# Lower Bear Creek Natural Area
# Site Management Guidelines

*March 2006*

King County
Department of Natural Resources and Parks
**Water and Land Resources Division**

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# Acknowledgements

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# Executive Summary

Lower Bear Creek Natural Area is a King County Department of Natural Resources and Parks Ecological Land managed for the protection of ecological values and, where appropriate, public access. The Lower Bear Creek Natural Area is 11.68 acres in size and located on the east side of Avondale Rd. NE, just east of Redmond.

Lower Bear Creek Natural Area borders Avondale Rd. NE on the west side. There is a relatively new housing development across the street. To the north is an equestrian center, and to the east and south are rural-residential lots between 0.8 and 3 acres in size. Bear Creek flows through the property on its west side, just to the east of Avondale Rd NE. The site is comprised of two parcels, formerly known as the Stensland and Tharpe properties.

The site contains both mature, upland forest and areas of wetland associated with Bear Creek. About half of the property is located within the 100-year floodplain of Bear Creek. The site contains habitat for a variety of fish and wildlife species.

There is limited public use in the Lower Bear Creek Natural Area, though there are a couple of trails that are likely used only by neighboring landowners.

The goals for the Lower Bear Creek Natural Area are 1) to conserve and enhance the ecological value, and 2) accommodate appropriate public uses that do not harm ecological resources. The following are planning and management recommendations that are designed to support these goals.

- Implement preserve and protect measures to limit inappropriate public use.
- Monitor public use, types of use and impacts to ecological systems to inform management decisions.

# Lower Bear Creek Natural Area Site Management Guidelines

# Introduction

Lower Bear Creek Natural Area is a King County Department of Natural Resources and Parks (DNRP) Ecological Land. Ecological Lands are a category of Water and Land Resources Division (WLRD) properties managed for the protection of their ecological value. Appropriate public access and educational opportunities are accommodated on these sites where they do not harm the ecological value of the site.

This document provides general property and acquisition information, a description of existing site conditions, a site analysis, and a list of management objectives and recommendations for Lower Bear Creek Natural Area. These site management guidelines were developed using guidance established in the King County Ecological Lands Handbook (2003).

# Part 1. General Property Information

Lower Bear Creek Natural Area is an 11.68-acre site located on the east side of Avondale Rd. NE just east of Redmond. The site borders Avondale Rd. NE on the west side. There is a relatively new housing development across the street. To the north is an equestrian center, and to the east and south are rural-residential lots between 0.8 and 3 acres in size. Bear Creek flows through the property on its west side, just to the east of Avondale Rd. NE. The site is comprised of two parcels, formerly known as the Tharpe and Stensland properties. The Tharpe property is 2.57 acres on the west side of the creek and was acquired in 1998 for the purposes of conducting a riparian restoration project. The Stensland property is 9.11 acres and is on the east side of Bear Creek. It was acquired in November 2003.

The Lower Bear Creek Natural Area is zoned RA-2.5 in accordance with the King County Comprehensive Plan (2004). The purpose of the rural area (RA) zone is to provide for long-term rural character and to minimize land use conflicts with the nearby agricultural or forest production districts or mineral extraction sites (King County Code 21A.04.060). This purpose is accomplished by: 1) limiting residential development; 2) allowing small scale farming, forestry activities, and tourism and recreation uses compatible with rural character; 3) increasing required setbacks to minimize conflicts with agriculture, forest and mineral zones; and 4) requiring tracks of cluster development designated as permanent open space. The RA-2.5 zone was created where rural attributes are desired but the surrounding area contains pre-existing lots smaller than 5 acres in size, the minimum lot size throughout most of the Rural Area.

**Table 1. Lower Bear Creek Natural Area General Information.**

| | |
|---|---|
| Best Available Address | Stensland - western terminus of NE 103rd St.<br>Tharpe – east side of Avondale Rd between 10000 and 10400 blocks |
| Thomas Guide Map Location | Page 537 |
| Legal Description | SE 1/4 of SW 1/4 Section 31 T26 North R06 East |
| Acreage | 11.68 acres |
| Drainage Basin | Bear Creek |
| WRIA | 8 |
| Council District | 3 |
| King County Sensitive Areas | Bear Creek |

**Table 2. Lower Bear Creek Natural Area Parcel Information.**

| Parcel Numbers | Acreage* | Recording Number | Purchase Date | Ownership type/price | Previous Names | Zoning | Funding Source |
|---|---|---|---|---|---|---|---|
| 3126069016 | 9.11 | 200309230 -2627 | 9/23/2003 | Owned in Fee $500,000 | Stensland Property | RA-2.5 | Salmon Recovery Funding Board, Conservation Futures |
| 3126069038 | 2.57 | 19981229 -2095 | 12/10/1998 | Owned in fee $50,000 | Tharpe Property | RA-2.5 | Surface Water Management CIP |

*Acreage from King County Assessor's data.

# Part 2. Acquisition, Funding Source and Deed Restrictions

As mentioned above, Lower Bear Creek was acquired in two phases. The Tharpe property, 2.57 acres on the west side of the creek, was purchased in December, 1998 with Surface Water Management CIP funds for the purpose of doing a stream restoration project on the west side of Bear Creek.

The Stensland property, 9.11 acres on the east side of the creek, was acquired in September, 2003 for $500,000 using a combination of Salmon Recovery Funding Board funds and Conservation Futures funds.

The Washington State Salmon Recovery Funding Board (SRFB) was created in 1999 to administer funds for salmon recovery appropriated by the state legislature and Congress (RCW 77.85). (SRFB 2002a) SRFB's mission is to "support salmon recovery by funding habitat protection and restoration projects and related programs and activities that produce sustainable and measurable benefits for fish and their habitat." SRFB receives administrative support from the Washington State Interagency Committee for Outdoor Recreation (IAC).

Project sponsors such as cities, counties, agencies, tribes, non-profit organizations, and private citizens submit applications to local lead entities such as Watershed Resource Inventory Area Steering Committees. The lead entities submit prioritized lists of project applications to SRFB for consideration. Sponsors request funds to protect or restore salmon habitat, commit to long-term monitoring, and provide a monetary or in-kind match of 15% or more. Projects may include acquisition; in-stream passage or diversion; in-stream, riparian, upland, or estuarine habitat actions; or assessments and studies.

Lands acquired in fee with SRFB assistance must have a recorded "deed of right" which conveys to the State of Washington the right to use the property forever for the purposes for which it was acquired. For SRFB grants this is typically a recorded Deed of Right to Use Land for Salmon Recovery and Conservation Purposes. Any inconsistent use must be approved by the SRFB or its successors. This approval will only be granted if other land is substituted of at least equal fair market value at time of change of use and of (as nearly as is feasible) equivalent qualities, characteristics, and location for the salmon recovery and conservation purposes for which state assistance was originally granted. (SRFB 2002b)

Washington state statute RCW 84.34.230 authorizes Washington counties to place a Conservation Futures Tax (CFT) levy on all taxable property within their jurisdiction to acquire open space land or rights to future development (termed "conservation futures" in RCW 84.34.220). Open space is defined in RCW

84.34.020 as land contributing to natural resources, streams, water supply, soils, wetlands, public land network, recreation opportunities, historic sites, or visual quality. King County Code 26.12 states that there should be "demonstrable regional visibility, use, ecological, cultural, historical, or other natural resource significance" in CFT funded projects." (King County, 2003, King County Code) Ordinance 10750 and 11068 (March 8 and October 3, 1993) authorized the Regional Conservation Futures 1993 Bond Acquisition Program (per regulations in RCW 84.34.200).

Properties purchased with Conservation Futures funds are to be used for low-impact, passive-use recreation. They are also limited to non-motorized use, except as necessary for maintenance or staging areas, including entrance roads and parking to provide public access. Non-vegetative impervious surfaces should cover less than 15% of the site, excluding trail systems, unless specially authorized by the King County Council. Conservation futures interests shall not be transferred except with agreement that land interests shall be preserved in accordance with the intent and language of RCW 84.34.230; uses of lands shall not be altered unless equivalent lands within the geographic jurisdiction are provided. (King County 1993a)

# Part 3. Ecological Resources

This section describes the existing natural resources and ecological processes present at Lower Bear Creek Natural Area. Further analysis will be provided in Part 6 below. Lower Bear Creek NA can be divided into two parts from an ecological standpoint. Approximately the western third and parts of the NE corner are dominated by wetland vegetation, and the eastern two thirds are upland conifer forest.

## Topography and Soils

Lower Bear Creek NA is essentially flat with a slight slope toward both sides of Bear Creek. It consists of two types of soils; Indianola on the eastern half and Briscot on the western half. Briscot soil is a grayish brown, silty loam with moderate permeability and poor drainage capability. It is a hydric soil and is found mostly within the wetland area associated with Bear Creek. In winter, the seasonal water table is within one or two feet. The main tree species in this type of soil are red alder, western red cedar, and western hemlock.

Indianola soil is a dark, reddish brown sand with yellowish brown sand underneath. It is excessively drained with rapid permeability and thus low puddling potential. The major tree species in this type of soil is Douglas Fir.

## Hydrology

Bear Creek flows north-south through the western side of Lower Bear Creek NA, and a small tributary joins it from the east. There is also some water that flows onto the northeast corner of the site, apparently discharge from a stormwater detention pond associated with the neighboring housing development. Combined, these water sources create the stream/wetland complex that covers roughly half of the site.

## Vegetation

The vegetation on Lower Bear Creek NA can be divided into two zones, the upland zone (4.04 acres) and the wetland zone (7.64 acres).

The upland zone is dominated by +/- 80-year old Douglas Fir, over 25 of which exceed 25 feet in circumference. Red Alder and western red cedar are also present in small amounts. The understory is comprised of scattered English Holly, red elderberry, wild raspberry, vine maple and California hazelnut. The ground layer is comprised of swordfern, piggy-back plant, spreading wood fern, and stream violet. There is also some lady fern, stinging nettle and coltsfoot in the wetter areas.

The wetland zone is comprised of willow, red-osier dogwood, and red alder. Past riparian planting efforts have established Sitka Spruce and western red cedar. The wetland area in the northeastern part of the site contains willows, salmonberry, water parsley, skunk cabbage, stinging nettle, lady fern, small-fruited bulrush and giant horsetail. In addition, several invasive species have become established including knotweed, Himalayan blackberry, reed canary grass, bindweed, yellow flag iris, English ivy, Scott's broom and a small amount of tansy ragwort and bitter nightshade. The Himalayan blackberry on the west side of Bear Creek is extensive along Avondale Rd. Knotweed covers roughly 11,000 – 12,000 sq. ft. of the site.

### Fish and Wildlife

A formal wildlife survey has not been completed for Lower Bear Creek NA, but the mature forest likely provides habitat for a variety of bird and animal species. Bald eagles and hawks probably use the sight, as do river otters and deer. There is evidence of beaver activity along the west side of Bear Creek. Heron have been spotted on the creek on several occasions. Lower Bear Creek NA is the last remaining stand of mature Douglas Fir forest on the lower Bear Creek stream reach and thus may serve as a refuge for animals in the area.

Bear Creek is designated as a Waterways 2000 stream and is classified AA by the Washington State Department of Ecology. According to the Washington State Department of Fish and Wildlife, it is the most productive salmonid stream for a basin its size in western Washington. The Lower Bear Creek Natural Area comprises app. 1500 lineal feet of Bear Creek. All six species of salmon utilize this reach for spawning, rearing and migration.

## Part 4. Site Use and Infrastructure

This section describes public use, access points, and site infrastructure such as trails and roads at Lower Bear Creek Natural Area.

### Current and Public Use

There is limited public use at Lower Bear Creek NA, largely due to the lack of infrastructure. It is likely that the only users are neighboring landowners. There are two small, deteriorating wooden and corrugated metal sheds on the Tharpe property, but it does not appear that these have been used for anything in a long time.

### Access

On the east side of Bear Creek, the site can be accessed from the end of NE 103rd St, but it is necessary to cut across the neighboring property for about 20 feet in order to access a trail. There is some parking at the end of NE 103rd St, but it is minimal. On the west side of the site, there is no easy access, but it is possible to walk onto the site from Avondale Rd.

### Trails and Roads

There are no roads on the site. There are a couple of informal trails that meander through the southern portion of the site, one along the eastern boundary and one from the southeast corner to the creek, but these are not maintained and do not seem to be used very regularly.

### King County Stewardship Activities

The King County Watershed Management CIP Unit conducted a riparian planting on the site in 1999. This project involved planting 1155 trees and shrubs along Bear Creek, including sitka spruce, Douglas Fir, western red cedar, big leaf maple, red alder, black cottonwood, pacific willow, scouler's willow, and

sitka willow. The majority of the planting was done on the right bank on the Tharpe property. Figure 3 shows a copy of the planting plan as built. The plants were monitored for a short time following the planting. A visit to the site in December 2005 revealed that many of the plants had been shaded out by both native and invasive species. In addition, invasive species had spread significantly throughout much of the site. In particular, knotweed is prevalent along the stream banks, and Himalayan blackberry has spread throughout much of the site.

# Part 5. Analysis

This section is intended to integrate site-specific information, public access considerations, and the larger landscape considerations described in the conservation principles section of the King County Ecological Lands Handbook (2003). This section presents the analysis from which site management recommendations will be made.

## Species of Concern

Due to the possibility that information gaps exist, the species identified in this document probably do not account for all species that use the Lower Bear Creek Natural Area for one or more stages of their life cycle. At the same time, Lower Bear Creek NA is just over 10 acres in size and is surrounded by rural development, so its function as habitat is somewhat limited, particularly for wide ranging species.

However, Bear Creek provides very important habitat for several species of salmonids, including Chinook and Bull Trout. King County has invested a great deal of money in efforts to preserve and restore the high quality habitat found along Bear Creek. The Lower Bear Creek NA contributes to this effort.

## Ecological Processes

Ecological processes must be maintained for ecosystems and habitats to be sustained. Current conservation theory suggests that where ecological processes are intact, systems are likely to recover – or be recovered – more easily from disturbance or inappropriate actions (if the actions themselves are not permanent). Conversely, the more interference there has been with the basic ecological processes, the greater the severity and longevity of the effects (King County, 2003, Ecological Lands Handbook). If systems are not functioning properly, management activities should focus on system-wide processes instead of affected elements. Ultimately, management actions that do not consider the processes are less sustainable.

Bearing this concept in mind, management decisions within the Lower Bear Creek Natural Area should strive to maintain or if possible enhance basic ecological processes. Given the developed nature of the surrounding area, Bear Creek is in relatively good condition. However, the Lower Bear Creek sub-basin is the most developed of all of the sub-basins in the Bear Creek watershed, and this development has inevitably had some impact on the ecological processes of the creek.

In relation to the rest of the Lower Bear Creek watershed, Lower Bear Creek Natural Area is in a relatively pristine condition. As such, it is enhancing the ecological processes of the watershed. The management of the site should be geared toward allowing natural processes to occur unencumbered. Monitoring of ecological processes should occur on a regular basis to ensure existing processes remain intact and functioning.

## Ecological Structure and Function

Conservation principles suggest that by addressing ecological processes on site, structure and function will follow. However, since it is not possible to impact the ecological processes of the Bear Creek watershed through actions on the Lower Bear Creek NA, the next level of intervention would be ecological structure and function. An ecologically diverse and functioning Lower Bear Creek Natural

Area provides numerous ecological benefits such as preventing erosion, shading the creek, adding large woody debris to the floodplain, creating a canopy and contributing to biological diversity.

Several opportunities exist to enhance the structure and function of the Lower Bear Creek Natural Area. Removing the deteriorating sheds on the west side of Bear Creek will eliminate a man-made detriment to the natural character of the site. The sheds could also serve as attractions for people in the area and thus increase the amount of potentially undesirable public use.

The 1999 riparian planting project is suffering from a lack of maintenance. Many of the seedlings have been shaded out by invasive species and may not mature. A comprehensive effort to remove the invasives and release the native plants is highly recommended. At this point, maintenance of the 1999 restoration effort is recommended over initiating any additional efforts.

Given that there are sites both upstream and downstream that have the same invasive species, it is probably not worth the time and money to try and eradicate all of the weeds. However, in addition to removing the invasives around the planted seedlings, it would be worthwhile to control the knotweed and yellow iris that have colonized the stream bank. These two species do not stabilize the bank and prevent species that do from becoming established.

### Monitoring

There are two types of monitoring: 1) monitoring of management actions to determine if they are succeeding in their objectives; and 2) monitoring the processes on lands where no management action is taking place to determine if management action is needed (King County, 2003, Ecological Lands Handbook). Because natural and social systems are uncertain, dynamic and in a constant state of flux, monitoring information is used to adaptively manage the site.

As mentioned above, the 1999 riparian planting is suffering from a lack of maintenance. An initial effort to remove the invasives that are out-competing native plants is recommended. Controlling the knotweed and yellow iris is also recommended. Once this effort is undertaken, it will be necessary to monitor the site to ensure that invasives do not return and that planted native species are thriving. Photographic evidence should be kept in order to visualize short and long-term changes.

### Public Use

Currently, Lower Bear Creek Natural Area supports fairly low numbers of visitors due to its absence of trails. Impacts from recreational use are therefore minimal.

At this point in time no revenue generating opportunities are foreseeable at the Lower Bear Creek Natural Area.

## Part 6. Management Goals, Objectives, and Recommendations

The objectives and recommendations in this section are derived from the analyses in the previous sections. Office of Rural and Resource Programs staff will revise the recommendations for Lower Bear Creek Natural Area within five years, or more frequently when new information from site monitoring programs and other initiatives indicate a need for a change in management strategies.

### Goals for Lower Bear Creek Natural Area

The King County Department of Natural Resources and Parks staff will strive to

- conserve and restore ecological value, and
- accommodate appropriate public use that does not harm the ecological resources on site.

The objectives and recommendations that follow are designed to support these goals where practical at Lower Bear Creek Natural Area. The corresponding matrix (Table 3) designates the King County

Department of Natural Resources and Parks staff involved in implementing the specific recommendations.

## Objectives and Recommendations

### *Objective: Protect and enhance the site's ecological resources*

- ***Recommendation: Remove the two deteriorating sheds on the west side of Bear Creek.***

- ***Recommendation: Assess the status of the riparian planting that was done in 1999 and take any necessary measures to improve the growth potential of the planted trees and shrubs.***

- ***Recommendation: Eradicate the knotweed and yellow flag iris on the site.***

Because knotweed and yellow flag iris are not designated noxious weeds, the King County Noxious Weeds Program cannot prioritize this work. However, if other resources are available or staff can obtain grant funds to cover the costs, this effort would be worthwhile, as it would allow native plants to colonize the stream banks.

- ***Recommendation: Monitor for future enhancement and restoration opportunities***

Once appropriate measures have been taken to address the invasive species and ensure the growth of the plated native species, the site should be monitored regularly to ensure that identified invasives do not return and that the native trees are continuing to flourish. In addition, any other ecological changes should be noted to determine if additional restoration activities are warranted in the future.

### *Objective: Allow levels of public use that do not impact ecological resources*

- ***Recommendation: Monitor public use***

King County Department of Natural Resources and Parks staff should note and record changes in public use and amount of visitation that the Lower Bear Creek Natural Area receives. Noticeable visitor impacts on the ecological resources of the site should be recorded.

This information should be reported annually to the King County Natural Resources Lands Program for updating and adapting site management guidelines.

- ***Recommendation: Implement preserve and protect measures***

The current level of public use is not causing damage to natural resources. However, King County Park staff should limit public use in sensitive areas if the level of use increases and becomes a problem.

- ***Recommendation: Install site identification signs***

King County Parks staff should install site identification signs along Avondale Way and at the end of NE 103rd St.

## *Objective: Implement site management guideline recommendations*

### ➢ *Recommendation: Site maintenance plan creation*

King County Park staff should prepare a site maintenance plan for Lower Bear Creek Natural Area that incorporates these site management plan recommendations. King County Natural Resource Lands staff and the Bear Creek Basin Steward should collaborate on this effort.

**Table 3.** Matrix of Little Si Natural Area Management Recommendations

| **Recommendations** | **Year** | **Park Resource Staff** | **Basin Steward** | **WRIA Project Coord.** | **CPOSA/ Contract** | **WEAT** | **GIS** | **NRL staff** |
|---|---|---|---|---|---|---|---|---|
| **Priority One** | | | | | | | | |
| Remove sheds | 2006 | X | | | | | | |
| Assess and maintain 1999 riparian planting | 2006 | X | | | | | | X |
| Implement preserve and protect measures | On-going | X | | | | | | X |
| Monitor public use | On-going | X | | | | | | |
| Develop site maintenance plan | Annual | X | X | | | | | X |
| **Priority Two** | | | | | | | | |
| Coordinate implementation of site management guideline recommendations | On-going | X | X | | | | | X |
| Monitor for future enhancement and restoration opportunities | On-going | X | X | | | | | X |
| Eradicate knotweed and Yellow Flag Iris | Unknown | X | | | | | | X |

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