design workshop. At the design workshop all the ideas generated during the community engagement process were reviewed to identify themes. Those themes have been incorporated into draft recommendations in this document and are listed in order of priority below.

First Priority

- Support environmental education
- Leave some areas undisturbed
- Consider the proposal for a canopy tour/challenge course
- Create hiking trails for all abilities
- Establish park zones to delineate different use levels consistent with funding sources
- Create gathering places
- Where possible create loop hiking trails

Future Actions

- Explore and advocate for pedestrian and wildlife connections across SR900
- Acquire land for parking and enhanced access

Part 8. Management Goals, Objectives and Recommendations

Goals for Cougar/Squak Corridor

The goals for Cougar/Squak Corridor are:

- conserve and enhance environmental value
- accommodate appropriate public access and recreation

The objectives and recommendations that follow support the goals for Cougar/Squak Corridor. They incorporate input received during the community engagement process and draft recommendations presented at the second community meeting. They reflect information gathered about ecological resources and the analysis contained in this report. Recommendations will be implemented as resources and funding becomes available.

Management Objectives and Recommendations

Environment

Objective: Protect and enhance streams and wetlands

Recommendations:

- When locating and constructing new trails minimize erosion and impact to streams.
- Use native plants when restoring wetlands, streams and buffers.
- Collect field data and inventory as needed to assess impacts to streams and wetlands.
- Retain fish and wildlife habitat functions for all restoration, public education, or recreation projects.
- Conduct wetland delineations along the un-surveyed stream corridors in the park to provide information for the management of the park, including trail maintenance, improvement, and potential decommissioning, planning and placement of other recreational amenities.
- Verify and map the accurate locations of streams to better understand the site's hydrology, potential erosion problem areas, the best areas for trails, and other site management elements.
- Remove debris such as the tires currently present in the stream just south of the parking lot entrance.

Objective: Control invasive plants

Recommendations:

- Continue to control weeds required for control under Washington State law.
- Remove invasive shrubs along utility corridors and replant with native shrubs at a thick density to help prevent the encroachment of the non-native plants.
- Use native plants to control invasive plants.
- Coordinate and collaborate with the King County Noxious Weed Program.
- Work with volunteers and stewards to manually remove invasive plants such as English holly, blackberry and ivy.
- Along the trails in the interior part of the park remove non-native herb species such as herb-Robert as well as English holly. Replace with native herb and shrub species to help minimize the further spread of invasive species in the park.

Objective: Protect fish and wildlife

Recommendations:

- Conduct additional field reconnaissance and FLAT surveys in the un-surveyed portion of the park to provide valuable information for the management of the park, including trail maintenance and decommissioning if necessary; placement of future recreational amenities; tracking forest health over time; and conserving and enhancing the park's ecological function, including wildlife habitat, forest health and biodiversity.

- Conduct surveys to determine what fish, amphibians, aquatic mammals, or wetland birds may be using the streams and wetlands of the park.
- Inventory the roads for fish habitat blockages and restore fish passage.
- Conduct fish survey in tributary 0294 to determine salmonid and other fish use, including what life history stages are present for coho and other salmonids.
- When possible, projects should be designed to minimize wildlife impacts and accommodate beaver activity.
- Coordinate with the Washington State Department of Transportation to add warning signs and decrease speed limits on SR900 to protect wildlife.
- Protect the Wildlife Habitat Network that runs through Cougar/Squak Corridor.
- Acquire adjacent properties to enhance wildlife connectivity.
- Leave some areas of the park undeveloped to support wildlife.

Public Use

Objective: Provide opportunities for low-impact public use that do not diminish environmental value and are compatible with uses allowed on adjacent public lands

Recommendations:

- Maintain and improve trail hiking opportunities.
- Install park rule signage to educate park visitors and encourage rule compliance and facilitate enforcement.
- Plan and construct gathering places, play areas and other amenities that attract visitors to the park and encourage visitors to play outside and explore nature.
- Conduct field assessments and define park zones including areas that will remain undeveloped.
- Acquire adjacent properties where feasible to provide additional parking or trail connections.
- Monitor public use and manage trails to accommodate or change use as needed.
- Remove the old tennis court and plant the wetland buffer in native vegetation. Consider this area for low-impact public environmental education opportunities or outdoor play areas.
- Ensure that public uses are compatible with the funding sources used for acquisition.

Objective: Protect Cougar/Squak Corridor from inappropriate public uses

Recommendation:

- Control litter/dumping and encroachment activities.
- Secure unused existing structures until they can be demolished.
- Work with the Sheriff's Office to ensure entrance gate is locked each evening and on enhanced patrols should issues arise.

Environmental Education

Objective: Provide opportunities for environmental education at Cougar/Squak Corridor.

Recommendations:

- Construct and install facilities that support environmental education such as a shelter to accommodate school groups, interpretive signs, trails and a parking area that accommodates a bus and vans.
- Coordinate with school districts, partners, non-profit organizations to assess program needs and promote park use for environmental education.

Forest Stewardship

Objective: Conduct forest stewardship at Cougar/Squak Corridor. A general timeline is provided for planning purposes

Recommendations:

Yearly

- Monitor forest health.
- Monitor invasive species and control as necessary to prevent spread.

2016-2021

- Incorporate Cougar/Squak Corridor into landscape forest stewardship planning.
- Conduct forest health assessment using FLAT on the areas of Cougar/Squak Corridor that have not yet been assessed.
- Assess the root disease present at Cougar/Squak and develop best management practice recommendations.
- Examine trees involved in planned recreational activities to ensure they are healthy and not diseased. Monitor trails in areas identified with root rot and remove hazard trees.
- Retain healthy mature Douglas-fir trees and hardwood species such as big leaf maple to increase fire resistance. Plant more fire-resistant species when doing restoration planting.
- Assess older red alder stands to ensure healthy forest conditions. If needed, regenerate these stands by planting, conducting shrub control and create canopy openings through overstory tree removal.

2021-2026

- If determined important for forest health, consider proposals for forest thinning and planting projects consistent with the other management recommendations of this plan.

Access, Roads and Trails

Objective: Provide appropriate public access and protect natural resources

Recommendations:

- Decommission old roads that are not part of the trail system or needed for maintenance or forest stewardship and plant with native vegetation.
- Conduct soil analysis prior to new trail construction.
- Construct new trails only in areas with suitable soil conditions.
- Construct new trails to minimize long term maintenance and prevent or minimize the potential for erosion and sediment delivery into nearby streams and wetlands.
- Minimize wildlife impacts when planning trails.
- When planning trails consider loop trails, low-elevation and easily accessible trails.

- New trails should be designed to meet standards established by King County's Trail Programmatic Permit, which is based on US Forest Service standards.
- If new land is acquired, evaluate area to expand parking.
- Discourage the creation of new unauthorized trails, including trails originating from adjacent private property.
- Maintain viewpoints by clearing trees where appropriate, feasible and according to King County policy.
- Negotiate with Puget Sound Energy to secure access on their right-of-way to provide legal public access to trails on the north side of Cougar/Squak Corridor.

Infrastructure

Objective: Provide amenities that are safe, sustainable and support park goals.

Recommendations:

- Deconstruct/decommission lodge. Where possible salvage materials that can be reclaimed for use in other park amenities or recycled.
- Finalize a site design with amenities that support goals and recommendations for Cougar/Squak Corridor.
- Secure permits and funding to make improvements to Cougar/Squak Corridor consistent with these site management guidelines.
- Design and maintain facilities that protect the environment and natural resources, support safe and sustainable recreation opportunities, and provide user accessibility in accordance with the Americans with Disabilities Act and other regulations.
- Explore opportunities for a shuttle service or similar transportation between local communities, transportation hubs and Cougar/Squak Corridor.
- Photograph existing lodge and office buildings and submit to King County HPI database prior to demolition.

Collaboration, Partnerships and Volunteers

Objective: Maintain existing partnerships, consider new partnerships, collaborate with non-profit organizations, interest groups, other government agencies and encourage volunteer participation.

Recommendations:

- Consider new proposals to the King County Community Partnerships and Grants Program that enhance public use and environmental education at Cougar/Squak Corridor.
- Consider proposals that attract visitors to Cougar/Squak Corridor especially ones that provide enhanced access for first time visitors and underserved, low-income King County residents.
- Continue to partner with volunteer groups and non-profit organizations for trail maintenance and development as well as habitat/forest restoration projects.
- Through the King County Parks Volunteer Program encourage local non-profit organizations, community groups and recreation clubs to engage members in volunteer activities.
- Seek groups and individuals to participate as King County Adopt-a-Park and Park Ambassadors stewardship partners.

- Support partnerships that connect local schools and youth groups with recreation opportunities and environmental education at Cougar/Squak Corridor.
- Facilitate relationships with colleges and universities to help plan and implement stewardship goals at Cougar/Squak Corridor.
- Collaborate with non-profit organizations and others to achieve goals and management recommendations at Cougar/Squak Corridor.

Sustainable Funding

Objective **Pursue sustainable funding opportunities that help support environmental education, facility and trail construction, habitat and forest restoration and land acquisitions.**

Recommendations:

- Consider public/private partnerships that generate revenue and sustainable funding for Cougar/Squak Corridor and King County Parks.
- Apply for grant funding for site development and park amenities that support environmental education and for additional land and easement purchases that enhance Cougar/Squak Corridor.
- Identify and consider alternative funding sources for accomplishing plan objectives.

Implementation

Many of these recommendations pertain to ongoing site maintenance and short-term management. The Parks District Maintenance Coordinator implements many of the short-term site maintenance tasks. Recommendations that address long-term management will be implemented when funded and prioritized by Parks Division management. As new information is gathered for Cougar/Squak Corridor new projects may be proposed. Projects should be consistent with these management objectives.

Objective: **Employ adaptive management practices when implementing these guidelines**

Recommendations:

- Evaluate site-specific conditions when implementing projects.
- Respond and adapt to new or changing information.
- Monitor actions that implement these site management guidelines and facilitate completion of management recommendations in a timely manner.
- Review and update these site management guidelines as needed or every ten years.

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