Draft
McGarvey Park Open Space Forest Stewardship Plan

March 14, 2011

_____

Kevin Brown, Division Director
Parks and Recreation Division

Report produced by:
King County Department of Natural Resources and Parks
201 South Jackson Street, Suite 600
Seattle, WA 98104-3855
(206) 296-7821

Suggested citation for this report:
King County. 2010. McGarvey Park Open Space. Forest Stewardship Plan. King County Department of Natural Resources and Parks, Water and Land Resources Division. Seattle, Washington.

Table of Contents

Table of Contents 2
Executive Summary 4
Introduction 6
  Vision 6
General Property Information 7
  History 8
  Acquisition 9
  Access 9
  Easements 9
  Zoning and Surrounding Land Uses 10
Natural Resource Analysis 10
  Landscape Context 10
Natural Resource Categories Existing Conditions 12
  Forest Health 17
    Insect & Plant Parasite Damage 18
    Noxious Weeds 18
    Fire 18
  Timber and Wood Products 19
    Soils and Slopes 19
  Water Quality, Riparian and Wetland Areas 21
    Streams 21
    Wetlands 22
  Fish and Wildlife Habitat 23
    Fish 23
    Wildlife 24
    Threatened and Endangered Species 24
    Agro-forestry/Special Forest Products 25
  Cultural Resources 25
  Aesthetics, Recreation and Public Use 25
Management Recommendations 26
    Control Invasive/Noxious Weeds 28
    Reduce Risk from Fire or Animal Damage 28
  Timber and Wood Products 29
    Soils and Slopes 29
  Water Quality, Riparian and Wetland Areas 30
  Fish and Wildlife Habitat 31
    Fish 31
    Wildlife 31
    Threatened and Endangered Species 32
  Aesthetics, Recreation and Public Use 32
References 35
Acknowledgements 36

DRAFT

List of Tables

Table 1: McGarvey Park Open Space General Information……... 7
Table 2: McGarvey Park Open Space Parcel Information…….. 8
Table 3: Summary of Assessment Data for Ecological Management Units……..16
Table 4: Timeline of Forest Stewardship Recommendations…… 34

List of Maps

Map 1. Locator……...41
Map 2. Boundaries with Orthophotograph……42
Map 3. Ecological Types and Ecological Management Units……...42
Map 4. Streams and Wetlands……....43
Map 5. Soils Types……43
Map 6. Contours and Hillshade……..44
Map 7. Roads, Trails, and Access Points……...44
Map 8. Public Lands……...45

DRAFT

Executive Summary

The McGarvey Park Open Space Forest Stewardship Plan provides natural resource analysis and management recommendations to guide the long-term stewardship of this forested open space property. The property is 400.55 acres located east of Renton which were dedicated to King County in 2000 as a condition of the McGarvey Park 4:1 project. McGarvey Park Open Space connects with Petrovitsky Park's 91-acres, Spring Lake/Lake Desire Park's 371-acres, and with Wetland 14 Natural Area 40.5-acres forming 862 acres of continuous park/open space.

Vision

McGarvey Park Open Space will serve as a model of how active management can provide and maintain a balance of ecological, economic, and social values that forests provide.

Goals

- Increase plant and animal bio-diversity by implementing adaptive forest practices that increase structural complexity.
- Conserve or restore forest ecosystem health.
- Commercially thin and harvest to accelerate late seral stage characteristics of the forest.
- Retain biological legacies when harvesting for future.
- Maintain and improve where necessary the existing system of recreational trails.
- Demonstrate environmentally-sound forest management and the importance of conservation of the county's forestland.
- Provide opportunities for education and passive recreation for the public.
- Conserve or restore wildlife habitat for a diversity of species; especially sensitive, threatened, or rare species.
- Use any revenue produced through ecologically sustainable management of the site to support the stewardship of the site or other forested King County Natural Resource Lands.

Current conditions

McGarvey Park Open Space is comprised of six parcels, four of which were dedicated open space from a subdivision plat titled Woodside at McGarvey Park Div.1. The plat was recorded December 12, 2000. In addition, through a lot line adjustment, two parcels were conveyed to King County from the previous landowner, Glacier Ridge Partnership. The six parcels total 400.55 acres and are located about a half a mile south of the Cedar River and southeast of the city of Renton in unincorporated King County, Washington.

The terrain of the property varies from gentle slopes in southern regions to steeper slopes in northern regions of the property. There are eight different ecotypes and 32 unique eco-units. The site contains seven tributary streams that flow from the site into the Cedar River.

DRAFT

The majority of the forests of the property are composed of stands with significant volumes of poor quality maple and alder which are a result of past logging practices which did not address ecological characteristics of the harvested sites. The alder are dying and will have lost most of their economic value within 5 years (2015). There are also areas of significant maple crown decline and die back. In general the minor conifer component is healthy without significant forest health concerns.

The forests of McGarvey provide habitat for a variety of wildlife species. The presence of two Type A wetlands (WADNR) and numerous smaller scrub – shrub wetlands and forested wetlands are home to amphibian species, and are used by numerous bird species and other wildlife. There are over five miles of trails used primarily by local residents. Illegal off-road vehicle driving is a problem on trails in the power line right of way. Garbage dumping has also occurred with some regularity.

There are seven locations that provide access to the property. However, most of these are not technically legal access points, and none of them provide adequate parking for a higher level of use than the property currently receives.

Desired Future Conditions

The forests of McGarvey Park Open Space will be managed with a long term goal of developing interior forest habitat with older forest structural complexity. This condition is defined as having:

- an over story cohort of large trees (>36” Dbh) with complex crowns
- multiple canopy layers, including shrub and herbaceous layers
- horizontal patchiness, including gaps
- wildlife trees: live trees with decadence and/or habitat structures
- large snags (>10” Dbh)
- large coarse woody debris (CWD) (>12” larger end diameter and >15’ in length)
- a diverse plant community including hardwood and conifer trees, tall shrubs, low shrubs, herbs, epiphytes, lichens, fungi, herbs, etc. Tree layers will contain a majority of conifers, but also contain a healthy component of hardwoods.

The management actions needed to achieve the long-term goal depend on the current condition of each stand, but in general, a combination of uneven age based harvests with variable density thinning (VDT) is the preferred method. VDT thins the forest in patches of various sizes in an effort to mimic natural disturbances. It ensures that the forest will maintain a mosaic of age classes, thereby providing wildlife habitat for a broad range of species. The reforestation of the site will plant a diverse mix of tree species depending on the sunlight and moisture levels of the planting spot.

The regulated streams and wetlands will be protected by riparian buffers that meet or exceed forest practice rules in effect at the time of harvest.

The trails on McGarvey that are not in good condition should be repaired and maintained.

DRAFT

Introduction

McGarvey Park Open Space is located in unincorporated King County, contiguous with eastern city limits of Renton. The property is located about a half a mile south of the Cedar River at an elevation between 495 and 680 feet above sea level. Three tributaries of the Cedar River originate on the property and flow north, and two minor streams flow south into King County Wetland 15, which is adjacent to the north side of Lake Desire. King County acquired most of the 400.55 acres as dedicated open space through the "4 to 1 Program".

The 2010 King County Open Space Plan recognized the importance of active, sustainable stewardship of all forest lands in the Parks Division inventory. The following policies are from the Open Space Plan:

> CIP-136 King County will promote forest management and restoration in order to conserve and enhance its vital natural areas with healthy forest canopies that contribute to improved water and air quality, surface water management, fish and wildlife habitat, aesthetics, climate change adaption, and energy conservation.
>
> CIP – 137 King County should be a leader in natural resource management by demonstrating environmentally sound and sustainable forest practices on county-owned open space sites that result in retention of forest cover and improved forest health.

The Open Space Plan also recommended an assessment of the forest conditions of all of the Park Division's forest lands.

Vision

McGarvey Park Open Space will serve as a model of how active management can provide and maintain a balance of ecological, economic, and social values that forests provide.

Goals

- Increase plant and animal bio-diversity by implementing restorative forest practices that increase structural complexity.
- Conserve or restore forest ecosystem health.
- Commercially thin to accelerate late seral stage characteristics of the forest.
- Retain biological legacies for future stands.
- Maintain and improve where necessary the existing system of recreational trails.
- Demonstrate environmentally-sound forest management and the importance of conservation of the county's forestland.
- Provide opportunities for education and passive recreation for the public.
- Conserve or restore wildlife habitat for a diversity of species; especially sensitive, threatened, or rare species.
- Use any revenue produced through ecologically sustainable management of the site to support the stewardship of the site or other King County Natural Resource Lands.

DRAFT

General Property Information

TABLE 1. MCGARVEY PARK OPEN SPACE GENERAL INFORMATION

Thomas Guide Map Location	Pages 657
Legal Description Parcel 9558001080 Parcel 3023069202 Parcel 3023069007 Parcel 9558001070 Parcel 9558001140 Parcel 9558001100	 WOODSIDE AT MCGARVEY PARK DIVISION 1 PARK OPEN AREA PORTION OF LOT A OF KING COUNTY BOUNDARY LINE ADJUSTMENT NO L96L0166 RECORDING NO 9701219002 BEING IN W 1/2 OF SECTION 30-23-06 AND LY SLY OF FOLLOWING DESCRIBED LINE - BEGIN ON W LINE OF SECTION 30-23-06 N 01-14-27 E 404.25 FT FROM W QUARTER CORNER TH LEAVING SAID W LINE S 89-04-57 E 545.42 FT TO ELY LINE OF LOT A AND TERMINUS OF HEREIN DESCRIBED LINE S 30 FTOF N 1/2 OF SW 1/4 LESS POR LY ELY OF W 1903.82 FT WOODSIDE AT MCGARVEY PARK DIV 1 PARK OPEN AREA WOODSIDE AT MCGARVEY PARK DIV 1 PARK OPEN AREA WOODSIDE AT MCGARVEY PARK DIV 1 PARK OPEN AREA
Acreage	400.5 acres
Drainage Basin	Lower Cedar River
WRIA	WRIA 8
Council District	9
King County Sensitive Areas	Coal mine hazards, erosion hazards, landslide hazards, Wetlands

DRAFT

TABLE 2 MCGARVEY PARK OPEN SPACE PARCEL INFORMATION

Parcel Number	Acreage	Purchase Date	Ownership type	Previous Names	Zoning	Funding Source	Recording Number
9558001080	335.7	2000	Owned in fee	Glacier Ridge Partnership	RA-10-P-SO	Dedicated open space	20001212000824
3023069202	16.2	2000	Owned in fee	Glacier Ridge Partnership	RA-10-P-SO	Dedicated open space	20001212001049
3023069007	1.4	2000	Owned in fee	Glacier Ridge Partnership	RA-10-P-SO	Dedicated open space	20001212001049
9558001070	19.1	2000	Owned in fee	Glacier Ridge Partnership	RA-10-P-SO	Dedicated open space	20001212000824
9558001140	21.4	2000	Owned in fee	Glacier Ridge Partnership	RA-10-P-SO	Dedicated open space	20001212000824
9558001100	6.7	2000	Owned in fee	Glacier Ridge Partnership	RA-10-P-SO	Dedicated open space	20001212000824

DRAFT

The northern boundary of Section 25 forms the northern boundary of the parcel. A power line easement intersects the property and is oriented generally east-west across the property. The property is bounded on the west by the city of Renton.

The property is zoned RA-10 and is surrounded by rural residential development to the north and east. Properties to the south consist of Petrovisky Park and residential lots on Lake Desire.

History

The historic land use of the property has been timber harvesting and coal mining. Prior to King County ownership this property was owned by Glacier Ridge Partnership LLC which was a subsidiary of the Port Blakely Companies. Prior to Glacier Ridge Partnership LLC ownership, the property was owned by Plum Creek Timber Company. Based on increment cores and visual observation, a significant portion of the property was harvested in the mid 1960's. There are a few legacy trees over 100 years old, but most of the 1960's harvesting utilized clear cut methods. If the property was replanted following this clear cutting, seedling survival was poor.

The southern and eastern portions of the property are underlain by a network of abandoned coal mines, predominantly the New Black Diamond Mine which was actively worked between 1884 and 1939. A 1991 abandoned coal mine evaluation noted that there are only two areas where the ground surface indicates a history of coal mining. These are the Ivan Jones Prospect Strip in the west central portion of the site, and an area immediately east of the Maple Valley Christian School (GeoEngineers, Inc. 1991)

Acquisition

The McGarvey Park Open Space was created in 2000 when Port Blakely Communities dedicated 383 acres (four parcels) to King County through the "4 to 1 Program." This program allows urban housing densities to cross into the rural area if the development is adjacent to the urban-rural line and provides four acres of permanent open space for every acre that is developed. The 4 to 1 program allows up to five percent of the total dedicated open space acreage to be used for active recreation. On this property that five percent equals 19.1 acres. At this time, there are no plans to develop any of the open space for active recreation. The development included a trail system that links the residential areas to the open space and to Petrovitsky Park.

Concurrently with the dedication of the open space, an additional 17.5 acres (two parcels) were acquired from Port Blakely through a boundary line adjustment transaction. This land abuts on the east side of the dedicated open space.

Access

The western side of the property is accessed via Parkside Way SE; the central area of the property via private road 174th Ave. SE.; the eastern areas via private road SE 170th ST and the south-eastern area along SE 171st Place and West Lake Desire Drive. A BPA power line right of way is located across the property from west to east. This serves as maintenance access and contains a network of recreational trails as deliea6ted on Map 7: Roads, Trails, and Access Points.

There are several trail access points located on the south parcel and one on the north parcel. There is also a trail connection to King County's Spring Lake - Lake Desire to the south. The only road access is through the power lines easement, which dissects the park from east to west. On the west side, the road access point is off of Parkside Way SE, in the city of Renton. On the east side the access point is through the power line easement on the west side of King County’s Maple Valley Heights Park.

Easements

There is an easement for the Bonneville Power Administration’s power line corridor right-of-way running east to west in the middle of the property. Other easement access provisions are provided for Qwest Communications, AT&T Cable TV, Puget Sound Energy, and Cedar River Water & Sewer District.

DRAFT

Zoning and Surrounding Land Uses

McGarvey Park Open Space is part of over 2,500 acres of protected park, forests, wetlands, bogs and shorelines that also includes Petrovitsky Park, Spring Lake - Lake Desire Park, Wetland 14 Natural Area and nearby Peterson Lake Natural Area and Seattle's Lake Young reservoir and watershed.

McGarvey Park Open Space is an important public land holding that provides a buffer between high density urban and low density rural residential development. The “4 to 1 program " resulted in the "Woodside at McGarvey Park” a residential development which conserved 400 acres of open space and created over 400 single family homes and condominiums. King County's urban growth line is along the western boundary of McGarvey Park and the Woodside development west of the open space park is classified as residential R-6. The area just south of McGarvey Park and circling Lake Desire is also inside the urban growth boundary and is zoned residential R-1. The Renton city limits are just northeast of McGarvey Park. The Fairwood "Potential Annexation Area" is west of McGarvey Park and south of Renton.

The surrounding areas north and east of the open space park are characterized by low-density residences, farms, and pastures and areas designated as rural area (RA) zoning and contain a mix of RA-2.5 and RA-5. Properties in the area support a mixture of suburban, rural residential, agricultural, and some forestry uses. There are three parcels of rural area between the park open space and the residential development that is owned by the Kent School District, Maple Valley Christian School, and Rainier Christian Schools.

Natural Resource Analysis

Landscape Context

King County encompasses 2,135 square miles between Puget Sound and the crest of the Cascade Range. McGarvey Park Open Space is located within the Puget Sound Eco-region, the flat, low valley of Puget Sound formed by the weight and scouring of glaciers during the last ice ages. The terrain of the Puget Lowland is made up of a series of rolling plateaus cut by steep-sided valleys. The drift plains slope gently west and northwest from the Cascade Range foothills (approx. 800 ft. elevation) to bluffs overlooking Puget Sound; they are built of unconsolidated sediment deposited during glacial periods.

Several large valleys cross the lowlands; the Cedar River flows roughly north-west in King County and is mostly in-filled by drift from the most recent glaciations. Many small streams flow into the Cedar, carving innumerable ravines in the edges of the plateaus. The surface landforms and materials in the lowlands are geologically young and are not likely to be in equilibrium with respect to geomorphic processes. McGarvey Park Open Space slopes are generally under 15 %, but there are headwater streams in the north with slopes in excess of 40%.

The property is located in the western hemlock vegetation zone, which is a wet low-to-mid-elevation forest area covering much of western Washington. This zone would typically support a

climax forest characterized by western hemlock with western red cedar and Douglas fir. Associated species of this zone may include grand fir, Sitka spruce, western white pine and lodgepole pine, with hardwood species (red alder, big leaf maple, black cottonwood, Oregon ash and vine maple) in riparian, disturbed and open areas.

Historical logging, coal mining, agriculture, and rapid residential development over the last 30 years have significantly altered land cover and forest connectivity of the property and most of the surrounding landscape. These land uses among others have altered the natural resources of the property.

As DNRP proceeds with forest stewardship planning on all forested sites in accordance with the 2010 Open Space Plan, the contiguous landscape of McGarvey Park Open Space, Petrovitsky Park, Spring Lake - Lake Desire Park, and Wetland 14 Natural Area will be managed using a landscape planning approach in order to provide high quality passive recreational opportunities, wildlife travel corridors, and a diversity of forest ecosystem conditions.

Forest Assessment

King County DNRP has partnered with the U.S. Forest Service, University of Washington and the Cascade Land Conservancy (CLC) on a two-year (2010-2012) American Recovery and Reinvestment Act (ARRA) project called "Integrated Urban Forest Assessments (IUFA): Green Jobs and Other Public Values". As a lead partner, King County DNRP has been collaborating with CLC staff on field assessments of urban forest conditions in Seattle and King County.

This funding came at an opportune time, as the adopted 2010 King County Open Space Plan (King County. 2010) promotes an assessment and inventory of forested open space properties to determine the health of ecological, economic and social resources of these properties. Specifically, the ARRA grant provides funding to develop, test, and implement rapid forest assessment protocols to obtain baseline forest conditions data to be used for forest stewardship planning including the prioritization of restoration projects. In addition the grant will evaluate the feasibility of quantifying carbon storage and sequestration potential, and identify key sites for restoration to promote carbon sequestration.

A key partner in the development of the rapid assessment protocol was International Forestry Consultants, Inc. (INFO). INFO developed a Forest Land Assessment Tool (FLAT) which is a modified version of Tree-iage developed by the Green Seattle Partnership, a public-private partnership between the City of Seattle, Cascade Land Conservancy, and Seattle's residents. Tree-iage is used by Cascade Land Conservancy and associated organizations to conduct rapid assessments of urban forests for restoration action prioritization. McGarvey Park Open Space was one of 12 sites identified as 2010 priority forest assessment sites and the field assessment was completed in July, 2010

Based on ortho-photos and GPS ground truthing, the property was divided into 32 ecological management units (EMU's). These EMU's are areas with generally homogeneous plant communities which are stratified primarily by tree species and age. These EMU's are further

defined by existing roads, power lines, and other infrastructure features. For the purposes of this plan, similar EMU's have been grouped together as an ecological type (ecotype). Ecotypes are classified according to the type of dominant vegetation present and the successional stage. Successional stages from Franklin et al (2002) were used. Nine distinct ecotypes were identified within McGarvey Park Open Space. The EMU's within each ecotype are listed on Table 3. Further analysis at the EMU scale can be generated for any management needs.

Natural Resource Categories Existing Conditions

Ecological types

Ecotype A: Hardwood-Conifer-Mature

This ecotype is the largest on the property at 232.8 acres. It contains EMU's 1, 7, 14, 15, and 23 which are generally dominated by hardwood species with conifer species comprising less than 20 percent of the ecotype. The species composition is 55% big leaf maple, 17% red alder, 7% black cottonwood, 7% western hemlock , 7% western red cedar, 3% Douglas-fir, and 4% miscellaneous other species. Based on this composition the Forest Landscape Assessment Tool rates the ecological value as medium. The EMU's are generally 40-75 years old with a few scattered legacy conifers approximately 140 years old. Based on aerial photographs and increment cores, logging occurred twice over the past 80 years. The 1936 aerial photographs indicate logging activity occurred in the early 1930's. Increment cores showed that conifers are approximately 75 years old and the maple and alder are approximately 55 years old. The crown closure averages 65 percent with moderate to high red alder crown mortality and top die back over the past few years.

The maple is average to poor quality with significant numbers of trees having originated from stump sprouts. Additionally, there are areas of maple crown die back which appears to occur where soils are poorly drained. In general, the EMU's are moderately stocked. The dominant and co-dominant conifers are generally healthy and growing vigorously. The alder and maple mortality has started to open up the canopy which will encourage a dense shrub layer and possible invasive species which will limit natural regeneration from becoming established without intervention by land managers.

There are areas of moderately prolific hemlock and cedar regeneration consisting of mostly saplings and poles with a lesser amount of seedlings. The current shrub/herbaceous layer consists primarily of sword fern, vine maple, salmon berry, Indian plum, Oregon grape, salal; with minor amounts of red elderberry, devils club, red huckleberry, cascara, trailing blackberry, ocean spray, hazelnut, and snowberry. At the ecotype level invasive species do not occupy more than five percent cover, but there are some locally higher levels. The invasive species present in approximate order of occurrence are herb Robert, English Holly, Himalayan blackberry, English ivy, Scotch broom, and Japanese knotweed.

Snags and coarse woody debris (CWD) are moderate to highly abundant, and consist primarily of red alder. Overall these stands are of average to low plant diversity and habitat value.

DRAFT

There is an area of EMU 1, due west of EMU 3, that contains about four to five acres of mature Douglas-fir and western red-cedar which appears to be in excess of 100 years old. A significant number of trees exceed 30 inches dbh. This area is in the most advanced successional stage on the property as it was only harvested once since European settlement. It provides important vertical and horizontal diversity which is lacking on McGarvey Park Open Space. In the south east area of EMU 1 there are some large legacy trees including the above mentioned 140 year old western hemlock. EMU 14 contains more conifer than most of Ecotype A, but was included in the ecotype as it is only 3.1 acres.

Ecotype B: Mix Conifer-Mature

This conifer dominated ecotype consists of EMU 3 and 4 in the north central area of the property, and EMU's 24 and 27 in the south end of the property on the north and south side of Woodside Dr. SE. These four EMU's total 24.7 acres.

The estimated age of the over story is 75-80 years as all four EMU's were harvested in the early 1930's. The over story tree species consist primarily of Douglas-fir, western hemlock, big leaf maple, and western red cedar with a minor red alder component. The total coniferous composition for the type is approximately 60 percent, and is highest in EMU 4. Based on the Forest Landscape Assessment Tool this indicates moderately high ecological value. The diameter of the over story averages 16 inches dbh. The ecotype is well stocked as indicated by crown closure in excess of 75 percent. A multi-storied vertical structure is developing given significant hemlock and cedar which have established in the understory and mid-story tree layers. Although the stocking is high in places, competition is not intense due to the vertical distribution of the multi-layered canopy.

Shrub diversity and abundance are patchy and there are areas with little understory vegetation and other areas with higher percentages of shrub and herbaceous cover. The primary ground cover species are sword fern, salal, Oregon grape, vine maple, red huckleberry, with minor amounts of other miscellaneous species. Given the dense canopy, there is a low presence of invasive species. Based on approximate percent cover invasive species present are holly, herb Robert, ivy, and Himalayan and evergreen blackberry.

Snag and CWD abundance are high and the stand provides diverse, high quality habitat for some wildlife species.

Ecotype C: Hardwood/ Conifer-Competitive Exclusion

This 9.6 acre ecotype consists of four small EMU's; 5, 9, 10, and 26. These EMU's have begun the natural thinning process as a result of competition for light, moisture, and soil nutrients.

The primary over story species are big leaf maple and Douglas-fir with associated hemlock and other miscellaneous species scattered throughout. The diameter of the over story is primarily 11-20 inches dbh. The EMU's are 60-80 years old based on 1936 aerial photographs. In general, the EMU's are moderately stocked with a crown closure of approximately 65 percent. The dominant and co-dominant Douglas-fir tend to be relatively vigorous and healthy with the exception of

DRAFT

some root rot in EMU's 9 and 10. There is a moderate amount of cedar regeneration present in the under story.

The ground cover consists of sword fern, vine maple, Oregon grape, and salal. Invasive species are moderately low in occurrence consisting primarily of herb Robert, Scotch broom, Himalayan blackberry, English holly, and Japanese knotweed.

Snags and CWD are moderately abundant and consist primarily of red alder.

Ecotype D: Conifer/Hardwood-Competitive Exclusion

The seven EMU's within this ecotype are dominated by 75-80 year-old conifers based on harvests that occurred prior to the 1936 aerial photographs. This 25.1 acre ecotype can be divided into two sub-types which are associated with two wetlands in the King County Wetlands inventory; Lower Cedar River Wetlands 15 and 16. Ecological management unit 19 is a 5.5 acre forested sphagnum bog at the core of Wetland 15 which is buffered by EMU 17 and 20. Wetland 16 is buffered by EMU's 28, 29, 32, and 34. The Water Quality, Riparian and Wetland Area section of this plan provides more information on the ecological condition of these EMU's.

The over story species present in order of occurrence are western hemlock, western redcedar, Douglas-fir, and scattered pockets of red alder and big leaf maple. The hemlock varies in diameter from 6-20 inches dbh. The Douglas-fir and cedar are of similar diameters, but include some trees between 21 and 34 inches. The hardwoods vary from 8-20 inches dbh. Understory vegetation is dominated by hemlock, alder, cedar, bitter cherry, sword fern, vive maple, willow, Oregon grape, trailing blackberry, salal, and salmonberry. Invasive species are relatively uncommon and consist primarily of Himalayan and evergreen blackberry, English holly, and small areas of ivy.

There are areas of mortality due to root saturation given proximity to wetlands and seasonally high water levels. This results in lower stocking levels than most of the property as indicated by an average crown closure of 55 percent.

These EMU's are approaching the end of competitive exclusion and entering maturation. Given the high water tables, the chance for significant natural disturbance is high and the future trajectory of these EMU's is somewhat unpredictable.

Self-thinning mortality has created a moderate amount of small diameter snags and coarse woody debris (CWD). Mortality from other causes is beginning to occur, primarily from laminated root rot, and is creating some larger diameter snags and CWD. These stands are beginning to become structurally complex and contain a relatively high degree of plant and animal diversity.

Ecotype E: Wetlands

There are four wetland EMU's totaling 18.4 acres. These EMU's are described in the Water Quality, Riparian, and Wetland section of this plan.

DRAFT

Ecotype F: Disturbed Vegetation

There are three areas of disturbed vegetation which total 67.5 acres.

The largest disturbed area is the power line easement (EMU 8) which is 62.5 acres. There are areas of alder and bigleaf maple that have regenerated in the areas which are less heavily managed to control vegetation. The ground cover species present consist of high levels of invasive and non-native species including various grasses, Himalayan and evergreen blackberry, and Scotch broom.

The 3.7 acre gas line easement (EMU 6) is vegetated with sword fern and various grass species with a moderate level of invasive present including herb Robert, and Himalayan blackberry.

Ecotype G: Hardscape

This ecotype is comprised of 1.2 acres of paved road which is 174th Ave. SE, and .6 acres in EMU 11 which is part of a water conveyance system. The Cedar River Water and Sewer District manages the land in EMU 11 under a 1970 easement that pre-dates the subdivision.

Ecotype H: Landscape

This 2.3 acre ecotype contains EMU's 12, 16, and 31 which are landscaped. EMU 12 is maintained in association with the Cedar River Water and Sewer District property. EMU 16 is subject to an access easement to an adjacent private property, and is maintained by the residents. EMU 16 is a location of a permanent drainage and access easement established in the Woodside plat.

DRAFT

TABLE 3: SUMMARY OF ASSESSMENT DATA FOR ALL ECOLOGICAL MANAGEMENT UNITS

EMU[2]	Ecotype	Ac.	Est. Trees Per Ac.	Origin Year[3] Hardwood	Origin Year[3] Conifer	Site Index[1]
1	A: Hwd/Cnf-Mature	97.3	120	1954	1933	109-DF
3	B: Mix Cnf-Mature	4.1	130	Unknown	Unknown	113-DF
4	B: Mix Cnf-Mature	12.5	135	1956	1940	113-DF
5	C: Hwd/Cnf-Comp Excl	3.3	125	Unknown	Unknown	111-DF
6	F: Disturbed Vegetation	3.7	NA	NA	NA	109-DF
7	A: Hwd/Cnf-Mature	11.5	120	1950-1956	1870 (legacy WH)	108-DF
8	F: Disturbed Vegetation	62.5	NA	NA	NA	109-DF
9	C: Hwd/Cnf-Comp Excl	0.6	125	Unknown	Unknown	108-DF
10	C: Hwd/Cnf-Comp Excl	1.9	125	Unknown	Unknown	108-DF
11	G: Hardscape	0.6	NA	NA	NA	108-DF
12	H: Landscape	0.1	NA	NA	NA	108-DF
14	A: Hwd/Cnf-Mature	3.1	125	1960	1935	108-DF
15	A: Hwd/Cnf-Mature	87.5	110	1950	1930	108-DF
16	H: Landscape	2.0	NA	NA	NA	90-DF
17	D: Cnf/Hwd-Comp Excl	3.5	135	1950 (est.)	1930 (est.)	108-DF
18	E: Wetland	4.3	NA	NA	NA	Non-Forest
19	D: Cnf/Hwd-Comp Excl	5.5	Unknown	Unknown	Unknown	111-DF
20	E: Wetland	4.4	NA	NA	NA	Non-Forest
21	D: Cnf/Hwd-Comp Excl	3.2	135	1950 (est.)	1930 (est.)	108-DF
22	G: Hardscape	1.2	NA	NA	NA	NA
23	A: Hwd/Cnf Mature	30.0	125	Unknown	Unknown	111-DF
24	B: Mix Cnf-Mature	25.9	135	1950 (est.)	1930 (est.)	108-DF
26	C: Hwd/Cnf-Comp Excl	3.8	120	1950 (est.)	1930 (est.)	108-DF
27	B: Mix Cnf-Mature	4.0	120	1950 (est.)	1930 (est.)	108-DF
28	C: Hwd/Cnf-Comp Excl	2.7	110	1950 (est.)	1930 (est.)	108-DF
29	C: Hwd/Cnf-Comp Excl	5.2	125	1950 (est.)	1930 (est.)	108-DF

EMU[2]	Ecotype	Ac.	Est. Trees Per Ac.	Origin Year[3] Hardwood	Origin Year[3] Conifer	Site Index[1]
30	F: Disturbed Vegetation	1.3	NA	NA	NA	108-DF
31	H: Landscape	0.2	NA	NA	NA	108-DF
32	C: Hwd/Cnf-Comp Excl	0.2	100	1950 (est.)	1930 (est.)	108-DF
33	E: Wetland	2.7	NA	NA	NA	Non-Forest
34	C: Hwd/Cnf-Comp Excl	4.8	100	1950 (est.)	1930 (est.)	108-DF
35	E: Wetland	7.0	NA	NA	NA	Non-Forest

[1] Site index based on NRCS soils data
[2] EMU's 2, 13, 25 were merged with other EMU's or deleted from the EMU GIS data based on ground truthing done during the field assessment.
[3] Origin year is defined as the year that the dominant over story cohort became established.

Forest Health

Sixty percent of the property (ecotype A and C) currently supports the growth of deciduous trees, primarily big leaf maple and red alder. This is a result of past logging methods which felled all the trees, but only yarded the conifer species desirable for timber products in the early 1930's. This logging method did not leave sufficient conifer seed trees to naturally regenerate logged areas.

Bigleaf maple can regenerate vegetatively by basal sprouting. Often as many as 50 stump sprouts can grow four to six feet per year during the first three years before self thinning starts to occur. A significant percentage of the maple on the property is a result of sprout origin with the average clump containing three to four stems. Given that these clumps share a root system in excess of 150 years old, these unmanaged, vegetatively produced maple have a shorter life span with a higher incidence of heart rot than maple that originated from seed. There are areas of ecotype A and C where maple crowns are starting to decline and die. Maple that originated from seed is generally of good quality especially when growing on better drained areas of the property.

The past logging practices on McGarvey resulted in red alder as the second most prominent species growing on the property. When the initial logging occurred there was not a Forest Practices Act. The first reforestation requirements were enacted in 1946. Alder seed is light with over 350,000 seeds per pound. Given the proximity to wetland ecosystems, there was a sufficient seed source as alder can be wind disseminated upwards of 1,000 feet given sufficient wind. The logging done in the 1930's used ground-based yarding equipment that sufficiently disturbed the site and exposed the mineral soil seed bed that alder thrives on.

Some areas of the property are well suited for alder given relatively high soil moisture levels, but back to back rotations of alder are not recommended without a fertilization program. The 55 year-old red alder is declining, demonstrated by trees with broken limbs or tops, crown mortality with resultant gaps, and increases in ground cover density. This is typical for previously unmanaged alder stands.

If there is not active management, clonal shrubs such as salmonberry and vine maple may form a dense shrub canopy making it difficult for conifers to become established from seed. These shrub species can expand rapidly by vegetative reproduction as space becomes available due to death of the alder over story.

Based on the 1936 aerial photographs, it appears that not many conifers were left standing where harvesting occurred. Cedar and Douglas-fir seeds travel only about 300 feet by wind, and hemlock only about 200 feet. The lack of seed source resulted in conifers representing only 20 percent of the forest present in 2010. The hemlock, cedar, and Douglas-fir are generally of good quality.

Insect & Plant Parasite Damage

Insect activity and damage to trees appears to be at a fairly normal level. There was some dwarf mistletoe noted on western hemlock in EMU 1.

Noxious Weeds

Invasive plant species are present within the forest at low to moderate levels of occurrence. The main exception to this is in disturbed and landscaped ecological EMU's. The primary weed of concern in these areas is Himalayan/evergreen blackberry. In forested EMU's the 2010 field assessment indicated the main concern to be non-regulated weeds; primarily herb Robert, Himalayan blackberry, and holly. Each of the ecotype descriptions provide the dominant weed species based on percent cover.

Fire

The high percentage of deciduous species, moderate stocking levels, and generally moderate terrain contribute to a low hazard from fire across the property. Fire hazard will increase for a short period of time after proposed harvests, but will not be significant because deciduous slash

is not highly flammable. The Puget Sound Basin has a historically very low frequency of forest fire occurrence with very high fire intensity. The urbanizing rural interface presents the greatest risk of ignition sources.

Animal Damage

No significant animal damage was noted. There is current beaver activity in the wetland complex of EMU's 18, 19, 20, and 21 but it is minor.

Timber and Wood Products

Ecotype A and C are primarily composed of deciduous species (see Forest Health section). A timber cruise of the merchantable volume in EMU 15 was done in summer of 2010 by International Forestry Consultants in preparation for a harvest. The data from this cruise has been applied to the rest of Ecotype A for planning purposes in conjunction with the FLAT data. This cruise estimated the merchantable trees per acre at 66. Based on this, it is estimated that there are a total of 90-100 trees per acre. The average dbh was 15 with a total basal area of 130 square feet per acre. The cruise estimated net volumes at approximately 9 MBF (thousand board feet) per acre. Alderwood soil series are the predominant soils on the property with a site class III based on 50-year Douglas-fir site index of 108. This site class indicates potential yields of Douglas-fir of 16 to 21 MBF per acre at 40 years of age. Although deciduous volumes per acre are lower than similar aged conifers, the poor quality and low stocking levels of this site indicate that the current forest is not adequately optimizing the natural resources of the site.

Ecotype B and D are conifer dominated. EMU's 17, 19, 21, and possibly 27 and 28 will not be commercially thinned or harvested as they provide important ecological value as wetland buffer. EMU 3 is located on or adjacent to steep, unstable slopes and will also be reserved from commercial thinning or harvest. In addition the mature coniferous composition and structural features of these EMU's are lacking across the landscape and they provide important wildlife habitat.

Ecotype's E, F, G, and H are wetlands, disturbed vegetation, hardscape, and landscaped areas that do not contain marketable timber.

Soils and Slopes

There are five soil types within McGarvey Park Open Space site (Natural Resources Conservation Service, 2010): Alderwood gravelly sandy loam, (AgC and AgD); Alderwood/Kitsap, (AkF); Everett gravelly sandy loam, (EvC); Orcas peat, (Or), and Seattle muck (Sk). They are indicated on Map 5: Soil Types.

The vast majority of the property is Alderwood gravelly sandy loam. The northern area of the property is Alderwood-Kitsap soil. The small areas of Everett, Orcas, and Seattle soils are associated with wetlands and are hydric soils.

The Alderwood soils are very compatible with timber growth and management. The predominant site class is III (50-year Douglas fir site index 108), the middle range for

productivity. The soils tend to be dry in the summer and have perched water tables in the winter. They also tend to easily support competing or invasive vegetation when disturbed. The Alderwood/Kitsap association is located on steeper slopes in EMU 1. Slopes adjacent to the streams north of the power line are 60% to 100% in some areas and there are visible signs of slope creep and shallow slumping, probably caused by the downward migration of stream channels as they carve through glacially deposited materials. Washington DNR's FPARS slope stability modeling software indicates a relatively high risk of slope failure in this area. The forest is relatively flat with gentle slopes in southern regions with areas of steeper, unstable slopes in northern regions of the property.

GeoEngineers, Inc. (December 15, 1994) published several reports concerning the evaluation of abandoned coal mines on the property; formerly known as "Lake Desire Estates". A second technical memorandum performed by Icicle Creek Engineers, Inc (July 6, 2000) indicated that there are 12 non-hazardous sinkholes in the area south of the Kent school district property. Per their recommendations "We do not expect that this monitoring program will result in frequent needs to reclaim high hazard sinkholes. We have monitored this area dating to about 1985 and have not observed any changes in sinkhole activity in this area."

The 1936 aerial photographs show the network of logging roads and skid trails, but these old access features are difficult to locate in the field. Access for the last logging activity was probably obtained from the power line easement road and surrounding properties as this was previously a larger land holding.

Access potential for managing these stands is quite good due to the terrain and long distance from streams; ground-based harvesting equipment may be used in most cases.

Water Quality, Riparian and Wetland Areas

Streams

There are eight streams on the site as indicated on Map 4. Four of these flow north to northwest into the Cedar River. For the purposes of this plan Washington Department of Natural Resources (WADNR) water type maps and resource maps were used to make planning decisions. When specific forest treatments are planned, actual site conditions will determine riparian and wetland buffers in accordance with state forest practice rules.

Stream 1 flows northwest out of the northwestern corner of the property into the Cedar River. Based on LIDAR derived contour lines, the stream gradient is approximately 30 percent. The Washington Department of Natural Resources (WADNR) stream type for this stream segment is non-fish (N). The WADNR forest practice resource map delineates most of this headwater drainage as an area of high slope instability. This area of McGarvey Park Open Space is isolated from the rest of the property due to the residential development at the end of Parkside Way SE. Due to the above factors, this area will be a permanent reserve with no active management.

Stream 2 drains north to northwest out of Ecotype 1 and 3, eventually joining the Cedar River approximately a mile to the north. There are two minor tributaries to the west of the main stream channel. According to WADNR stream type maps the east fork of this drainage on the property is fish bearing and the western forks are non-fish bearing. During the field assessment significant landslide activity of various ages was observed. There are numerous seeps in this drainage. The power line and natural gas line construction may have resulted in some of these landslides.

Stream 3 is the headwaters of a minor tributary of the Cedar River. The stream flows north through Ecotype 1 between EMU 3 and 4. The slopes vary somewhat, but are in excess of 30 percent where the stream flows off the property. These areas of steep slopes are designated as having a high potential for slope failure on WADNR resource maps. The stream is non-fish bearing based on WADNR stream type maps.

There is a non-fish bearing stream that originates off McGarvey Park Open Space and just barely crosses the northeast corner of the property. This area of EMU 1 is also an area of unstable slopes.

Streams 4-7 all drain south into Lake Desire. Gradients of these four streams are significantly less than streams in the northern area of the property. Most of Stream 4 is classified as a non-fish bearing seasonal (NS) stream based on current WADNR forest practice rules. The stream flows through EMU 15 into King County Wetland Number 15. The upper reaches of this stream dry up in most summers. The stream occasionally goes sub-surface and the channel is not very well defined due to gentle gradients generally less than five percent. As the stream enters the wetland buffer the channel is wide enough to have the potential to be fish bearing (Type F). It is possible that cutthroat trout use the lower reach of this stream.

Stream 5 is a fish bearing stream (Type F) which flows westerly out of Wetland 14 on adjoining private land. It flows through EMU 18, a forested wetland that may be in transition to a Type B (WADNR) wetland due to hydrological changes. There has been a significant amount of wind throw of mature hemlock and black cottonwood trees along this drainage due to saturated soils. Stream 5 flows through wetland 15 into Lake Desire.

Stream 6 is a seasonal non-fish bearing stream (Type NS) located just east of 174th Ave SE. The channel is not well-defined and water flows in only the wetter seasons.

Stream 7 is identified as fish bearing on WADNR water type maps. There are only about 100 feet of stream 7 on the property in EMU 28. This is the headwaters of the stream which flows south east into Lake Desire.

Wetlands

There are three significant wetland complexes located in part on the property (see Map 4). This plan will reference them by the wetland number assigned from the King County Wetland Inventory. In addition the field assessment and aerial photographs determined the existence of a number of small forested wetlands in low lying depressions with perched water tables. When this plan is implemented, these wetlands will be field delineated and typed based on WADNR forest practice rules.

Lower Cedar River Wetland 14 is located to the east of the property except for a small area in the northern tip of EMU 16 on the east side of SE 170th ST. The King County Wetland Inventory indicates that peat was extracted commercially from this bog.

Located along the south eastern edge of the property is Lower Cedar River Wetland 15. This is a wetland complex which includes a sphagnum bog with western hemlock and western redcedar growing in the sphagnum mat (EMU 19). Surrounding this forested wetland is a scrub-shrub wetland. This wetland complex is associated with Lake Desire, and does contain significant areas of perennial water. Both current and historical beaver activity was noticed during the field inventory. Additional vegetation present includes Douglas spirea, willow, crab apple, red osier dogwood, salal, bog laurel, trapper's teas, Labrador tea, and twinberry (King County, 1990).

Lower Cedar River Wetland 16 is located in the south western region of the property. The Natural Resources Conservation Services Soil Survey mapped the soils in this area as Seattle muck and Alderwood gravelly sandy loam. It is the headwaters of Madsen Creek a tributary to the Cedar River. This wetland type is somewhat unique in King County as it includes a sphagnum bog. There is an area of perennial open water just south of the County property, but only a minor area of the property is inundated year round. Peat in this bog was estimated to be over ten feet deep based on other peat systems in the vicinity (Shapiro and Associates, 1998). Shrub vegetation present includes primarily red osier dogwood, bog laurel, Labrador tea, wild crabapple, cascara, Douglas spirea, and willow (King County, 1990). During the sub-division process the impacts of residential development on this wetland received most of the attention. Concerns were raised about development impacts on water quality and the viability of the bog given the potential for fluctuations of the wetland water levels. The developer provided detention and water quality treatment to Petrovitsky Park runoff in addition to that required for

the developed areas of the plat. In addition, storage and bypass facilities were designed and constructed to moderate wetland fluctuations (King County, 1998).

The sub-division process in the late 1990's resulted in a variety of wetland analyses which focused on the potential impacts of residential development and roads on wetlands. A study by Shapiro and Associates, Inc identified the presence of 13 wetlands in the study area. Eleven of the 13 are smaller than a quarter acre in size; one is larger than one acre, and is a highly disturbed, 43 acre wetland that lays mostly offsite. The majority of these are forested wetlands as defined by WADNR forest practice rules. The forested wetlands are dominated by cedar, hemlock, red alder, and black cottonwood (Shapiro and Associates, Inc. May 1992).

Raedeke Associates, Inc did a wetland and wildlife assessment for a portion of the Bonneville Power Administration (BPA) power line corridor to evaluate the impacts on wetlands from the placement of fill generated during the development process. This study indentified a 4.4 acre scrub shrub wetland and three small scrub shrub wetlands less than a quarter acre in size. Spirea, salmonberry, and willow dominate vegetation of these scrub-shrub wetlands. (Raedeke Associates, Inc. May 2000)

Fish and Wildlife Habitat

Fish

Streams 1, 3, and 8 which flow out of EMU 1 in the northern area of the property have steep gradients and impassable cascades off the property which limit the occurrence of fish. The WADNR forest practice stream type map (WCHYDRO) verifies this with a stream type of N for each of these streams on the property. This stream type map indicates Stream 2 to be fish bearing. The data dictionary for the WCHYDRO GIS coverage indicates that this type call is based on the DNR computer model. Physical stream conditions were not quantified in the field. Based on the WDFW Salmonscape mapping tool and Williams et al. (1975) the probable use of stream 2 by salmonid species is low.

In southern areas of the property Stream 5 has fish potential based on observed physical characteristics (stream width and gradient). The WADNR stream type map verifies this with a stream type of F. Stream 5 flows out of Wetland 14 through McGarvey into Wetland 15 and then into Lake Desire. The Washington Department of Fish and Wildlife (WDFW) web page lists the following fish as present in Lake Desire; Largemouth Bass, Bluegill, Brown Bullhead, Yellow Perch, and Rainbow Trout.

There could be some native cutthroat trout, in addition to the rainbows that WDFW stocks, but the inlets to the lake may not provide good spawning habitat. The WRIA 8 fish map for cutthroat tracks them to Lake Desire and indicates that WDFW also stocks Lake Desire with cut throat trout (S. Abella, 2010).

Most of Streams 4 and 6 are non fish bearing seasonal (NS) streams based on areas of undefined channel and bank full widths less than 2 feet. As stream 4 reaches the Wetland Management

Zone (WMZ) associated with the class A wetland it becomes fish bearing based on stream width and channel definition.

Wildlife

The four forested ecotypes, the wetlands, the disturbed areas, and the landscaped areas provide a variety of habitats.

The forested ecotypes contain an over abundance of maturing deciduous species and a lack of mature coniferous species. The abundant bigleaf maple provides seeds that are eaten by mice, wood rats, squirrels, chipmunks, and some bird species. Maple seedlings are a source of browse for deer and some rodents. Bird species noted for their use of bigleaf maple for nesting and roosting include hairy woodpeckers, pileated woodpeckers, and bald eagles. There are significant numbers of alder snags present due to the dying alder. Red alder snags and down, dead wood provides important foraging and cavity habitat, but they decompose quickly. Larger, longer lived, more desirable conifer snags are lacking.

Understory species that provide important wildlife habitat are vine maple, salmon berry, Indian plum, Oregon grape, salal, trailing blackberry, bitter cherry, red elderberry, red huckleberry, cascara, trailing blackberry, ocean spray, hazelnut, and snowberry.

There are quite a few small forested wetlands within the forested ecotypes which were too small to be stratified out and identified as separate EMU's. They provide habitat for a variety of frogs, snakes, and salamanders.

Species observed or expected at the property were recorded by Shapiro and Associates as part of the sub-division review. Their species list is in Appendix A.

The four wetland ecotypes provide habitat for marsh wren, red-winged blackbird, mallard, kingfisher, flicker, pileated woodpecker, junco, robin, song sparrow, crow, black-capped chickadee, kinglet, and Pacific tree frog.

The King County Wildlife Network passes through the vicinity of Wetland 15 and re-enters the property at the east end of the power line corridor where it travels north through the east edge of EMU 1. This network was established in the King County Comprehensive Plan to identify potential travel corridors and protect them from development. This plan does not recommend any use that would conflict with the purpose of the Wildlife Habitat Network.

Threatened and Endangered Species

No federally-listed threatened or endangered species are known to inhabit the site. Streams on the site are seasonal, relatively small, and have high gradients. In the case of the streams flowing into Lake Desire, no priority habitats are found within the Lake Desire shoreline, nor is the Lake accessible to anadromous salmonids. Eagles have been observed using the site. They are a state sensitive and federal species of concern, but are not currently listed as threatened or endangered.

Agro-forestry/Special Forest Products

Special Forest Products (SFP) or Non-timber forest products (NTFP) are commodities obtained from the forest without harvesting trees. They include game animals, fur-bearers, nuts and seeds, berries, mushrooms, oils, foliage, medicinal plants, peat, fuel wood, and forage.

The best opportunities at McGarvey are mushroom cultivation and propagation, and the harvest of select ferns and shrubs for the floral industry.

Carbon sequestration and other ecosystem services may present revenue opportunities as the markets and regulations evolve.

Cultural Resources

The forests of McGarvey Park are one mile south of the Cedar River, which played an important role for local Native Americans:

Ethnographic evidence indicates that local tribes had a hunter-gatherer mode of existence. The Duwamish people had longhouses in several places along the Cedar River; the nearest location was four miles west of the landfill at the town of Elliott. The Duwamish people also had an elaborate ceremonial complex that included the Duwamish spirit canoe ritual. After the ceremony, Indian doctors who participated in the soul recovery disposed of the spirit canoes and other paraphernalia in trees in remote places away from the village.

There are no known cultural sites of significance at McGarvey Park.

Aesthetics, Recreation and Public Use

McGarvey Park Open Space, along with Petrovitsky Park and Spring Lake-Lake Desire Park, provides an important "green" buffer between the rapid urban development and sprawl of the Fairwood area of Renton and the Cedar River watershed corridor to the east. There is an existing network of soft surface recreational trails used and valued by hikers, mountain bikers and equestrians from the Renton and Kent areas of King County. The trail network crosses the open space site from east to west and north to south. The trails connect to residential neighborhoods to the east and to Spring Lake - Lake Desire Park to the south. Most of the trails were established by equestrians and were in place when the land was dedicated to King County. There is a small network of trails and roads in the power line corridor that had been historically used by off road motorized vehicles prior to King County ownership. Motorized vehicle use is prohibited within the open space site and over the years Parks staff has worked to eliminate this activity from the area. Through its backcountry trails program, King County Parks will implement appropriate trail uses, improvements and maintenance standards as needed.

Management Recommendations

Forest Health

The forests of McGarvey Park Open Space will be managed with a long term goal of developing interior forest habitat with older forest structural complexity. In Ecotypes A, B, and C, active management is recommended to:

- Accelerate forest succession.
- Increase the percentage of coniferous tree species.
- Increase horizontal and vertical structure and diversity.
- Promote a more diverse shrub and herbaceous vegetative community.

Silvicultural prescriptions will be designed to convert appropriate areas of Ecotype A, B, and C to stands dominated by a diversity of coniferous species. These prescriptions will include measures to increase structural diversity by creating variable crown closure levels from uncut to clear cut gaps. These silvicultural prescriptions will include two to three treatments phased seven to ten years apart. These phased treatments will establish multiple age classes, resulting in stands more resilient to natural and human caused disturbance. Site-specific reforestation plans will create future stands that are better suited to the ecological conditions of the site. All treatments will be followed by annual monitoring of invasive weeds and the development of appropriate control measures.

Four to one open space properties allow up to five percent of the dedicated open space to be developed and used as active recreation facilities. This has implications on forest management activities. When forest practices are done, a six year building moratorium is placed on the entire parcel that the forest practice takes place on. County regulations allow areas of potential development to be excluded from the forest practice application if clearly delineated on the site map. An active recreation map should be prepared if and when any active recreation facilities are developed. This map can then be attached to this plan and will be submitted with future forest practices to avoid the placement of a building moratorium on the open space.

Specific forest health recommendations for the next 10 years follow for specific EMU's.

Ecotype A:
The first harvest will occur in EMU 15 in 2010-2011. This harvest will initiate the removal of the poor quality merchantable alder and approximately 30% of the merchantable maple. The cedar, hemlock, Douglas-fir, cottonwood, and miscellaneous other species will be retained for ecological and aesthetic values. Single tree and group selection with retention methods will remove all merchantable red alder and approximately 30 percent of the maple over story concentrating on trees which regenerated from stump sprouts. The harvest prescription will result in variable densities of vegetation by removing single trees as well as groups. Dead and live non-merchantable wildlife reserve trees will be retained standing when possible unless they are deemed hazardous by logging contractors.

The harvest will be followed by reforestation of shade tolerant species such as western hemlock, western redcedar, and grand fir in the single tree selection areas with adequate openings. Prior to determining planting density, the existing conifer will be evaluated for natural seeding potential. It is expected that a minimum of 70 trees per acre will be planted in these areas. In the group selection areas shade intolerant species such as Douglas-fir, Sitka spruce, and western white pine will be planted in areas of full sun. Shade tolerant species will be planted in less open areas of the group selection patches. Approximately 300 trees per acre will be planted depending on the probability of natural regeneration. The regeneration will be monitored and appropriate vegetation management efforts will be implemented to retain adequate growing stock of deciduous species.

A second harvest in EMU 15 will occur seven to ten years after the first (2017-20). The phasing of the removal provides for a diversity of ages and more closely mimics the temporal scale of smaller scaled natural disturbances. The phasing also results in better light conditions for the establishment of cedar and hemlock which are generally better suited to wet areas of this site. In addition lighter, staged removals limit the establishment of invasive plant species, and lower vegetation management costs. This treatment will concentrate on the removal of 80 percent of the maple growing on the site at that time. This treatment will be followed by appropriate reforestation and vegetation management measures including invasive weed control which will promote the development of a forest that has a diversity of tree, shrub and forb species at optimal, varying densities with a tree composition of approximately 80% conifers and 20% deciduous tree species.

EMU's 1 and 7 on the north side of the power line are also part of ecotype A. The alder appears to be a bit healthier and the crown mortality is not quite as significant. A harvest with the same goals as that described for EMU 15 should be planned and implemented within five years (2011-2016). Based on social impacts and disruption to adjacent residential developments, it may be best to have a year or two between the implementation of the first harvest in EMU 15 and this one. The rate of alder deterioration should be evaluated in summer of 2011 when doing the first harvest. This will aid in determining when to do this second harvest. This is an excellent example of balancing economic and social values derived from the property. There are approximately 55 acres of steep, unstable soils in EMU 1 which will be reserved from commercial harvest/thinning. This area is located due west of EMU 3 and includes all of EMU 1 which is north of the residential area at the end of Parkside Way SE. This area is reserved from commercial harvest due to the potential for negative ecological impacts of logging, and a desire to determine the implications of continued inactive management of this deciduous dominated EMU. There is an additional three acres in the north east corner of EMU 1 which will also not be actively managed due to the presence of steep, unstable slopes.

EMU 23 is located across 174 TH Ave. SE from EMU 15. This 30 acre EMU is of similar composition and quality as EMU 15. A harvest of the maple and alder similar to the one planned for EMU 15 should occur within five years (2011-2016).

EMU 14 is a small 3.1 acre area which will be retained from harvest to provide wildlife habitat and aesthetic value given the proximity to the private school properties to the south.

Ecotype B:
EMU 24 is a stand of mixed conifers with a minor hardwood component. This maturing coniferous stand provides conditions not found elsewhere on McGarvey Park. The stand has a high potential, if managed properly to provide late seral conditions with a diverse cohort of trees greater than 36" dbh. In order to achieve this objective the EMU should be commercially thinned in approximately five to ten years (2016-2020). This thinning will remove maple and alder which are significantly competing with desirable conifer trees. In order of priority, trees to retain are cedar, Douglas-fir, hemlock, maple, and alder. Approximately 20 percent of the deciduous species should be retained for biodiversity, wildlife habitat, and visual and structural diversity. Some root rot was observed during field work. These areas should be treated by removal of significantly impacted trees followed by reforestation with non-host species such as cedar, western white pine, and grand fir. Over time this will result in a significant increase in numbers of coniferous snags, live trees with decadence and habitat structures, and large coarse woody debris (CWD). These features are currently lacking across the property.

Ecotype C:

EMU's 5, 9, and 10 are a total of 5.9 acres. These small EMU's are sandwiched between the power lines and residential development. These EMU's would benefit ecologically from a harvest similar to that proposed for EMU 1 and 7. Due to the small size of these EMU's, they should be scheduled in conjunction with EMU's 1 and 7.

Control Invasive/Noxious Weeds

The Forest Landscape Assessment Tool data collected on the property by International Forestry Consultants and DNRP will be analyzed with the other 2010 priority sites in the fall of 2010. One of the results of this analysis will be a ranking of which EMU's will benefit the most from active management to control invasive weeds. The analysis will aid in scheduling and prioritizing restoration projects depending on the availability of resources. Forest harvests and thinning will incorporate invasive weed monitoring and control measures as appropriate following treatment. King County Parks Resource Program staff should be notified of areas of intensive tansy ragwort, ivy and herb Robert infestations. Adjacent landowners should be encouraged to eliminate noxious weeds on their property in order to reduce incursion into the forest. King County staff should survey for noxious weeds during annual forest inspections.

Reduce Risk from Fire or Animal Damage

The most important preventative measures for both fire and animal damage will be management activities that promote forest health, assuring optimal stocking levels for all age classes, and maintaining a broad diversity of vegetative species. Outreach to surrounding neighborhoods regarding FireWise community planning would help elevate awareness and improve stewardship on private properties surrounding the forest.

Timber and Wood Products

Harvests will be designed to protect ecological resources of the site, improve forest health, and provide revenue to the Parks Division. Harvest units should be cruised prior to the sale of timber.

Approximately half the property will benefit from ecologically based harvests. The initial three harvests are scheduled to occur by 2016. This schedule can be modified to allow flexibility due to timber market fluctuation. Harvests should be timed to take advantage of strong markets.

Harvest planning will be similar for all units. Streams will be buffered based on habitat potential, which presumes fish presence. Roads will be designed and built according to Washington Department of Natural Resources Forest Practice Rules and under the Forest Practice Board Manual Guidelines. Wildlife tree selection will favor western red cedar, Douglas fir, western hemlock, alder and maple, in that order. Leave trees will primarily be aggregated in the riparian and wetland buffers, with some distributed through harvest areas.

Following harvest and reforestation, all planted areas should be monitored for signs of reduced vigor due to crowding of canopies, and over-topping of conifer by shrub and hardwood species. Between four and seven years following planting, it may be necessary to implement vegetation management measures to ensure desirable species survive and thrive.

The stands should be evaluated 10-15 years following the second harvest to determine if pre-commercial thinning will be necessary, or if competition levels are low enough to forego this expense. At this time a preliminary decision on when to commercially thin should be made.

Soils and Slopes

Slopes on the property are moderate and can be harvested, using low-ground-pressure, tracked machinery. Harvest contracts should specify adequate suspension of logs (½ to ¾ length suspended) to minimize or prevent disturbance to duff and ground vegetation. Yarding should be limited to periods when soils are not saturated, ideally late spring through early fall.

Washington State Department of Natural Resources FPARS mapping system designates areas of EMU 1 as having medium to high slope instability potential. These areas of instability are most prevalent along streams 1 and 2. These areas will be reserved from commercial thinning or harvests. These areas can be observed from the power lines, and it is fairly easy to see the instabilities as portions of the power line right of way have had past slope failures.

Harvest activities planned will require a combination of upgrades to old roads grades and new construction of access roads meeting the current forest practice standards. Temporary roads will be constructed and either converted to trails or decommissioned after harvest. It should not be necessary to cross any streams in constructing access roads. These roads will be constructed on Alderwood soils which support roads well, requiring low to moderate ballast. Road surfacing will depend on what time of year the roads will be used. In areas of wetter soils, use of geotextile will help prevent pumping of surfacing into the sub grade and will minimize rutting and puddling on the roads.

Water Quality, Riparian and Wetland Areas

All wetlands and streams will be buffered at a minimum as required by WADNR Forest Practice Rules and according to best available science. Streams will be buffered according to presumed habitat. The combined result will be wide wildlife travel corridors, increased accumulation of large woody debris, and additional shade.

Streams

The first harvest area includes stream 4 which is a seasonal, non-fish (NS) bearing stream above the fish break which is at the edge of EMU 20, the Type A wetland described above. Stream 4 bisects EMU 15 approximately in half. This NS segment will be protected with a 30 foot no cut buffer which exceeds the forest practice rules which specify an Equipment Limitation Zone. The portion of Stream 4 within EMU 20 is fish bearing. Buffers of this fish bearing segment will exceed the 95 foot no cut buffer required by Forest Practice Rules.

Stream 5 flows east to west from King County Wetland 14 into wetland EMU's 18 and 20. WADNR regulations require an inner zone no cut buffer of 105 feet on this fish (F) bearing stream. The harvest will be laid out with buffers that exceed this requirement for the inner zone.

Just east of 174th Ave. SE is Stream 6 which is a non-fish (NS) bearing stream. This stream will be buffered with a 30 foot no cut buffer which exceeds forest practice rules.

All harvests on the property will be laid out in a manner which avoids hauling or yarding across crossing any streams on the property. In addition, harvest system requirements will be designed to avoid or minimize disturbance to ground vegetation and duff layers on all slopes, which will help prevent soil erosion and compaction.

Wetlands

Based on WADNR regulations, EMU 20 is a Type A wetland and EMU 18 is a Type B wetland. These surround EMU 19, a sphagnum bog supporting a forested wetland. This wetland complex is near the first harvest planned in EMU 15. Coniferous EMU's 17 and 21 will be reserved from commercial harvest. Forest Practice rules for Type A wetlands greater than five acres require a minimum Wetland Management Zone (WMZ) buffer of 50 feet with a maximum of 200 feet and an average buffer width of 100 feet. The unit lay out will meet or exceed these regulations.

Fish and Wildlife Habitat

Fish

As described in the analysis section, the streams of McGarvey Park Open Space do not provide habitat for anadromous fish species. The steep gradients and impassable cascades in the upper reaches of the streams off the property make fish use improbable. However, in an effort to provide habitat for any fish species, any perennial streams over two feet wide bank-full width will be buffered as though they were fish bearing. This will assure large woody debris recruitment, shade provision, and hydrologic cover.

Wildlife

Forest management activities will incorporate prescriptions that provide for the protection and improvement of wildlife habitat.

Specifically, proposed harvests will result in increased horizontal and vertical diversity beneficial for a wider variety of animal species. The harvest will result in increased cover of coniferous tree species which will improve winter thermal cover. The group selection patches will result in patches of dense shrub communities currently lacking across the property. The reforestation of these patches with cedar, hemlock, Douglas-fir, grand fir and white pine will create dense, young stand which are lacking across the landscape. These conditions will provide hiding and thermal cover.

The single tree selection areas will increase sun infiltration which will stimulate the growth of browse and berry producing shrub and herbaceous species. Sufficient maple, all cottonwood, cherry, cascara, and over hardwoods which provide food for wildlife will not be cut.

There is currently a limited amount of large snags and coarse woody debris across the landscape. Harvest prescriptions will retain all the existing conifers, some of which will grow into the desirable large structural wildlife trees of the future. In addition the 58 acre no-cut slope stability reserve in EMU 1 will produce high levels of hardwood snags and coarse woody debris. Green recruitment and wildlife reserve tree requirements will be exceeded based on this harvest prescription as all conifers will be retained as well as standing dead trees unless they are hazards to logging contractors.

Wide riparian and wetland buffers will remain unlogged, providing areas of hiding, breeding, and thermal cover for both amphibian as well as terrestrial species. The uncut riparian buffer along stream 4 in EMU 15 provides a travel network into the 55 acre retention area west of stream 2. With the exception of the 600 foot width of the power line, this will provide an

unharvested north west/south east connection across the property. In addition, the combination of group and single tree selection methods in the harvest prescription should provide adequate levels of canopy retention to avoid significant disruption of wildlife travel patterns.

When stewardship plans are prepared for the adjacent Petrovitsky Park, Spring Lake - Lake Desire Park, and Wetland 14 Natural Area the entire landscape will be evaluated to ensure that a diversity of tree, shrub, and other vegetation species is encouraged with a range of age classes and structural diversity represented across the landscape. Given the fact that all proposed harvests in this plan involve significant levels of retention, active management of these 4 properties should not involve significant land use conflicts.

Threatened and Endangered Species

Based on resources consulted including WDFW Salmonscape, WDFW habitat data sets, and consultant reports completed as part of the 2000 sub-division process, there are not any state or federally protected threatened or endangered species that will be impacted by the stewardship practices described in this plan.

Aesthetics, Recreation and Public Use

The Resource Program has collected GPS data on all the trails throughout the McGarvey Park Open Space and into neighboring Spring Lake/Lake Desire Park but to date has not updated any trails except in the Spring Lake Area on the trail connecting to McGarvey Park. There were some possible errors in the trail locations detected in EMU 15 as indicated on Map 7: Roads, Trails, and Access Points. The mapped trail locations did not agree with GPS readings taken in the summer of 2010. These discrepancies were where the trail approached adjacent private lands in the vicinity of King County Wetland 15 and where the trail (0.59) crosses Stream 4. In addition this trail is not up to standards of the Parks Resource Program due to its' impact on forested wetlands, and the lack of a clearly defined trail corridor.

In conjunction with the harvest in EMU 15, the Parks Resource Program will work with Forestry staff on incorporating appropriate conditions in the logging contract to maintain, and improve existing trail resources. This will include flagging and signing any necessary trail closures to protect the safety of users. In addition, Parks Resource Program staff will determine and clearly flag segments of existing trails which are appropriately located. Conditions will be drafted in the logging contract to ensure that harvest contractors do not cause excessive damage to these retained trail resources and leave the corridor graded and relatively free of logging slash. Similar conditions will be drafted to direct logging contractor to leave any new trail corridors designated by DNRP staff graded and free of slash. These proposed new trails will be flagged by Parks Resource Program staff when cutting and yarding operations are nearing completion. The new trail centerline will be clearly flagged, and communicated to the logging contractor by Forestry staff.

Following harvesting operations the Resource Program will finalize the update of these trail conditions to Forest Service Standards by closing unnecessary and repetitive trails and ensuring that all GPS trail data is updated and accurate. These improvements will address the identified problems in EMU 15.

In conjunction with the scheduled harvests in the rest of ecotype A, as well as B, and C the trail network will be assessed prior to these harvests. A similar upgrade of trail standards including any necessary relocations will be planned and integrated into the harvest plan and logging contract by DNRP Resource Program and Forestry staff.

Table 4 Timeline of Forest Stewardship Recommendations

Eco-unit	Recommendation	Year
	High Priority	
All	Update this plan as necessary based on FLAT analysis to be completed by end of 2010. Invasive control measures will be determined based on this analysis.	2011
All	Annual monitoring for invasive species.	Ongoing
15	Ecologically based harvest to convert a poor quality hardwood forest to a more diverse, multi story, conifer dominated forest.	2011
15	Plant harvested area with a variety of conifer species depending on light and moisture levels.	2012
15	Evaluate and determine the need and type of vegetation management practices.	2012-13
15	Implement the 2nd harvest of 2 stage deciduous to conifer ecologically based harvest.	2016-2020
1, 5, 7, 9, 10	Ecologically based harvest to convert a poor quality hardwood forest to a more diverse, multi story, conifer dominated forest.	2011-16
1, 5, 7, 9, 10	Plant harvested area with a variety of conifer species depending on light and moisture levels.	First planting season following harvest.
1, 5, 7, 9, 10	Evaluate and determine the need and type of vegetation management practices.	Within 3 years of planting.
1, 5, 7, 9, 10	Second harvest of 2 stage deciduous to conifer ecologically based harvest.	2018-26
	Medium Priority	
23	Commercial thinning to promote development of late seral stage conditions.	2016-2020
15	Evaluate and determine if pre-commercial thinning is necessary.	2027-32
1, 5, 7, 9, 10	Evaluate and determine if pre-commercial thinning is necessary.	2027-32

References

Abella, Sally, “Re: Lake Desire fish inventory”, e-mail message, November 19, 2010

Franklin, J.F., T.A. Spies et al., 2002. Disturbances and Structural Development of Natural Forest Ecosystems with Silvicultural Implications, using Douglas Fir Forests as an Example. Forest Ecology and Management 5624. p 1-25.

GeoEngineers, Inc. 1991. Revised report, Abandoned Coal Mine Evaluation and Geotechnical Engineering Services. King County, Department of Development and Environmental Services (DDES). 1994.

Icicle Creek Engineers, Inc., Monitoring Program of Severe Coal Mine Hazard. July 6, 2000

King County. 2010. King County Open Space Plan: Parks, Trails, and Natural Areas, 2010 Update, King County Department of Natural Resources and Parks, Parks and Recreation Division. Seattle, Washington

King County, 1998. Office of the Hearing Examiner. Revised Report and Recommendation to the King County Council, Department of Development and Environmental Services File No. L94P0022, Proposed Ordinance No. 97-587, McGarvey Park Preliminary Plat

King County, 1990. King County Wetland Inventory. 1990 update. King County Parks, Planning and Resources Department, Environmental Division, Bellevue, Washington

Shapiro and Associates, Inc., Wildlife Use. March 26, 1990

Shapiro and Associates, Inc., Wetland Determination. May 1992

Shapiro and Associates, Inc., McGarvey Park Limited Scope Master Drainage Plan, Baseline Monitoring Results, revised August, 1998.

Raedeke Associates, Inc., Wetland and Wildlife Assessment. May 22, 2000

Williams, R. W., R. M. Laramie, J. J. Ames, and F. Biologists. 1975. A catalog of Washington Streams and salmon utilization. Washington Department of Fisheries.

Acknowledgements

King County Staff

Bill Loeber, Project Manager/Forester, Rural and Regional Services Section King County Department of Natural Resources and Parks (DNRP)

Tom Beavers, Cedar River Basin Steward, Rural and Regional Services Section, (DNRP)

Connie Blumen, Natural Lands Program Manager, Capital Planning & Business Development Section, (DNRP)

Duane Evans, Resource Coordinator, Resource Section, (DNRP)

Kim Gauthier, Park Specialist, Resource Section, (DNRP)

Don Harig, Parks Resource Section Manager, Resource Section, (DNRP)

Larry Kimble, Supervisor, Resource Section, (DNRP)

David Kimmett, Natural Lands Program Manager, Capital Planning & Business Development Section, (DNRP)

Ingrid Lundin, Natural Lands Program Manager, Capital Planning & Business Development Section, (DNRP)

Tina Miller, Senior Ecologist/ Volunteer Coordinator, Resource Section, (DNRP)

Consultants

Jesse Saunders, Forester, International Forestry Consultants, Inc.

Appendix A (Shapiro, 1990)

OBSERVED AND EXPECTED SPECIES AT THE LAKE DESITE ESTATES

Species	Seasonality	Status	Habitat Types: Forest	Habitat Types: Wetlands
BIRDS				
Grebes				
Pied-billed grebe	R	C		X
Herons and Bitterns				
Great blue heron	V	C		X
Green-backed heron	S	U		X
Waterfowl				
Canada goose	R	R		X
Wood duck	R	R		X
Green-winged teal	W	U		X
Mallard	R	A		X
Northern pintail	W + S	C		X
Blue-wing teal	S	R		X
Cinnamon teal	S	U		X
Northern shoveler	W	C		X
American wigeon	W	C		X
Ring necked duck	W + S	R		X
Lesser scaup	W + S	R		X
Common goldeneye	V	R		X
Barrow's goldeneye	W	R		X
Bufflehead	W + S	U		X
Hooded merganser	W	U		X
Common merganser	W	U		X
Ruddy duck	W	U		X
Vultures, Hawks, Eagles, and Falcons				
Bald eagle	W	R	X	X
Sharp-shinned hawk	M + W	U	X	
Cooper's hawk	M + W	R	X	
Red-tailed hawk	R	C	X	X
American kestrel	S + M	U		X
Grouse, Quail, and their Relations				
Ring-neck pheasent	R	U		X
California quail	R	C		X

39

Species	Seasonality	Status	Habitat Types	
			Forest	Wetlands
Rails, Coots, and Cranes				
Virginia rail	R	R		X
American coot	R	C		X
Shorebirds				
Killdeer	R	C		X
Lesser yellowlegs	M	C		X
Spotted sandpiper	M	R		X
Western sandpiper	M	R		X
Least sandpiper	M	R		X
Common snipe	M	U		X
GULLS				
Bonaparte's gull	M + W	U		X
Mew gull	W	U		X
Glaucous-winged gull	W +S	C		X
Pigeons and Doves				
Rock dove	R	C	X	
Band-tailed pigeon	V	C	X	
Mourning dove	S	U	X	
Owls				
Barn owl	R	U		X
Screech owl	R	C	X	X
Great horned owl	R	C	X	X
Swifts				
Black swift	S	R		X
Vaux's swift	S	R		X
Hummingbirds				
Rufous hummingbird	S	U		X
Kingfisher				
Belted kingfisher	R	C		X

Species	Seasonality	Status	Habitat Types	
			Forest	Wetlands
Woodpeckers				
Red-breasted sapsucker	R	R	X	X
Downy woodpecker	R	C	X	X
Hairy woodpecker	R	C	X	X
Northern flicker	R	C	X	X
Pileated woodpecker	R	U	X	X
Flycatchers and Horned Lark				
Olive-sided flycatcher	S	U	X	X
Western wood pewee	S	U	X	X
Willow flycatcher	S	U	X	X
Alder flycatcher	S	U	X	X
Swallows				
Tree swallow	S	U		X
Violet-green swallow	S	C		X
Barn swallow	S	C		X
Crows, Jays, and Ravens				
Stellar's jay	R	C	X	
Crow	R	C	X	X
Chickadees, Nuthatches, etc.				
Black-capped chickadee	R	C		X
Chestnut-backed chickadee	R	C		X
Bushtit	R	C		X
Red-breasted nuthatch	W	R		X
Wrens, Kinglets, Thrushes, and Near Relatives				
Bewick's wren	R	C	X	
Winter wren	R	C	X	X
Marsh wren	R	C		X
Golden-crowned kinglet	R	C	X	X
Ruby-crowned kinglet	W	C	X	X
Swainson's thrush	S	U	X	
Hermit thrush	M	R		X
American robin	R	A	X	X
Varied thrush	W	C	X	
Pipits, Waxwings, and Starlings				
Cedar waxwing	S + M	C	X	X
Northern Shrike	W	R	X	
European starling	R	C		X

Species	Seasonality	Status	Habitat Types: Forest	Habitat Types: Wetlands
Hoofed mammals				
Black-tailed deer	R	C	X	X
Amphibians and Reptiles				
Northwestern salamander	R	U	X	X
Long-toed salamander	R	U	X	X
Rough-skinned newt	R	U	X	X
Western red-backed salamander	R	U	X	X
Pacific tree frog	R	A	X	X
Red-legged frog	R	U	X	X
Northern alligator lizard	R	U	X	
Rubber boa	R	R	X	X
Common garter snake	R	A	X	X
Western garter snake	R	A	X	X
Northwestern garter snak	R	U	X	X

NOTES

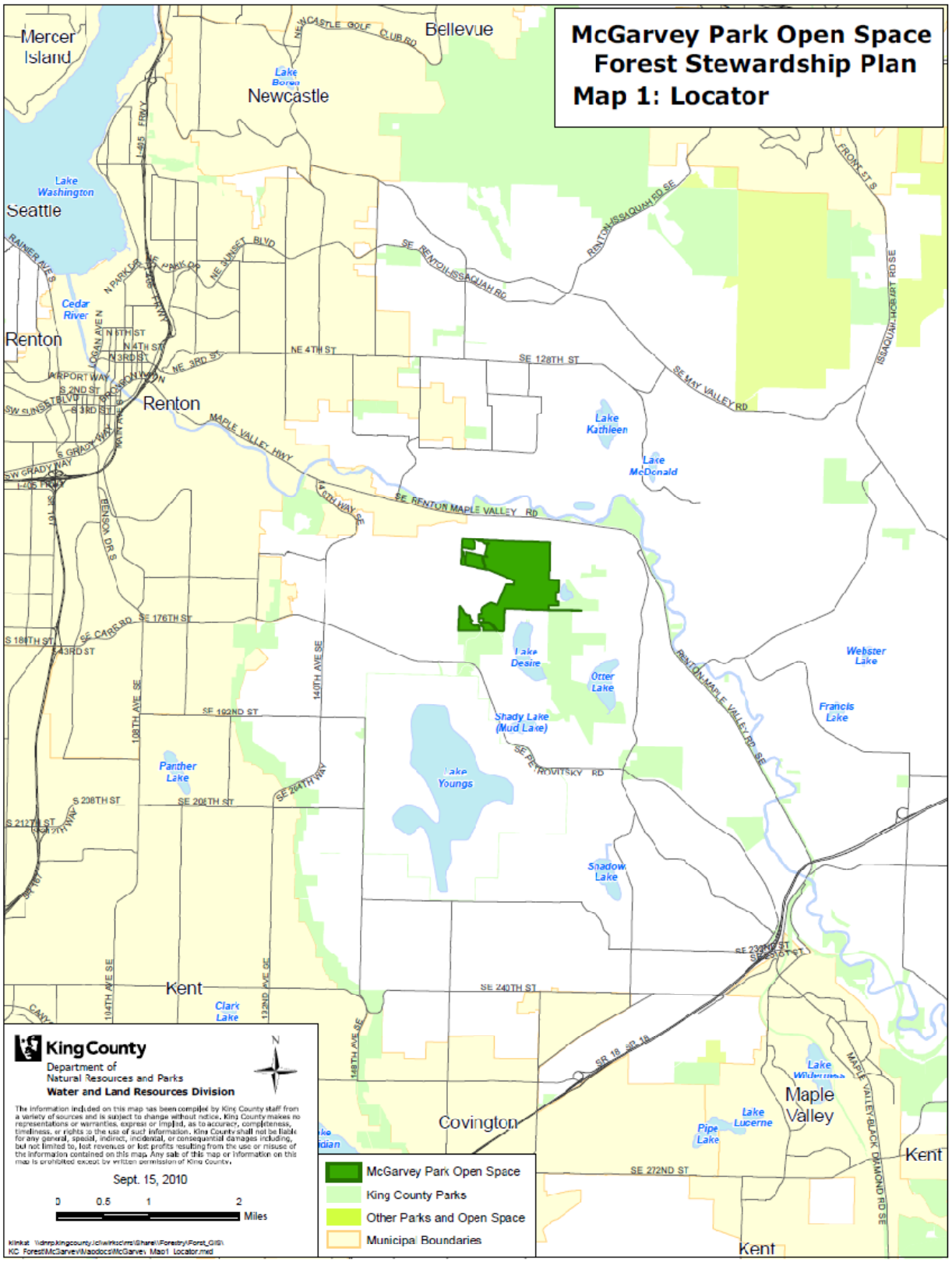
Seasonality

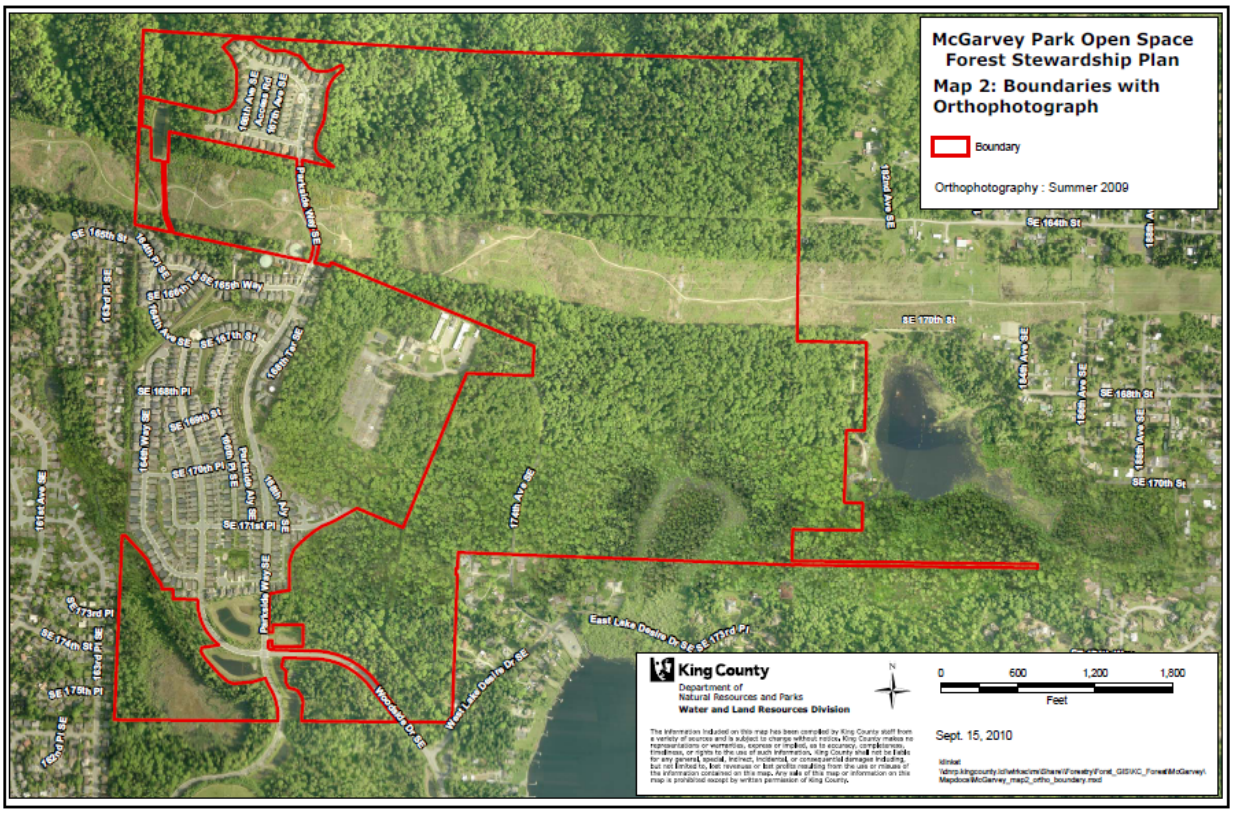
R-Resident: present all year, athough abundance may vary seasonally: presumed to breed in gen
S-Summer: summer visitor only (includes spring and fall); presumed to breed in area.
M-Migrant: spring and fall only
W-Winter: winter visitor only (includes spring and fall)

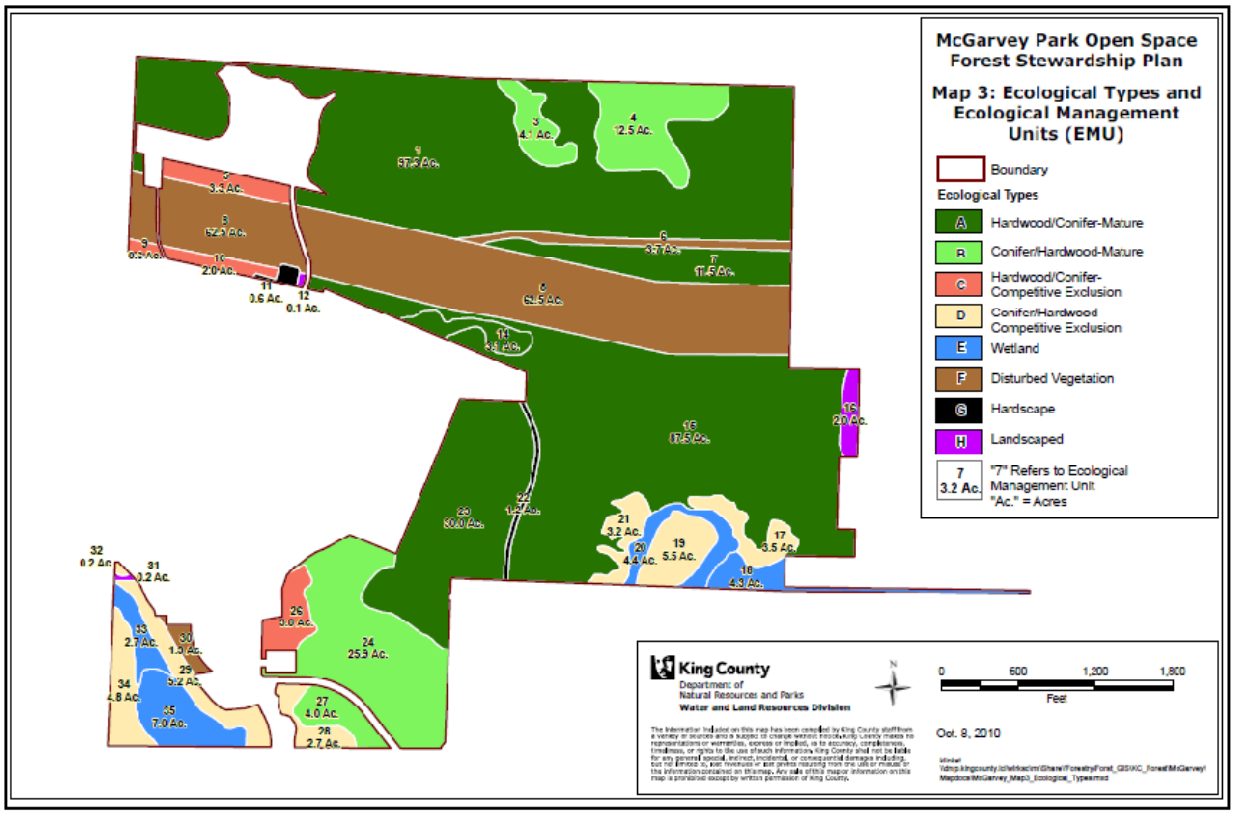
General Status in its Range

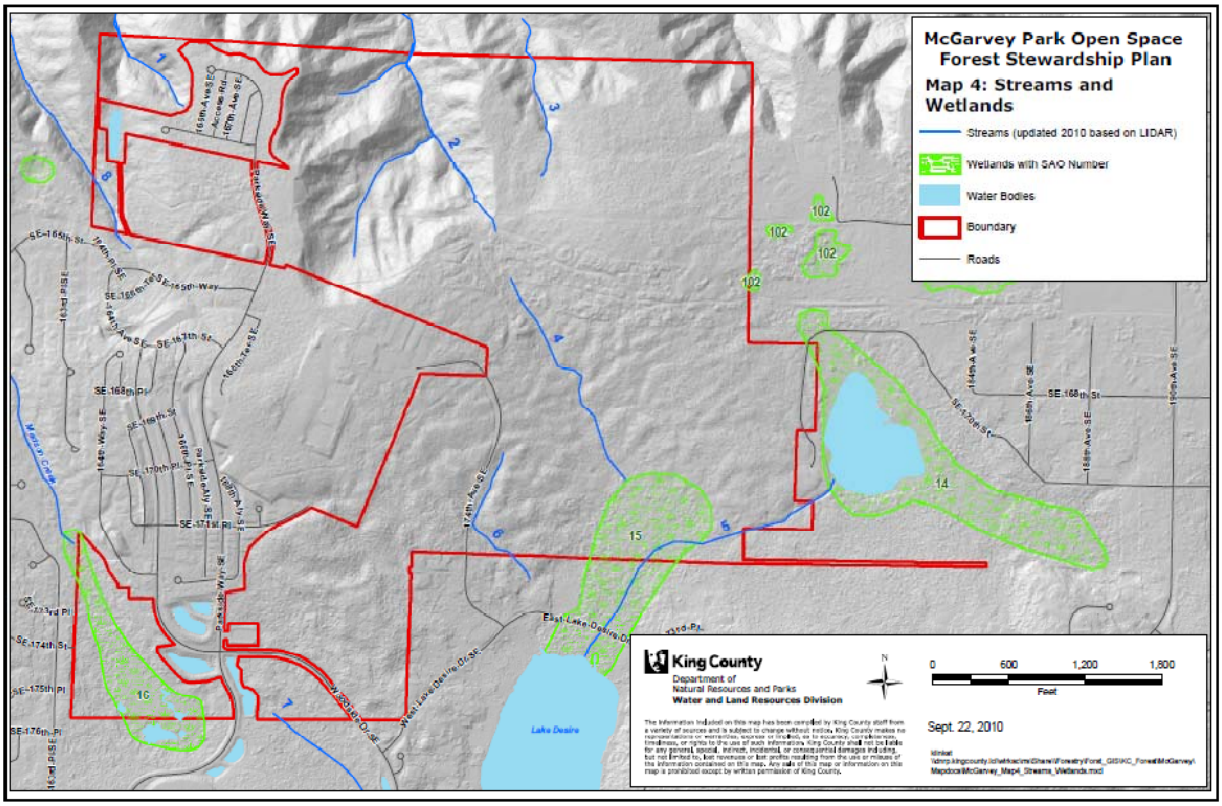
A-Abundant: very likely to be seen in large numbers every time by a person visiting its habitat : the proper season
C-Common: may be seen most of the time or in smaller numbers under the same circumstances.
U-Uncommon: may be seen quite regularly in small numbers in the appropiate environment and se:
R-Rare: occupies only a small percentage of its preferred habitat or occupies a very specific lim it is usually found only by an experienced observer; can be accidental

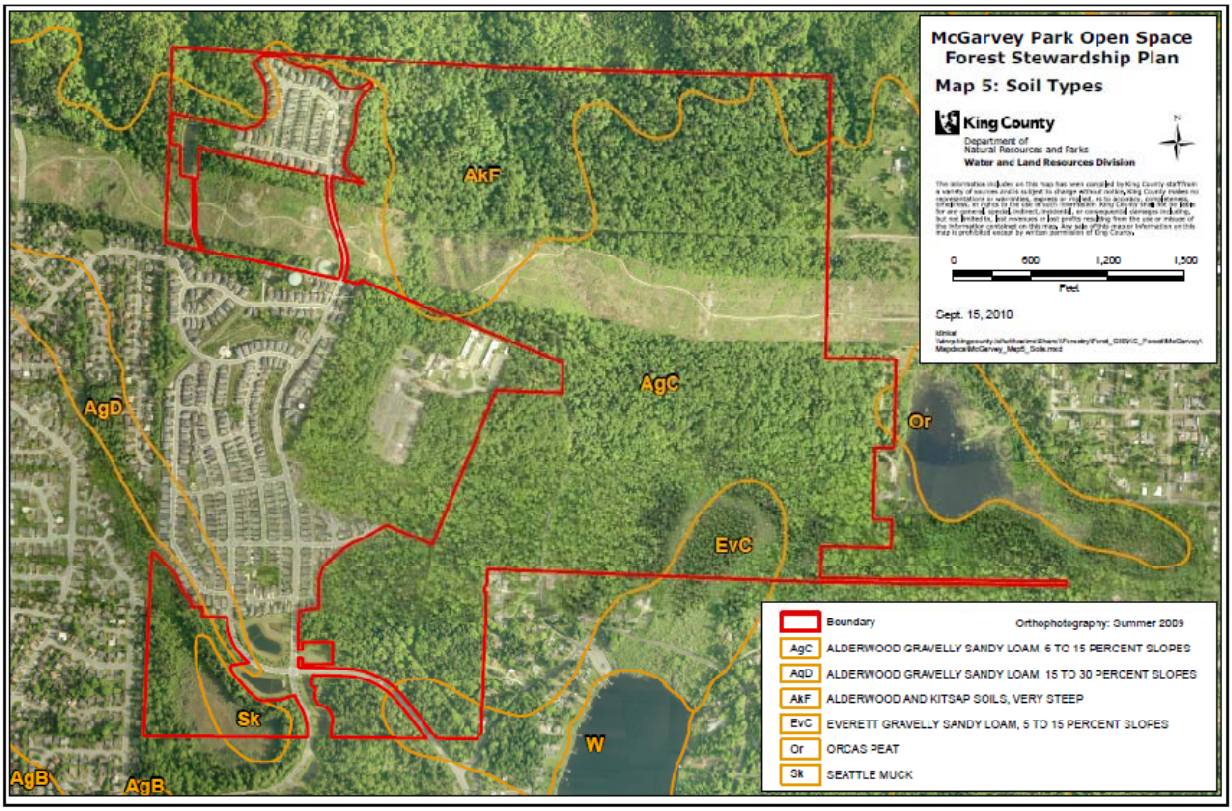
Sources: Hunn, E.S., 1984. Birding in Seattle and King County, Site Guide and Annotated List.
King County, 1987. Wildlife Habitat Profile. King County Natural Resources and Parks Divisic

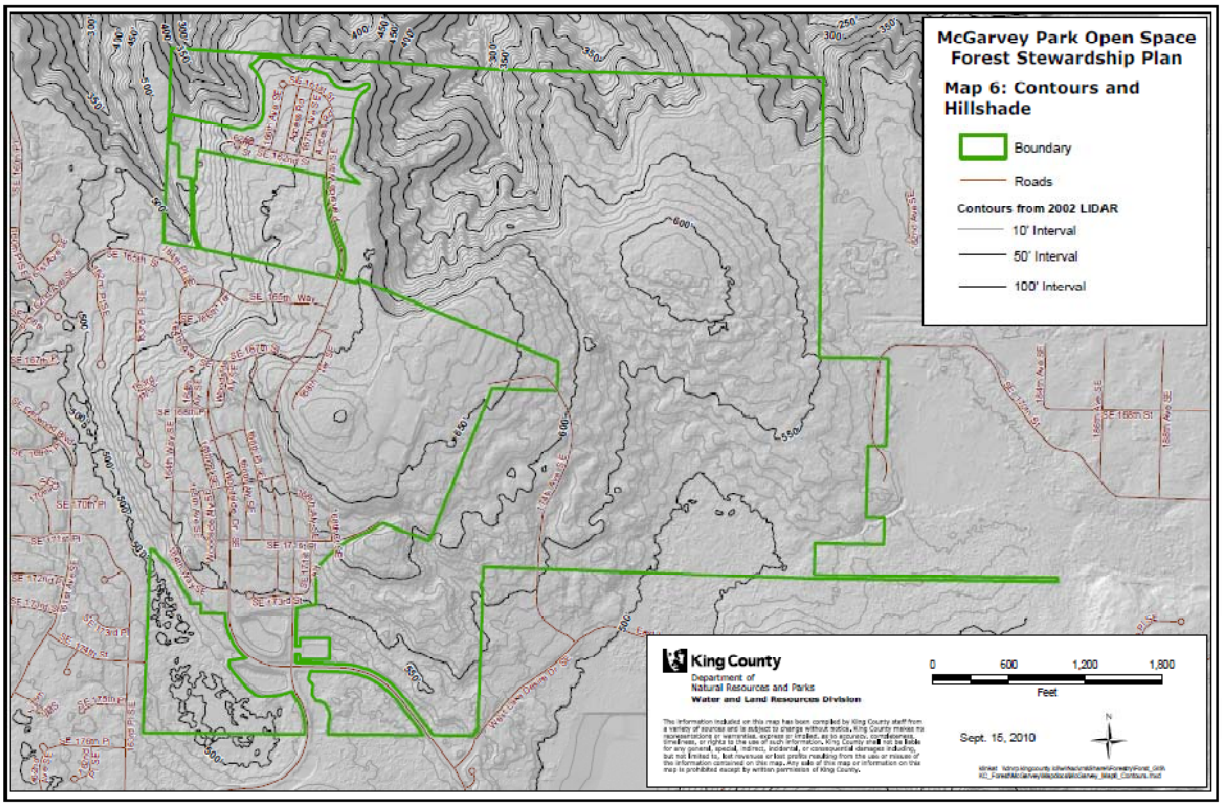

McGarvey Park Open Space
Forest Stewardship Plan
Map 1: Locator
Mercer Island
Bellevue
Newcastle
Lake Boren
Lake Washington
Seattle
Cedar River
Renton
Renton
Lake Kathleen
Lake McDonald
Lake Desire
Otter Lake
Shady Lake (Mud Lake)
Lake Youngs
Webster Lake
Francis Lake
Panther Lake
Shadow Lake
Kent
Clark Lake
Covington
Lake Wilderness
Maple Valley
Lake Lucerne
Pipe Lake
Kent
Kent
NE 4TH ST
SE 128TH ST
SE MAY VALLEY RD
MAPLE VALLEY HWY
SE RENTON MAPLE VALLEY RD
SE 176TH ST
SE 192ND ST
SE 208TH ST
SE 240TH ST
SE 272ND ST
SR 18
King County
Department of
Natural Resources and Parks
Water and Land Resources Division
The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.
Sept. 15, 2010
0 0.5 1 2
Miles
N
McGarvey Park Open Space
King County Parks
Other Parks and Open Space
Municipal Boundaries

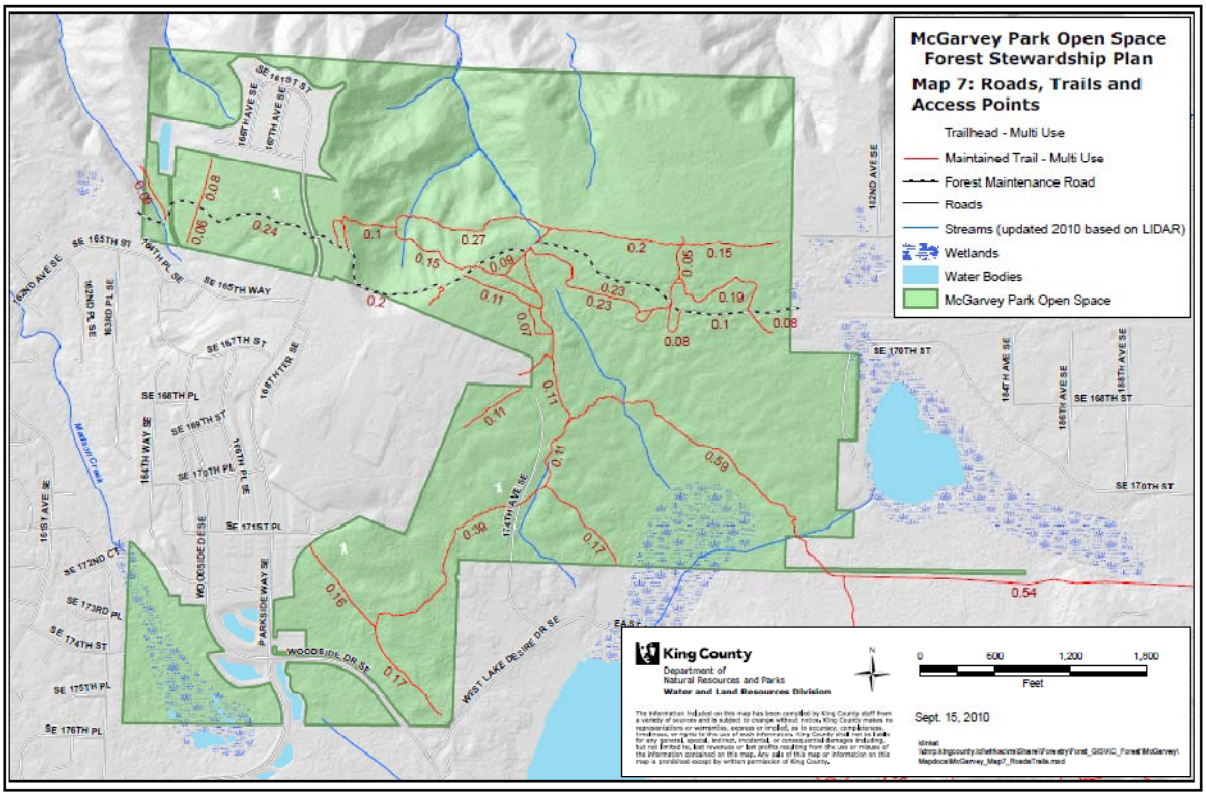

McGarvey Park Open Space
Forest Stewardship Plan
Map 2: Boundaries with Orthophotograph
Boundary
Orthophotography : Summer 2009
King County
Department of
Natural Resources and Parks
Water and Land Resources Division
0 600 1,200 1,800
Feet
Sept. 15, 2010
SE 164th St
SE 170th St
SE 168th St
East Lake Desire Dr SE
West Lake Desire Dr SE
Woodlawn Dr SE
Parkside Way SE
174th Ave SE

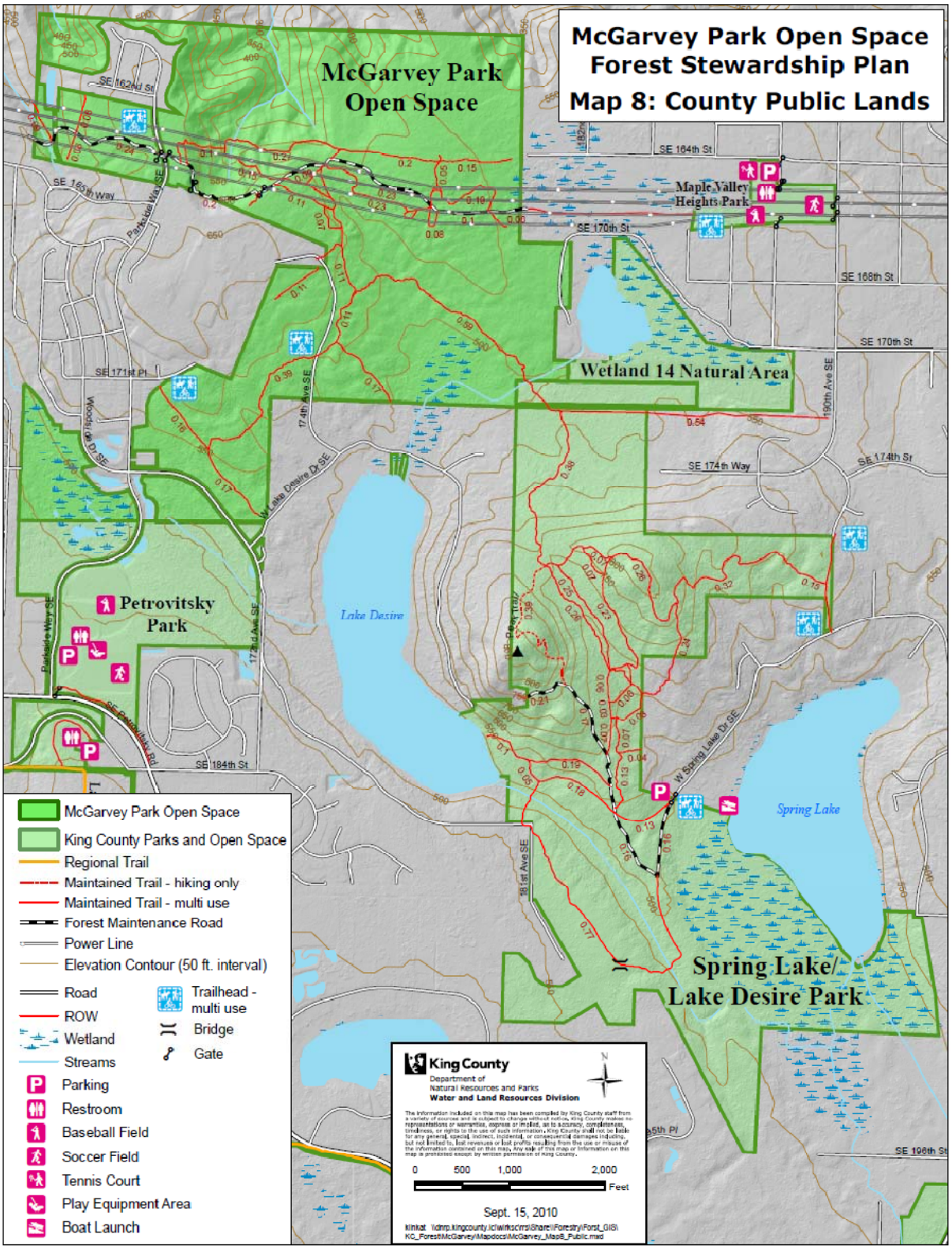

McGarvey Park Open Space
Forest Stewardship Plan
Map 3: Ecological Types and Ecological Management Units (EMU)
Boundary
Ecological Types
A Hardwood/Conifer-Mature
B Conifer/Hardwood-Mature
C Hardwood/Conifer-Competitive Exclusion
D Conifer/Hardwood Competitive Exclusion
E Wetland
F Disturbed Vegetation
G Hardscape
H Landscaped
7 3.2 Ac. "7" Refers to Ecological Management Unit "Ac." = Acres
King County
Department of
Natural Resources and Parks
Water and Land Resources Division
0 600 1,200 1,800
Feet
Oct. 8, 2010


McGarvey Park Open Space
Forest Stewardship Plan
Map 4: Streams and Wetlands
Streams (updated 2010 based on LIDAR)
Wetlands with SAO Number
Water Bodies
Boundary
Roads
King County
Department of
Natural Resources and Parks
Water and Land Resources Division
0 600 1,200 1,800
Feet
Sept. 22, 2010
Lake Desire


McGarvey Park Open Space
Forest Stewardship Plan
Map 5: Soil Types
King County
Department of
Natural Resources and Parks
Water and Land Resources Division
0 600 1,200 1,800
Feet
Sept. 15, 2010
AkF
AgC
AgD
Or
EvC
Sk
W
AgB
Boundary
Orthophotography: Summer 2009
AgC ALDERWOOD GRAVELLY SANDY LOAM 6 TO 15 PERCENT SLOPES
AgD ALDERWOOD GRAVELLY SANDY LOAM 15 TO 30 PERCENT SLOPES
AkF ALDERWOOD AND KITSAP SOILS, VERY STEEP
EvC EVERETT GRAVELLY SANDY LOAM, 5 TO 15 PERCENT SLOPES
Or ORCAS PEAT
Sk SEATTLE MUCK


McGarvey Park Open Space
Forest Stewardship Plan
Map 6: Contours and Hillshade
Boundary
Roads
Contours from 2002 LIDAR
10' Interval
50' Interval
100' Interval
King County
Department of
Natural Resources and Parks
Water and Land Resources Division
0
600
1,200
1,800
Feet
Sept. 15, 2010


McGarvey Park Open Space
Forest Stewardship Plan
Map 7: Roads, Trails and Access Points
Trailhead - Multi Use
Maintained Trail - Multi Use
Forest Maintenance Road
Roads
Streams (updated 2010 based on LIDAR)
Wetlands
Water Bodies
McGarvey Park Open Space
King County
Department of
Natural Resources and Parks
Water and Land Resources Division
0
600
1,200
1,800
Feet
Sept. 15, 2010


McGarvey Park Open Space Forest Stewardship Plan
Map 8: County Public Lands
McGarvey Park Open Space
Wetland 14 Natural Area
Petrovitsky Park
Lake Desire
Spring Lake
Spring Lake/ Lake Desire Park
Maple Valley Heights Park
SE 164th St
SE 170th St
SE 168th St
SE 174th Way
SE 174th St
SE 171st Pl
SE 184th St
SE 198th St
174th Ave SE
190th Ave SE
181st Ave SE
172nd Ave SE
W Lake Desire Dr SE
W Spring Lake Dr SE
Parkside Way SE
McGarvey Park Open Space
King County Parks and Open Space
Regional Trail
Maintained Trail - hiking only
Maintained Trail - multi use
Forest Maintenance Road
Power Line
Elevation Contour (50 ft. interval)
Road
ROW
Wetland
Streams
Trailhead - multi use
Bridge
Gate
Parking
Restroom
Baseball Field
Soccer Field
Tennis Court
Play Equipment Area
Boat Launch
King County
Department of Natural Resources and Parks
Water and Land Resources Division
0 500 1,000 2,000 Feet
Sept. 15, 2010