Council Meeting Date: October 2, 2006 **Agenda Item: 7(b)**

CITY COUNCIL AGENDA ITEM

CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Urban Forestry Assessment
DEPARTMENT:	Parks & Recreation
PRESENTED BY:	Dick Deal, PRCS Director /Maureen Colaizzi, PRCS Project Coord.

INTRODUCTION:

- The City recognizes the need to create a comprehensive management plan to guide future management of urban park forests within the city. A critical first step in the creation of a city-wide management strategy is to conduct an inventory of existing vegetation resources in our parks.

BACKGROUND:

- The City Council approved $50,000 for an Urban Forestry Assessment in the 2006 Parks Department budget to conduct an inventory of existing vegetation resources within our public parks to guide future forest management decisions. Additionally the preparation of an Urban Forestry Assessment meets Goal #6 of the 2007-2008 City Council Work Plan, Create an "environmentally sustainable community".

- The Parks & Recreation Department (Parks) has contacted the Seattle Urban Nature Project (SUNP) to provide a draft proposal for habitat mapping, vegetation surveys and management recommendations. Based on available budget, the proposed scope includes approximately fifty percent of Shoreline's public parks to begin the City's goal of completing an Urban Forest Assessment of City-Owned property.

DISCUSSION:

- Seattle Urban Nature Project is a nonprofit organization founded in 1998 to document natural resources on public lands, to inform civic decision-making and support improved stewardship of these lands. SUNP is currently moving towards a focus on empowering people in Puget Sound to improve urban habitat through science-based information and methods.

- A seven member board of directors, in concert with three staff experienced in performing botanical and biological surveys, developed a system to survey plant communities and wildlife habitats and store the information in geographic information system (GIS) data for mapping. Maps and data have been used by public agencies to help make better-informed decisions about how to manage invasive and native species on public lands, and where to undertake restoration.

- A resource inventory will give the City information regarding existing forest habitat types and structure, and native and invasive species distributions. This information can be used to make planning and management decisions for both forest stewardship and recreational needs.
- SUNP proposes to conduct resource inventories for Hamlin (80 acres), South Woods (16 acres), Shoreview (48 acres) and Boeing Creek (40 acres). These four parks comprise the largest forested tracts in the park system with a majority of our public parks' important stream corridors, upland forest and wetland natural areas.
- Based on data that will be collected in the field, SUNP will produce a GIS layer that delineates existing habitat types throughout each of the four parks. A database with collected vegetation data will be linked to the GIS files and management recommendations will be developed for each of the four areas surveyed. Additional information in the final report will include:

  Identification of invasive plant species and a species list of appropriate plants to replant on each site.

  Recommendations on methods of removal for invasive trees and suggested species to replace removed trees.

  Recommendations for preserving and increasing the number of large downed logs and underplanting shade-tolerant conifers

  Recommendations for erosion control and re-establishing understory vegetation that has been removed or disturbed by over use

- This information will be used to implement the City's forest management strategy within these parks and provide a template for future survey efforts in the remaining forested public parks and open spaces.
- If City Council approves this implementation strategy, work will commence this fall and be completed summer of 2007. A completed report will be presented to the council in the fall of 2007.

FINANCIAL IMPACT:

- $50,000 has been allocated in the 2006 Capital Improvement budget for an Urban Forestry Assessment. $7,000 will be expended in 2006 and the remaining $42,500 will be carried over to 2007 for expenditure. Based on the City of Shoreline's purchasing policies, professional services $50,000 and under do not require a competitive proposal. Formal quotes are not required.
- An administrative selection was conducted for this non-architectural and engineering service. With City Council approval of this proposal a contract will be finalized and signed by the City Manager.
- A statement of work was provided to SUNP. SUNP was chosen because of their qualifications and experience preparing urban forest assessments.

ATTACHMENTS:

- Attachment A: Draft Proposal from Seattle Urban Nature Project.

RECOMMENDATION:

- Staff recommends the City Council approve the implementation of the urban forest assessment strategy as prepared.

Approved By: City Manager ____ City Attorney ___

Attachment A: Proposal to provide habitat mapping, vegetation surveys and management recommendations for the City of Shoreline

Prepared for:
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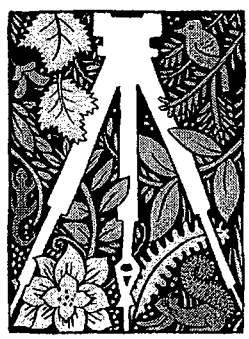
Seattle Urban Nature Project



Revised, September 22nd, 2006

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Attachment A

1. Introduction

The City of Shoreline owns and manages more than 340 acres of parks and natural areas, and is in the process of purchasing additional land through the recently passed Park Bond. The task of managing these areas for a variety of uses falls to the Parks and Recreation Department. The Department has recognized the need to create a comprehensive management plan to guide future management of urban parks and forests within the city.

A crucial first step in the creation of a city-wide management strategy is to conduct an inventory of existing vegetation resources on public lands. A resource inventory will give the City information regarding:

1) The locations and extents of habitat types throughout the city
2) Structural conditions in forested areas such as tree density, size, composition and regeneration
3) Native species distributions
4) Invasive species distributions

This information can then be used to make planning and management decisions for both forest stewardship and recreational needs.

Seattle Urban Nature Project (SUNP) proposes to conduct a resource inventory in the following four parks in Shoreline:

1) South Woods (16 acres)
2) Hamlin Park (80 acres)
3) Shoreview (48 acres)
4) Boeing Creek (40 acres)

These four parks comprise approximately 50% (184 acres) of Shoreline's public parks, and contain important wetland and natural areas. This assessment will provide the City of Shoreline with valuable information and analysis on a significant portion of city forest lands.

Based on the data collected in the field, SUNP will produce a GIS layer that delineates existing habitat types throughout each of the four parks. A database with collected vegetation data will be linked to the GIS shapefile and management recommendations will be developed for each of the four areas surveyed. This information will allow the City of Shoreline to make informed management decisions and will be the first step towards creating a unified and comprehensive management plan for the city's parks and natural areas.

Seattle Urban Nature Project
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2. Project Objectives

Primary Objective

The primary purpose of this project is to provide the City of Shoreline with key natural resource information regarding four parks of interest within the city. This information will help to inform the city's management within these parks and provide a template for future survey efforts in other Shoreline Parks and open spaces.

Specifically, this effort will produce the following information for the City of Shoreline:

1) **Location and extent of habitat types in four parks within the city**
Habitat types in forested areas can include conifer forests, deciduous forests, madrone forests, mixed conifer/deciduous forests, riparian forests, forested wetlands, streams, and other types. Habitat types in developed areas can include landscaped grasslands, landscaped forests and more developed areas such as playgrounds and parking lots. This information will allow city managers to understand the location and extent of different forest and habitat types within the selected parks.

2) **Current forest structure and composition present in these parks**
Forest composition is defined as the types and species of trees, shrubs and herbaceous species present in forested areas. Forest structure includes information about tree age, tree density, the amount and type of regeneration present in the forest, as well as information about snags and downed wood. The combined information provides a comprehensive ecological picture about the state and health of a forest. For instance, the amount and size of snags in a forest provides important information about wildlife habitat for birds and animals that use these habitat features. The amount of downed wood provides information about suitable habitat for conifer tree regeneration, an important indicator of forest health. Knowing the type and distribution of native and non-native species provides important information about the current condition of the forest. This information is crucial to developing appropriate management strategies and planting plans.

3) **Location and extent of invasive species infestations**
Since the end of the last ice age approximately 10,000 years ago, plants in the Puget Sound region have co-evolved with animal, bird, fish and insect populations to create many different and unique communities. With the arrival of European settlers approximately 150 years ago, many non-native species have been introduced to this region. Species were introduced for agriculture, to provide animal feed, for medicinal and textile purposes and also for horticultural reasons. Today, thousands of different species are available at nurseries and are planted widely for ornamental value. While the majority of these species are fairly harmless and remain confined to the areas they are planted, a small number of them are capable of escaping into the forest and natural environment and reproducing. Without the constraints of conditions found in their native countries such as cold winters, diseases or predators, these species are capable of reproducing rapidly and displacing the native species present. These types of species are considered to be **invasive**. Examples of common invasive species in the Pacific

Northwest include ivy (*Hedera helix*), scotch broom (*Cytisus scoparius)*, English holly (*Ilex aquifolium*), cherry laurel (*Prunus laurocerasus*) and Himalayan blackberry (*Rubus discolor*). In forested areas, infestations of invasive species such as ivy can be very widespread, killing trees and suppressing all other species on the forest floor. It is important to understand the types, locations and extent of these infestations to make appropriate management decisions.

5) **Management strategies based on an analysis of collected data**
Once the above data has been collected and analyzed, a report will be written for each park presenting a comprehensive picture of the ecological condition of the forested lands present. Key management issues will be identified and solutions will be presented to allow Shoreline park managers to create their own site specific plans and timelines. Examples of the types of information that will be provided in the report include best management practices for removing invasive species, and suggested lists of plants to revegetate cleared sites.

Over the past several years SUNP has conducted detailed surveys and written management plans for several parks in Seattle. Some examples of important findings that have come from these surveys are:

- In Deadhorse Canyon (Lakeridge Park), a 40 acre park in Southeast Seattle, our survey showed that very few native conifer or deciduous trees are regenerating in the park. Instead, invasive trees such as English holly, cherry laurel and Portugal laurel are regenerating in large numbers (in some cases, over 1,000 per acre). If these trees are not removed, in the next 30-40 years they will substantially alter the makeup of the native forests in Deadhorse Canyon. Recommendations included methods of removal as well as a list of suggested species to replace the removed trees.
- In Deadhorse Canyon, SUNP ecologists located two large and previously unknown infestations of yellow archangel (*Lamiastrum galeobdolon*), which is listed as a Weed of Concern by the King County Noxious Weed Control Program. This information has provided park managers with advance warning and an opportunity to tackle this problem before it becomes unmanageable.
- In Llandover Woods, a 9 acre open space just south of Shoreline, our survey revealed the location of a significant new area colonized by invasive species that was not known to park managers. Best management practices and suggestions were provided for removing these species, as well as a species list of appropriate plants to replant on the site.
- In addition, in Llandover Woods, very low amounts of conifer regeneration were found. The low amounts of downed wood found during the survey were identified as an important contributing cause. Downed wood provides an important substrate for regenerating conifers. Recommendations included preserving and increasing the numbers of large downed logs and underplanting shade-tolerant conifers such as Western hemlock and Western red cedar.

The provided data and management recommendations can be used to: 1) develop specific management or action plans for these parks; 2) produce overall forest management policies for the city and 3) develop educational materials for decision-makers and the public.

Objective 1

Delineate habitat types in four parks throughout the City of Shoreline. Habitat types will include both developed and natural areas within the parks. Habitat delineations will be based on dominant plant associations. The information will be collected by both digitizing aerial photos and collecting data in the field with a GPS unit. The final product will be a GIS layer and maps depicting the various habitat types in the four selected parks.

Objective 2

Characterize the structure and condition of each delineated habitat type. Assessment plots will be established throughout each forested habitat type (developed areas will not be considered) and sampled using appropriate scientific protocols. The collected data will be made available to the City of Shoreline in a geo-referenced Access database at the end of the project.

Objective 3

Analyze data and identify management issues and concerns for each park. The final report will summarize the data gathered during sampling and will contain detailed maps depicting: 1) habitat types for each park; 2) locations of significant invasive species infestations; and 3) locations of assessment plots.

3. Timeline

SUNP will initiate this project in November of 2006. Field work will be completed between April and August of 2007. The estimated completion date of this effort is October 2007.

4. Detailed Approach

Task 1. Delineate habitat types in four parks in Shoreline

SUNP will map habitat types in four parks in Shoreline using a combination of digitizing orthophotos for developed areas and field reconnaissance of forested areas using a GPS unit. Habitat types will be placed in the following categories:

- Developed (light, medium or heavy)
- Landscaped (grassland, shrubland, forest)
- Open canopy (non-landscaped shrubland, tree savannah, unmown grassland)
- Wetland (forested wetland, scrub-shrub wetland, emergent wetland, stream)
- Forest types (conifer, deciduous, madrone, riparian)

Additional habitat designations will be made for forest types based on the predominant overstory species compositions. In addition to the habitat maps included in the final report, a GIS shapefile depicting the collected information will be provided to the City of Shoreline.

Task 2. Vegetation survey

SUNP will establish vegetation plots in each forested habitat type delineated in Task 1. These plots will be used to characterize the vegetation and forest structure found in each habitat type. Approximately 125 acres of forested lands are present within the four selected parks. SUNP estimates that approximately four to five percent of this area will be surveyed for this effort. Vegetation management plans generally aim to sample three to ten percent of the area of interest.

Information collected will include:

- Tree densities, DBH (diameter at breast height) and height by species
- Percent cover of native and invasive shrub, herbaceous and vine species
- Snag densities, coarse woody debris volume and overstory canopy cover

Plots will be randomly stratified across each forested habitat type. The geographic coordinates of each of the plots will be recorded so that they may be revisited in the future. In addition, the locations of prominent infestations of invasive species will be identified.

This data will be housed in an Access database, which will be provided on CD or DVD media to the City of Shoreline upon completion of the project.

Task 3. Develop management recommendations for forested areas in selected parks.

SUNP will analyze data and produce a vegetation assessment detailing the current forest conditions within the selected parks. Key management issues and concerns for each park will be identified and prioritized and management approaches outlined. The report will also contain maps depicting habitat types for each park and locations of significant invasive species infestations and other management issues. This report will enable the City of Shoreline to develop effective forest management policies.

5. Deliverables

The following items represent the consulting services and licensed materials that SUNP agrees to deliver to Client pursuant to the terms of this Agreement:

1. A geographic shapefile depicting habitat types present in four selected parks, provided on CD or DVD media.
2. An Access database containing data collected during the vegetation survey and locations of vegetation plots, provided on CD or DVD media.
3. Ten copies of a final report with data analysis, management recommendations and maps. Additional copies may be ordered based on the city's needs.
4. Five poster-sized maps, including four maps depicting habitat types in each of the selected parks and one city overview map.

6. Budget

The following outlines the costs associated with each of the project tasks, based on an hourly rate of $70 per hour.

Labor Costs
The following descriptions of labor costs represent not to exceed estimates of the work required to complete the deliverables described above in Section 6. In the event that SUNP becomes aware that the estimated labor costs set forth in this Section are less than the actual labor costs needed to complete the deliverables, SUNP will notify Client of the additional labor required to complete the deliverables and the parties shall negotiate in good faith to reach a mutually agreeable price for completion of the deliverables.

Materials Costs
The following descriptions of materials costs represent estimates of the materials needed to complete the deliverables described above in Section 6. In the event that SUNP becomes aware that the estimated materials costs set forth in this Section are less than the actual materials costs needed to complete the deliverables, SUNP will notify Client of the additional materials required to complete the deliverables and the parties shall negotiate in good faith to reach a mutually agreeable price for completion of the deliverables.

Project Budget

Tasks	Units	# of Staff	Labor Cost	Materials and/or Mileage	Task Total
Task 1					
1a. Conduct habitat delineation in four parks	40 hours	2	$5,600	150 miles @ .445 cents/mile =$66.75	$5,666.75
1b. Process GIS data and create shapefile with preliminary habitat delineations	16 hours	1	$1,120		$1,120
Task 2					
2a. Research & planning prior to field work	10 hours	2	$1,400		$1,400
2b. Establish plots and conduct vegetation surveys in four parks	200 hours	2	$28,000	500 miles @.445 cents/mile = $222.50	$28,222.50
2c. Two check-in meetings with Shoreline staff	4 hours	3	$840		$840
Task 3					
3a. Data analysis and report with management recommendations	100 hours	1	$7,000		$7,000
3b. Creating maps for report and finalizing GIS shapefile of habitat delineations	24 hours	1	$1,680		$1,680
3c. Final project meeting with Shoreline staff	2 hours	3	$420		$420
Task 4					
4a. Report printing	10 reports			$150	$150
4b. Map printing	5 maps			$200	$200
Project Management					
Overall Project Management	40	1	$2,800		$2,800
Totals					
Totals:			$48,860	$639.25	**$49,500**

7. Schedule

The proposed schedule of tasks required to complete the deliverables.

Tasks	Dates
Task 1. Conduct habitat delineation in four parks	November 2006
Task 2. Establish plots and conduct vegetation surveys in four parks	April 2007–August 2007
Task 3. Data analysis and report with management recommendations	September 2007–October 2007
The estimated completion date for deliverables is:	October 2007

8. Project Team

Project Lead:

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Work under this contract will be performed by Seattle Urban Nature Project Staff with the following qualifications:

Jeff Bash, Seattle Urban Nature Project's Executive Director, has a range of experience in environmental and natural resource management. Before joining the staff of SUNP, he served for 3 years as the watershed coordinator of the Yamhill Basin Council, a regional watershed council serving the Yamhill River Basin in McMinnville, Oregon. This regional group conducted water quality monitoring, watershed outreach and education, and advised public officials on water quality and land management issues. Prior to this, Bash worked at the University of Washington's Center for Streamside Studies, Ross and Associates Environmental Consulting, and the Washington State Department of Ecology. Bash has a B.S. in Natural Resources from the University of Michigan and an M.S. in Forestry/Natural Resource Management from the University of Washington. Bash serves as the project manager for all

SUNP efforts.

Ella Elman, Field Ecologist, earned a B.S. in Natural Resources from Cornell University and a M.S. in Forest Ecosystem Analysis from the University of Washington. Her Master's degree focused on the effects of post-harvest treatments on high-elevation forests of the North Cascade Range. Elman most recently served as a Research Analyst for the US Forest Service PNW Research Station, focusing on fuel loadings for various types of forest ecosystems. Elman also served as a Noxious Weed Specialist for the King County Noxious Weed Control Program in Seattle. Elman has served as an Ecologist and Database lead for SUNP on a variety of projects focusing on vegetation survey, analysis and management recommendations since 2005.

Nelson Salisbury, Assistant Ecologist, earned his Bachelor of Science degree with a major in botany from Humboldt State University. Since his graduation he has had the opportunity to experience a variety of disciplines within the natural sciences through work with the Bureau of Land Management, The Pacific Lumber Co., and the Student Conservation Association. His duties have included monitoring range and riparian areas on federal lands in Southern Idaho, surveying for rare and endangered plant species on private timber holdings in Coastal Northern California, and managing teams of volunteers collecting native plant seeds for the Millennium Seed Bank Project in Southern and Central Oregon. Salisbury has served as an Ecologist and GIS Project Lead for Seattle Urban Nature Project on a variety of forest survey and mapping projects since 2003.