

**LAWTON PARK
Forest Restoration Plan**

**Seattle Department of Parks and Recreation
100 Dexter Avenue North
Seattle, WA 98109
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INTRODUCTION

Lawton Park is a neighborhood park in the Magnolia district. It is notable in that it has communities of complex and diverse native vegetation which offer significant habitat for urban wildlife as well as a scenic treasure for park users. It is especially important for those who live in the neighborhood and those who enjoy this quiet park for its aesthetic and recreational qualities.

Lawton Park's landscape has been recognized by the Seattle Department of Parks and Recreation as a valuable resource which is worth preserving. For this reason, an inventory of vegetation, habitat types and community uses was conducted within the park in order to give a greater sense of the parameters for park landscape management.

HISTORY AND BACKGROUND

Lawton Park was acquired by the Seattle Parks Department in 1897. Major General Henry W. Lawton was the famed captor of Chief Geronimo in 1886. He was killed in action in 1899 and the park was named as a tribute to him (Sherwood files). Because of its close proximity to the naval base, the park has had a strong military influence. The park was formally dedicated in 1969 by Seattle mayor, Wes Uhlman. During this dedication, a flag donated by the Magnolia American Legion was raised at the Mount Suribachi viewpoint at the south end of Williams Avenue West. Mayor Uhlman commended the long and arduous task of developing a model of the park (Seattle Times 12/7/69).

In total, Lawton Park now covers an area of 7.75 acres with trails which once covered one mile within the park. Originally, the park consisted of a two areas between 28th Place West and 26th Avenue West to the east and west and West Elmore and West Emerson to the north and south. Since 1956, two lots entitled the Baker Addition (Block 7- 13 & 15) have been added to the park across from the southeast corner below 26th Avenue West. The Lawton School lies directly north of the park and there is a joint-use agreement between DPR and Seattle Schools that the playground and park will be used for school purposes. This playground was built in 1955 and was planned by the Lawton School PTA, Magnolia Neighborhood Council, and the Seattle School Board (Sherwood files).

Throughout the history of the park, there has been extensive community involvement regarding the development and maintenance of the park. A community leader, Adopt-a-Park participant, and Lawton School PTA representative named Margaret Coughlin was very active in advising the DPR on decisions made within the park. Within DPR files, there are at least 100 letters from Ms. Coughlin regarding community opinions on the direction of park management. In addition to Ms. Coughlin, there are and have been

many different active interests within the park- Tremendous Seattle, Adopt-a-Park volunteers, the Lawton School and the University of Washington.

There are several conservation issues which have been most prevalent in the management of the park. Throughout the history of the park, there have been incidents with private landowners encroaching upon park property. Typically, this manifests itself in the cutting and clearing of trees without DPR permission. Although the DPR has been quite efficient in dealing with these incidents, they continue to occur.

Another issue which threatens the natural beauty of the park is that of invasive plant species. Certain species propagate easily in our environment because they lack the natural competition that would normally limit their presence. Himalayan blackberries and morning glory are two of these types of species which are present in Lawton Park. The majority of project recommendations within the park include removing invasive plant species.

GOALS OF THE URBAN FOREST RESTORATION PROGRAM

The Urban Forest Restoration program was formed as an attempt to preserve the forested landscapes within Seattle parks. This plan is not an attempt to develop a master plan or redesign the park. Instead, our purpose is to provide direction for the stewardship of the existing park landscape to insure its future well-being. The goals and objectives of the program are defined in the following criteria:

Conserve soil and water quality

Vegetative cover will be retained and planted to buffer runoff and reduce erosion.

Assist natural processes

Management activities will emulate the natural succession and regeneration that would be expected on an undisturbed site of similar habitat.

Protect and enhance wildlife habitat

Existing habitats will be managed for a healthy and diverse species composition as set forth in the DPR's *Urban Wildlife and Habitat Management Plan* (Miller 1994).

Promote native character

Outside the developed park landscape, management activities will encourage native species and control non-natives.

Buffer land uses

Trees and shrubs will be adapted to screen and separate the park from its neighbors.

Provide recreation and education

Park users will be encouraged to engage with the park landscape in a constructive and sensitive way.

Insure public safety

The status of declining trees will be evaluated for removal, retention or adaptation to a wildlife tree.

CURRENT PARK INVENTORY

Vegetation

Lawton Park falls within the Western hemlock climax zone of Puget Sound. In general, this zone is characterized by an overstory vegetation of Western red cedar, Douglas fir, and Western hemlock. Understory vegetation would be comprised of sword fern, huckleberry, vine maple, and other shade-tolerant species. However, conifers were harvested from Lawton Park sometime before the turn of the century and now the park is dominated by hardwood trees such as big-leaf maple, bitter cherry and red alder. Within the park, regeneration of coniferous trees is sparse and occurs only in those areas with little disturbance. The general habitat composition is an overstory of deciduous trees with an understory dominated by Indian plum, western hazelnut, red elderberry and snowberry.

This type of plant community is common in undeveloped areas of the Puget Sound region which were harvested in the late part of the last century. Typically, this type of community move in succession from a mature deciduous forest to coniferous regeneration in the understory. Within Lawton Park, there is very little coniferous regeneration occurring naturally.

Table 1. **Plant species present in Lawton Park**

COMMON NAME	<i>Scientific Name</i>
Grand fir	<i>Abies grandis</i>
Bigleaf maple	<i>Acer macrophyllum</i>
Red alder	<i>Alnus rubra</i>
Pacific madrone	<i>Arbutus menziesii</i>
Lady fern	<i>Athyrium felix-femina</i>
Butterfly bush*	<i>Buddleia davidii</i>
European bittersweet*	<i>Celastrus spp.</i>
Wild clematis*	<i>Clematis vitalba</i>
Morning glory	<i>Convolvulus arvensis</i>
Pacific dogwood	<i>Cornus nuttalli</i>
Red-osier dogwood	<i>Cornus stolonifera</i>

Beaked hazelnut	<i>Corylus cornuta</i>
Black hawthorn	<i>Crataegus monogyna</i>
Daphne *	<i>Daphne laureola</i>
Horsetail	<i>Equisetum spp.</i>
Herb robert*	<i>Geranium robertianum</i>
Large leaved avens	<i>Geum macrophyllum</i>
English ivy*	<i>Hedera helix</i>
Ocean spray	<i>Holodiscus discolor</i>
English holly*	<i>Ilex aquifolium</i>
Skunk cabbage	<i>Lysichitum americanum</i>
Oregon grape	<i>Mahonia nervosa</i>
Indian Plum	<i>Oemlaria cerasaiformis</i>
Pacific water parsley	<i>Oenanthe sarmentosa</i>
Mock orange	<i>Philadelphus lewisii</i>
Bamboo spp.*	<i>Phyllostachys spp.</i>
Velvet grass	<i>Poa spp.</i>
Sword fern	<i>Polystichum munitum</i>
Bitter cherry	<i>Prunus emarginata</i>
English laurel	<i>Prunus laurocerasus</i>
Ornamental cherry*	<i>Prunus spp.</i>
Douglas fir	<i>Pseudotsuga menziesii</i>
Bracken fern*	<i>Pteridium aquilium</i>
Creeping buttercup*	<i>Ranunculus repens</i>
Himalayan blackberry*	<i>Rubus discolor</i>
Thimbleberry	<i>Rubus parvifolius</i>
Salmonberry	<i>Rubus spectabilis</i>
Trailing blackberry	<i>Rubus ursinus</i>
Pacific willow	<i>Salix spp.</i>
Elderberry	<i>Sambucus racemosa</i>
Evening nightshade	<i>Solanum dulcamara</i>
Mountain Ash	<i>Sorbus aucupariaspp.</i>
Snowberry	<i>Symphoricarpus albus</i>
Western red cedar	<i>Thuja plicata</i>
Western hemlock	<i>Tsuga heterophylla</i>
Stinging nettle	<i>Urtica dioica</i>
Red huckleberry	<i>Vaccinium parvifolium</i>

*denotes non-native species

As a result of disturbance and edge effects, Lawton Park has serious problems with non-native invasive species. Near most edges within the park, there are problems with either Himalayan blackberries, morning glory, stinging nettles or English ivy. Within the park, the primary concentration of any management must address this issue.

Habitat

Although Lawton Park is a relatively small park, it has substantial wooded areas which provide food and habitat for local wildlife. Bitter cherry, a species which is abundant throughout the park, is known to provide food or habitat to at least twenty eight bird species which exist in King County parks (DPR, 1994). Other overstory species of trees within the park such as big-leaf maple and western red cedar also have important food value to wildlife. In addition to food value, these trees are also important habitat when they occur as snags or down logs. There are snags throughout the park and their use is evidenced by the multiple cavities and feeding spots which occur on them.

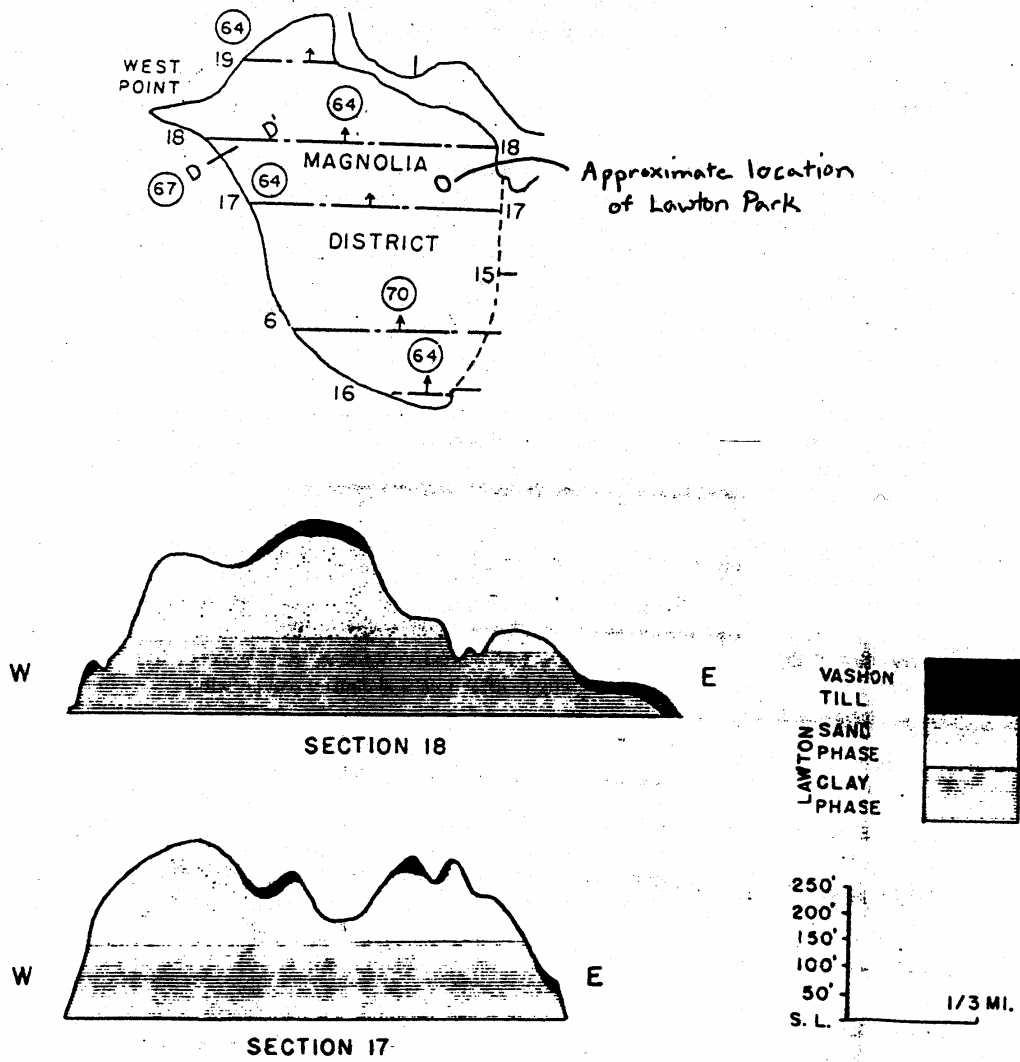
In a broader view, Lawton Park may provide an important linkage for wildlife moving to and from Discovery Park and other surrounding open spaces. In this region of Seattle, there are not many undeveloped areas available for wildlife. Although Lawton Park is small, to birds flying overhead it is a needed resting and foraging spot.

A general issue with the park's habitat is that the coniferous canopy cover within the park is minimal. Most of the big-leaf maple in the park are mature or old enough that a coniferous understory would normally be developing in a natural succession. In most areas within the park, this is not happening. Several factors seem to be interrupting this cycle. Lack of conifer seed source, presence of aggressive weed species, and occasional disturbances from park uses are combining to inhibit natural conifer regeneration.

Geology and Soils

The Puget Sound area was once covered with glaciers that receded about 12,000 years ago. When these glaciers moved northward, they left layers of unsorted gravels, sands and silts that capped much of the existing landscape. This glacial till caps an older layer of sands and silts called the Lawton Formation. Lawton Park's topography extends through these strata. (see Figure 1) .

Figure 1. Map of Magnolia District and Stratigraphic Cross-section of Lawton Area
source: William J. Stark and Donal R. Mullineaux. The Glacial Geology of the City of Seattle.



The soil survey of King County does not describe the soils which occur in Lawton Park. However, the soils found in the park can be inferred from the known geology. . The upper layers of glacial till have weathered to form an Alderwood soil association, while the deeper strata are layers of sands and silts from Indianola and Kitsap soil series respectively. . Alderwood soils are classified as gravelly sandy loams which range in thickness from 24-40 inches above glacial till. This soil series makes up the largest proportion of soils in the Puget Sound region.. Indianola soils are loamy fine sands, and Kitsap soils are silt loams. The park may also contain Everett gravelly loams in patches of glacial outwash. (King County Soil Survey).

In the wetland area within the park, the soils are derived from the deposition of organic debris. They are poorly drained and can support hydrophytic vegetation such as skunk cabbage. The topography and drainage pattern is the predominant factor of soil formation. The slow decomposition and water retention in a wetland influence the composition of soils and make them unsuitable for most upland plants.

Tree Risk Assessment

The majority of Lawton Park is dominated by immature to mature deciduous forests. In some areas, such as the ravine on the west side of Williams, these trees are nearing the end of their life cycle. As a result, there are several large trees which could pose a potential risk. There are also smaller trees (<15 diameter breast height (dbh)) which have become snags and are leaning on older trees. There is some risk in this as well because many of these trees are near to the trail leading up the ravine.

Although it may be best to remove the smaller trees, the larger trees which pose a threat to homes or apartment buildings may be converted into wildlife trees for those species which use them as nesting or feeding sites. Throughout the park, there are a total of twelve trees which have been identified as potentially hazardous (Appendix VI).. These trees will be evaluated for removal and replacement as part of the initial phase of reforestation work.

VEGETATION ANALYSIS

Lawton Park was inventoried in July of 1997. The park was divided into eight management units according to habitat type and dominant vegetation. These eight units were surveyed for native and exotic vegetation and assessed for their habitat value for wildlife as well as physical characteristics. These characteristics were noted on a data sheet containing information about the slope, average dbh, average height, and habitat type of each stand.

Class 1. Heavily Invaded Upland Vegetation (Units 1, 2a, 3a, 5a, 5c, 5d, 5e, 6, 7b, 7d)

Heavily invaded units within upland management zones were given subunit numbers. These subunits were not assigned their own unit because, for the most part, they were very small areas within less disturbed units. These heavily invaded areas consist of invasive vegetation with a dominance rating above 4. For the most part, these areas require the most immediate attention and most are listed in the high priority list for potential projects. Most of these areas are located on the perimeter or on the edge between the grass and the wooded areas of the park. The most common invasive species within heavily invaded areas are Himalayan blackberry, morning glory and English ivy.

Issues:

- Extensive cover of English ivy choking out native vegetation- Units 1, 3a, 7b
- Extensive cover of Himalayan blackberries burying native vegetation- Units 3a, 7, 5a, 5c, 5d, 5e
- Removal of trees from park property where morning glory has taken over- 2a, 5a
- Exposed soil and side trail in- Units 7b, 7d, 5a
- Illegal dumping of yard materials into park- Units 5a, 7b

Class 2. Moderately Invaded Upland Vegetation (Units 5b, 7a, 7c)

Moderately invaded areas are those which have invasive species with a dominance rating of 2 or 3. The invasive plant species which are usually found in these zones are English holly, stinging nettles and other invasives in small quantities.

Issues:

- Interspersed invasive plant (blackberries, ivy, nettles, morning glory and holly) in areas where invasives are dense but underlying native vegetation has not been choked out.
- Sparse vegetation in areas where side trails have been established- 5b, 7a, 7c

Class 3. Light/No invasion in Upland Vegetation (Units 3, 5)

Management unit 6 has the largest area within the park that does not have intense problems with invasive species. However, within this area, there are some management issues which should be addressed.

Issues:

- Presence of giant hogweed, a potentially toxic invasive species- Unit 3

- Presence of sparse invasives throughout zone- English holly, morning glory, stinging nettle, English ivy- Units 3, 5
- Side trails scattered throughout park- Units 3, 5

Class 4. Heavily Invaded Wetland Vegetation (Unit 4a)

Management unit 4a is located within the southeast corner of the park adjacent to the Quarterdeck Apartments. Although this unit is quite small (30x30 meters), it has great potential for a wetland restoration project. Unit 4, west of subunit 4a, has a diverse community of wetland vegetation.

Issues:

- Presence of invasive plants throughout this unit (Himalayan blackberries, morning glory, English holly, English ivy). Throughout most of the zone, these plants have outcompeted native species and make the area impassable.
- Foot traffic into some wetland areas has created disturbance and inhibited understory vegetation.

Class 5. Lightly Invaded Wetland Vegetation (Unit 4)

Although unit 5 has some minor problems with invasive species, it should provide a wonderful reference for restoration in subunit 4a. It is primarily a thicket of salmonberry, skunk cabbage and other water-tolerant species.

Issues:

- Lack of definition in trail to picnic area as well as weeds growing within picnic area.
- Repeated foot traffic into wetland areas has created disturbance and inhibited understory vegetation.

MANAGEMENT RECOMMENDATIONS

Priority Projects

Throughout Park

Within Lawton Park, there are several projects which could be undertaken and address problems which occur throughout the park. Re-establishment and improvement of some trail sections would make the park more accessible while also reducing the pressure for side trails. This is important because it will also reduce disturbance to off-trail areas and lessen their susceptibility to invasive plant species.

Since encroachment and yard waste dumping are problems within the park, it may be beneficial to begin a neighbor education program. This program could be implemented by individuals on their own time who have the desire to educate people about unneighborly activities such as vegetation removal and yard waste dumping. Organizations such as Tremendous Seattle and Adopt-a-Park volunteers could be involved by handing out flyers at planting events and having open discussion on the ramifications of these activities.

Throughout the park, there is a high number of invasive species and a low number of regenerating conifers. The need for invasive removal and conifer planting is expressed below in the project list throughout the park. Conifer establishment is especially important in the ravine west of Williams St. because it is a mature deciduous forest. The trees in this area are nearing the end of their life cycle which means the time for coniferous regeneration is now. This is probably the most limiting factor in the future development of the park. For this reason, it is important that an aggressive approach to invasive removal is taken. In addition, it is important that those older trees be observed for danger to park users and adjacent property.

Unit 1

- Tree hazard abatement - snag creation, crown balancing

Unit 2

- Blackberry removal in the large clearing near Cedar trees. Blackberries have choked out almost all vegetation in this area and pose a threat to nearby vegetation. This area could be replanted with additional cedars as well as other trees and some understory shrubs such as serviceberry, oceanspray, mock orange, etc.

Unit 3

- Tree hazard abatement - 3 removals, crown cleaning
- Blackberry removal needed immediately at the south (inwards 10-50 feet) and west edges of this zone. This growth is threatening native species on the interior of this zone.
- A holly thicket is developing behind the Quarterdeck apts. about 50 feet in from the edge of the park. Right now, it is very manageable and would be easily removed but may not be in several years.

Unit 4, 4a

- Boardwalk construction across stream to reduce pedestrian pressure on wetland and provide interpretive opportunities.
- Blackberry removal needed on perimeters of management zone, especially bordering Quarterdeck apts. and 25th Pl. W. Planting of zone with red-osier dogwood, Oregon ash and willows would be suitable for this wet area.

Unit 5

- Tree hazard abatement - snag creation, crown cleaning of dogwoods
- Removal of isolated blackberry patches from perimeter of this zone (subunits 5a,c,d,e). Currently, these are small patches but may become quite larger and more destructive if not taken care of soon.

Unit 6

- Understory planting of conifers in big-leaf maple stands to provide regeneration of canopy. Invasive control, especially ivy and holly should occur simultaneously

Unit 7b

- Understory planting of conifers and shrubs in areas with high invasive plant concentrations.

Secondary Projects

Unit 1

- Removal of ivy in understory. Understory vegetation still quite diverse but may be threatened by further ivy growth.

Unit 3a

- Ivy removal on 26th Ave W. side of this zone. Ivy occurs in the understory as well as up to 20 feet high on trees.

Unit 5

- Removal of ivy within coniferous zone of 5b. Understory vegetation is still diverse so no replanting would be necessary.

Additional Projects

Unit 3

- Eroded hillside near developing holly patch. Needs replanting and trail definition.
- Removal of yard waste debris pile from resident on 26th Ave W.

Unit 4

- Holly removal needed in the Northeast section of this zone and evening nightshade removal may be beneficial throughout the zone.
- Addition of a boardwalk or defined trail through this section of the park would reduce side trails and destruction of vegetation.

Unit 6

- Weeding, pruning and general maintenance of bank behind baseball field.
- Removal of blackberries around baseball field.

Unit 7

- Tree hazard abatement - 4 removals
- Heavy invasive removal (ivy, nettles, blackberries, evening nightshade morning glory, English laurel, herb Robert) from throughout this zone. Invasives present are well-established and pose less of an immediate threat than other invasive colonies in the park.
- Removal of large debris piles from a residence on Williams Ave.

Ongoing Projects

Throughout the park, there are projects which can be undertaken by park neighbors throughout the year.

- Cutting of ivy at the base of trees
- Blackberry removal
- Picking up litter
- Maintenance of main trail throughout park

APPENDIX I. VICINITY MAP



APPENDIX II. YEARLY ACTIVITY CYCLE FOR PARK STEWARDSHIP

ACTIVITY	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ivy removal												
Blackberry, Holly, Laurel removal*												
Stump treatment**												
Morning glory removal												
Site preparation for planting												
Planting ***												
Trail maintenance												
Plant maintenance- weeding and watering												

*Large shrubs should not be disturbed during the March-July nesting season.

**Application of herbicide by licensed DPR staff only.

***Wetland plantings can take place in late spring or early summer as well.

APPENDIX III. SURVEY RESULTS.

Unit 1 Description:

Unit 1 is located on the south side of the sidewalk from the entrance on 26th Ave W and West Thurman. It is comprised of a small stand of immature bitter cherry and mature big-leaf maple. Overall this unit has a diverse community of vegetation in both the understory and overstory. However, this unit has a serious problem with english ivy which is covering the ground in the south half of the unit.

DATE	7-8-97	SITE	Lawton Park	HABITAT CLASS	mature decid.
NAME	Angela Kimpo	POLYGON	1	DOM SPP	big-leaf maple
Species	Dominance Rating (1-5)	Canopy/ Understory	Species	Dominance Rating (1-5)	Canopy/ Understory
Mock Orange		1	U Douglas-fir		1 C
Thimbleberry		2	U Indian plum		4 U
Bitter cherry		2	C Snowberry		3 U
Red alder		2	C Hawthorne		1 U
Trailing blackberry		1	U Sword fern		2 U
Western hazelnut		4	C Big-leaf maple		5 C
English laurel		1	U English ivy		5 U
Bamboo		2	C Himalayan blackberry		2 U
Braken fern		1	U Horsechestnut		1 U
Salmonberry		2	U		

Unit 2 Description:

Unit 2 contains two units- 2 & 2a. In a small portion of this zone, subunit 2a, there has been some problems in the past with encroachment onto park property. The result of this is elimination of trees and overgrowth of invasive plant species. This subunit requires immediate attention because it threatens the rest of the zone which does not have serious invasive plant problems.

DATE	7-8-97	SITE	Lawton Park	HABITAT CLASS	open/mixed
NAME	Angela Kimpo	POLYGON	2	DOM SPP	big-leaf maple
Species	Dominance Rating (1-5)	Canopy/ Understory	Species	Dominance Rating (1-5)	Canopy/ Understory
Western red cedar		3	C Oregon grape		1 U
Red alder		2	C Sword fern		2 U
Western hazelnut		3	C Trailing blackberry		1 U
Snowberry		4	U Big-leaf maple		3 C
Stinging nettle		2	U Bitter cherry		1 U
English holly		3	U Prunus spp		1 C
Morning glory		3	U Himalayan blackberry		5 U

Unit 3 Description:

Unit 3 is the non-wetland area located in the block of land south of 26th Ave W. It consists of a mature deciduous forest which surrounds a wetland area (Unit 4). The problems with invasive species in this zone are minimal with the most problems in the southwest corners. The dominant species in this zone is big-leaf maple and there is a thick underbrush of western hazelnut, indian plum and eldeberry. Near the wetland area, there is a valuable wildlife tree which is frequently occupied by cavity feeding birds.

DATE	7-9-97	SITE	Lawton Park	HABITAT CLASS	mature decid
NAME	Angela Kimpo	POLYGON	3	DOM SPP	big-leaf maple
Species	Dominance Rating (1-5)	Canopy/Understory	Species	Dominance Rating (1-5)	Canopy/Understory
Bitter cherry	4	C	Pig-a-back	2	U
Western hazelnut	4	C	Red alder	4	C
Pacific dogwood	1	C	Big-leaf maple	5	C
Western red cedar	2	C	Braken fern	1	U
Indian plum	3	U	Mock orange	1	U
Grand fir	1	U	Salmonberry	3	U
Hemlock	1	C	Horsetails	2	U
Huckleberry	1	U	Trailing blackberry	3	U
Sorbus spp	1	U	Ocean spray	1	U
Oregon grape	5	U	Snowberry	2	U
Sword fern	3	U	Common hawthorne	1	U
Prunus spp.	1	C	Himalayan blackberry	3	U
Red eldeberry	2	U	Morning glory	1	U
Fringe cup	2	U	Buttercup	2	U
English ivy	3	U	English holly	2	U
Evening nightshade	1	U	Stinging nettle	2	U
Luminaria (money tree)	1	U	Herb roberts	1	U
			English laurel	1	U

Unit 4 Description:

Unit 4 is primarily a wetland area with some characteristics of an immature riparian forest. Alders are common in the northwest corner of the zone around the skunk cabbage community of the wetland. The lower portion of this unit, subunit 4a, is also a wetland area but is heavily invaded by exotic species. This subunit would be a perfect site for a restoration project. First, this subunit is a small enough area to do a thorough invasive removal and restoration. Secondly, this area would provide a valuable resource for the teachers of the Lawton School.

DATE	7-9-97	SITE	Lawton Park	HABITAT CLASS	wetland
NAME	Angela Kimpo	POLYGON	4	DOM SPP	red alder
Species	Dominance Rating (1-5)	Canopy/Understory	Species	Dominance Rating (1-5)	Canopy/Understory
Red alder	2	C	Hedge nettle	2	U
Skunk cabbage	4	U	Prunus spp.	1	C
Salmonberry	5	U	Western Hemlock	1	C
Lady fern	3	U	Common Hawthorne	2	U
Equisetum spp.	5	U	Creeping buttercup	3	U
Sedge spp.	2	U	Himalayan blackberries	5	U
Birch spp.	1	U	Herb roberts	2	U
Red huckleberry	1	U	English holly	3	U
Western red cedar	1	C	English laurel	1	U
Mock orange	1	U	Evening nightshade	2	U
Thimbleberry	2	U	Morning glory	3	U
Sword fern	1	U	Red osier dogwood	1	U
Salix spp.	2	C	Douglas-fir	1	U

Unit 5 Description:

Zone 5 is less affected by invasive plant species than other units. It has the most variety of plant species present and is the least affected by human disturbance. Although the canopy of this zone is composed of deciduous trees, primarily big-leaf maple, it is very open. This may be partially due to historical cutting or topping of trees in order to create or maintain views. What remains is a shrub layer of beaked hazelnut which forms a dense canopy to the understory plants throughout the zone.

DATE	7-10-97	SITE	Lawton Park	HABITAT CLASS	open/immature deciduous
NAME	Angela Kimpo	POLYGON	5	DOM SPP	
Species	Dominance Rating (1-5)	Canopy/Understory	Species	Dominance Rating (1-5)	Canopy/Understory
Beaked hazelnut	5	U	Mock orange	1	U
Bed straw	2	U	Western hazelnut	5	U
Big-leaf maple	4	C	Western red cedar	1	C
Bitter cherry	4	C	Trailing blackberry	3	U
Bracken fern	4	U	Western hemlock	1	C
Common hawthorne		C	Herb roberts	2	U
Creeping buttercup		U	English holly	3	U
Douglas fir	1	C	English laurel	1	U
Evergreen huckleberry		U	Himalayan blackberry	1	U
Horsechestnut	1	U	Stinging nettle	3	U
Horsetail	1	U	English ivy	4	U

Indian plum	3	U	Morning glory	2	U
Nootka rose	1	U	Evening nightshade		U
Ocean spray	2	U	Red huckleberry	1	U
Oregon grape	5	U	Red flowering currant		U
Pacific dogwood	1	C	Sword fern	3	U
Pacific madrone	1	C	Salmonberry	3	U
Pig-a-back	2	U	Sorbus spp.	1	U
Prunus spp.	1	C	Salal	1	U
Red alder	4	C	Red eldeberry	3	U

Unit 6 Description:

Site 6 is located around the baseball field at the entrance of the plant. It includes the area at the entrance of the park as well as the strip of vegetation along right side of the sidewalk on the way from the swings to Williams Street. Besides the planted area at the entrance, this zone is heavily invaded by exotic species. However, since this is such a small zone with definite boundaries, it does not cause a threat to the natural vegetation in surrounding areas of the park.

DATE	7-10-97	SITE	Lawton Park	HABITAT CLASS	immature deciduous
NAME	Angela Kimpo	POLYGON	6	DOM SPP	red alder
Species	Dominance Rating (1-5)	Canopy/Understory	Species	Dominance Rating (1-5)	Canopy/Understory
Sword fern	2	U	Western hazelnut	2	U
Equisetum spp.	2	U	Rhododendron	2	U
Prunus spp.	3	C	Fireweed	2	U
Laurel spp.	5	U	Cotoneaster	2	U
Pinus spp.	2	C	Evening nightshade	1	U
Western white pine		C	Morning glory	3	U
1					
Big-leaf maple	1	C	English holly	1	U
Red alder	3	C	Himalayan blackberry	5	U
Bitter cherry	2	C			

Unit 7 Description:

Site 7 is located in the ravine across Williams Street from the main portion of the park. This zone has the most problems with invasive species. In addition, this part of the park is also affected the most by human presence- especially in the form of bank erosion. The ravine is a mature deciduous forest with the presence of a few conifer trees. The native understory consists of red eldeberry, indian plum, and salmonberry.

DATE	7-9-97	SITE	Lawton Park	HABITAT CLASS	mature decid.
NAME	Angela Kimpo	POLYGON	7	DOM SPP	big-leaf maple
Species	Dominance Rating (1-5)	Canopy/Understory	Species	Dominance Rating (1-5)	Canopy/Understory
Red elderberry	5	U	English holly	3	U
Western hemlock	1	C	Morning glory	2	U
Snowberry	1	U	Red huckleberry	1	U
Big-leaf maple	5	C	Indian plum	3	U
Sword fern	5	U	Bitter cherry	1	U
Pig-a-back plant	3	U	Sorbus spp.	1	U
Oregon grape	1	U	Large leaved avens	1	U
Western hazelnut	4	U	Daphne missorum	1	U
Western red cedar	1	C	wild clematis	1	U
Salmonberry	3	U	English laurel	2	U
Ocean spray	1	U	Creeping buttercup	2	U
Lady fern	2	U	Prunus spp.	1	U
Red alder	1	C	Evening nightshade	3	U
Thimbleberry	1	U	Herb roberts	2	U
English ivy	5	U	Himalayan blackberry	3	U
			Stinging nettle	5	U

APPENDIX IV - LAWTON PARK RECOMMENDED PLANTS FOR RESTORATION

BOTANICAL NAME	COMMON NAME	LOCATION	EXPOSURE	SPACING	COMMENTS
<i>Abies grandis</i>	Grand Fir	M>U	FSh - Sh	>= 15' o.c.	Do not plant in wet soils.
<i>Calocedrus decurrens</i>	Incense cedar	U>M	FSh	>=10' o.c.	transition to natural areas
<i>Pinus contorta</i> v. <i>contorta</i>	Shore pine	U>W	FSh	>=10' o.c.	lower growing conifer
<i>Pinus monticola</i>	Western white pine	U>M	FSh	>=15' o.c.	use blister rust resistant varieties
<i>Pseudotsuga menziesii</i>	Douglas Fir	M>U	FSh - PSh	>= 15' o.c.	Do not plant in wet soils.
<i>Thuja plicata</i>	Western Red Cedar	W > U	FSh - Sh	>= 15' o.c.	Plant some under existing deciduous overstory.
<i>Tsuga heterophylla</i>	Western Hemlock	W > U	FSh - Sh	>= 15' o.c.	Looks best if planted more in sun than shade.
<i>Taxus brevifolia</i>	Pacific Yew	W>M	FSh - PSh	>= 10' o.c.	Difficult to cultivate
<i>Alnus rubra</i>	Red Alder	W>U	FSh - PSh	>= 10' o.c.	
<i>Acer circinatum</i>	Vine Maple	W, U	PSh	>= 6' o.c.	
<i>Acer macrophyllum</i>	Bigleaf Maple	M>U	FSu - PSh	>= 10' o.c.	
<i>Amelanchier alnifolia</i>	Serviceberry	U > W	FSh - PSh	>=6' o.c.	Best in sun.
<i>Arbutus menziesii</i>	Pacific madrone	U>M	FSh	>=10' o.c.	only available in small sizes, needs protection to establish
<i>Betula papyrifera</i>	Paper birch	M>W	FSh	>=10' o.c.	
<i>Craetegus douglasii</i>	Pacific Hawthorn	M	FSh	10' o.c.	
<i>Fraxinus latifolia</i>	Oregon Ash	W>U	FSh - PSh	>= 10' o.c.	
<i>Prunus emarginata</i>	Bitter Cherry	M>U	FSh	10' o.c.	
<i>Quercus garryana</i>	Oregon oak	U	Fsn	10' o.c.	transplant in small sizes
<i>Rhamnus purshiana</i>	Cascara	W>M	FSh - PSh	10' o.c.	
<i>Cornus stolonifera</i>	Red Osier Dogwood	W>M	FSh - PSh	4' o.c.	Will spread; keep other tall shrubs away from it.
<i>Corylus cornuta californica</i>	Hazelnut	U > W	FSh - Sh	>= 6' o.c.	
<i>Gaultheria shallon</i>	Salal	M>U	FSh - Sh	18" o.c.	Plant in masses of at least fifteen plants in random pattern
<i>Holodiscus discolor</i>	Oceanspray	U>M	FSh	4' o.c.	hot, dry sites
<i>Lonicera involucrata</i>	honeysuckle	W>U	FSh-PSh	3' o.c.	
<i>Mahonia aquifolium</i>	Tall Oregon Grape	U	FSh - PSh	4' o.c.	Prefers well drained soil.
<i>nervosa</i>	Cascade Oregon Grape	U >M	PSh - Sh	18" o.c.	Plant in clusters of > five plants. Needs good drainage.
<i>Oemleria ceraciformis</i>	Grape	W>U	PSh - Sh	6' o.c.	
<i>Oplanax horridum</i>	Indian Plum	W	PSh	4' o.c.	
	Devil's Club				

	Pachistima myrsinites	Oregon Box	M>U	PSh - Sh	2' o.c.	Prefers moist soil.
	Philadelphus lewisii	Mock Orange	M>U	FSh - Psh	6' o.c.	
	Physocarpus capitatus	Pacific Ninebark	W, U	FSh - Psh	8' o.c.	
	Rhododendron macrophyllum	Pacific Rhododendron	M>U	PSh	random	Likes to "peek out" from under conifers.
	Rosa nutkana	Nootka Rose	M > U	FSh - PSh	5' o.c.	Best when planted in sunny spots with good drainage.
	Rubus parviflorus	Thimbleberry	W>U	FSh - PSh	4' o.c.	
	Rubus spectabilis	Salmonberry	W>M	fSh - Sh	4' o.c.	
	Salix scouleriana	Scouler's willow	W>M	FSh	2' o.c.	stakes
	Salix hookeriana	Hooker's willow	W>M	FSh	2' o.c.	stakes
	Salix lasandra	Pacific willow	W	FSh	8' o.c.	stakes
SHRUBS	Sambucus racemosa	Red elderberry	M>W	FSh-PSh	4' o.c.	
	Spiraea douglasii	Hardhack	W>U	FSh	3' o.c.	
	Symphoricarpos alba	Snowberry	M > U	FSh - PSh	4' o.c.	Plant in clusters of at least five plants.
	Vaccinium ovatum	Evergreen huckleberry	U>M	FSh - PSh	4' o.c.	slow to establish
	Vaccinium parvifolium	Red Huckleberry	W>M	PSh	4' o.c.	
	Viburnum edule	Moosewood	W	FSh - PSh	6' o.c.	
		High Bush Cranberry	W > U	FSh - PSh	6' o.c.	
		Maidenhair Fern	W	Sh	random	Best on moist shady slopes such as streambank.
		Deer Fern	U > W	PSh - Sh	random	Likes to be under conifers.
	FERNS	Gymnocarpium dryopteris	Oak Fern	W, U	Sh	18" o.c.
	Polystichum munitum	Sword fern	W, U	FSh - Sh	3' o.c.	Plant in clusters of at least three. Excellent for erosion control.
	Achlys triphylla	Vanilla Leaf	W, U	PSh - Sh	12" o.c.	
	Aquilegia formosa	Red Columbine	W, U	FSh - PSh	random	
HERBACEOUS	Aruncus diocus (sylvester)	Goat's Beard	W	FSh - PSh	random	Plant along streambank.
PERENNIALS	Dicentra formosa	Western Bleeding Heart	W, U	PSh - Sh	12" o.c.	
	Maianthemum dilatatum	False Lilly-of-the- Valley	W > U	PSh - Sh	18" o.c.	
	Tiarella trifoliata	Foamflower	W>U	FSh - PSh	18" o.c.	
	Tolmiea menziesii	Piggyback Plant	W>M	PSh	18" o.c.	
	Trillium ovatum	Western Wake Robin	U	PSh	random	Intolerant of full sun.
WETLAND	Carex obnupta	Slough Sedge	A	PSh - Sh	18" o.c.	Plant in clusters of fifteen or more
	Lysichiton americanum	Skunk Cabbage	A, W	PSh - Sh	random	

Juncus ensifolius	Dagger Leaf Rush	A, W	FSh - PSh	12" o.c.	Plant in clusters of fifteen or more
Oenanthе sarmentosa	Water Parsely	W	FSh - PSh	18" o.c.	
Sagittaria latifolia	Arrowhead, Wapato	A, W	FSh - PSh	12" o.c.	Plant in clusters of five or more
Scirpus microcarpus	Small Fruited Bullrush	W>A	FSh - PSh	18" o.c.	Likes sun.

FSh = Full Sun PSh = Part Shade Sh = Shade o.c. = on center >= greater than or equal to

W = Wetland M=Mesic U = Upland A = Marsh (Aquatic)

APPENDIX V. REFERENCES

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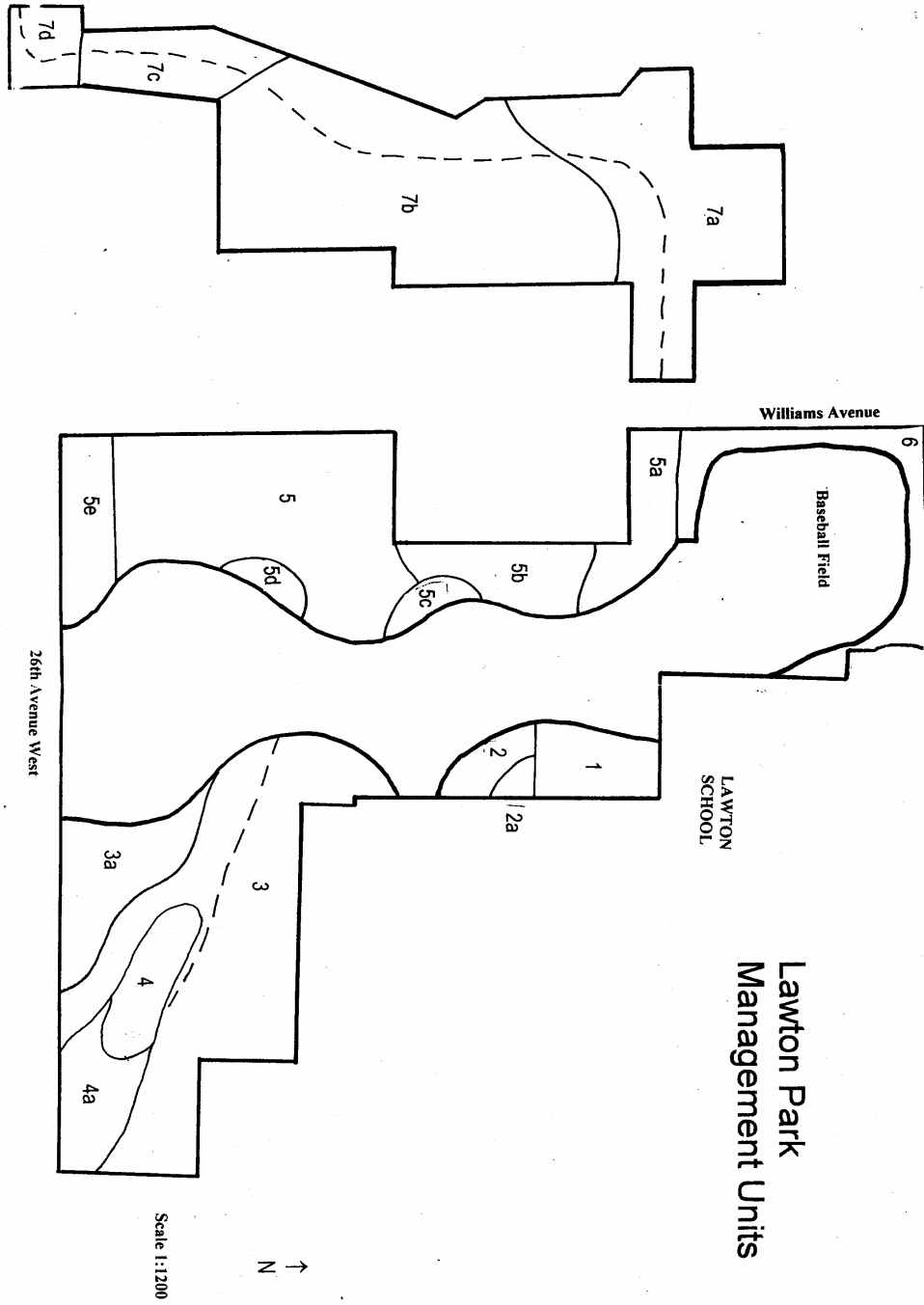
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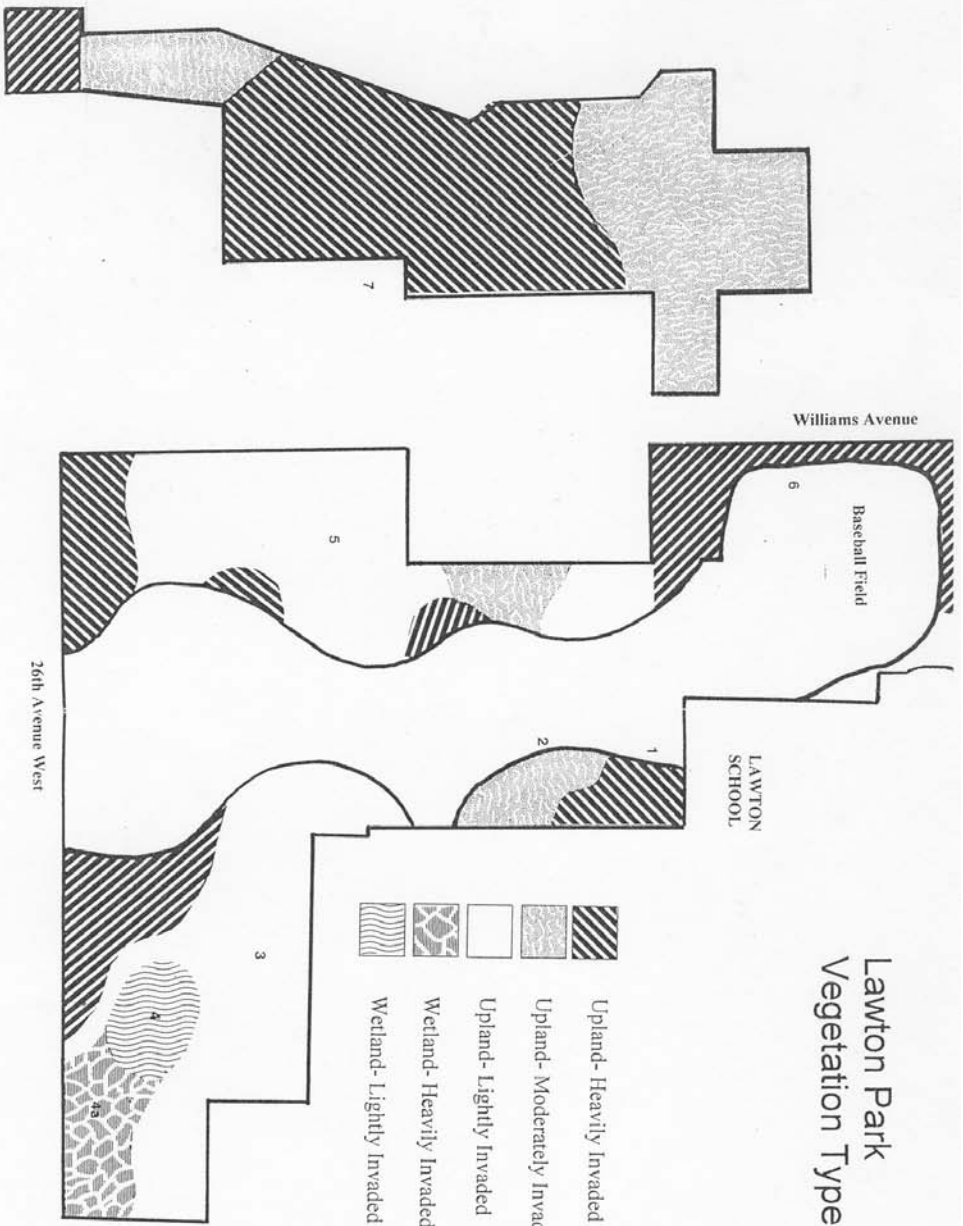
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APPENDIX IV: Maps



Lawton Park Vegetation Types



LAWTON SCHOOL

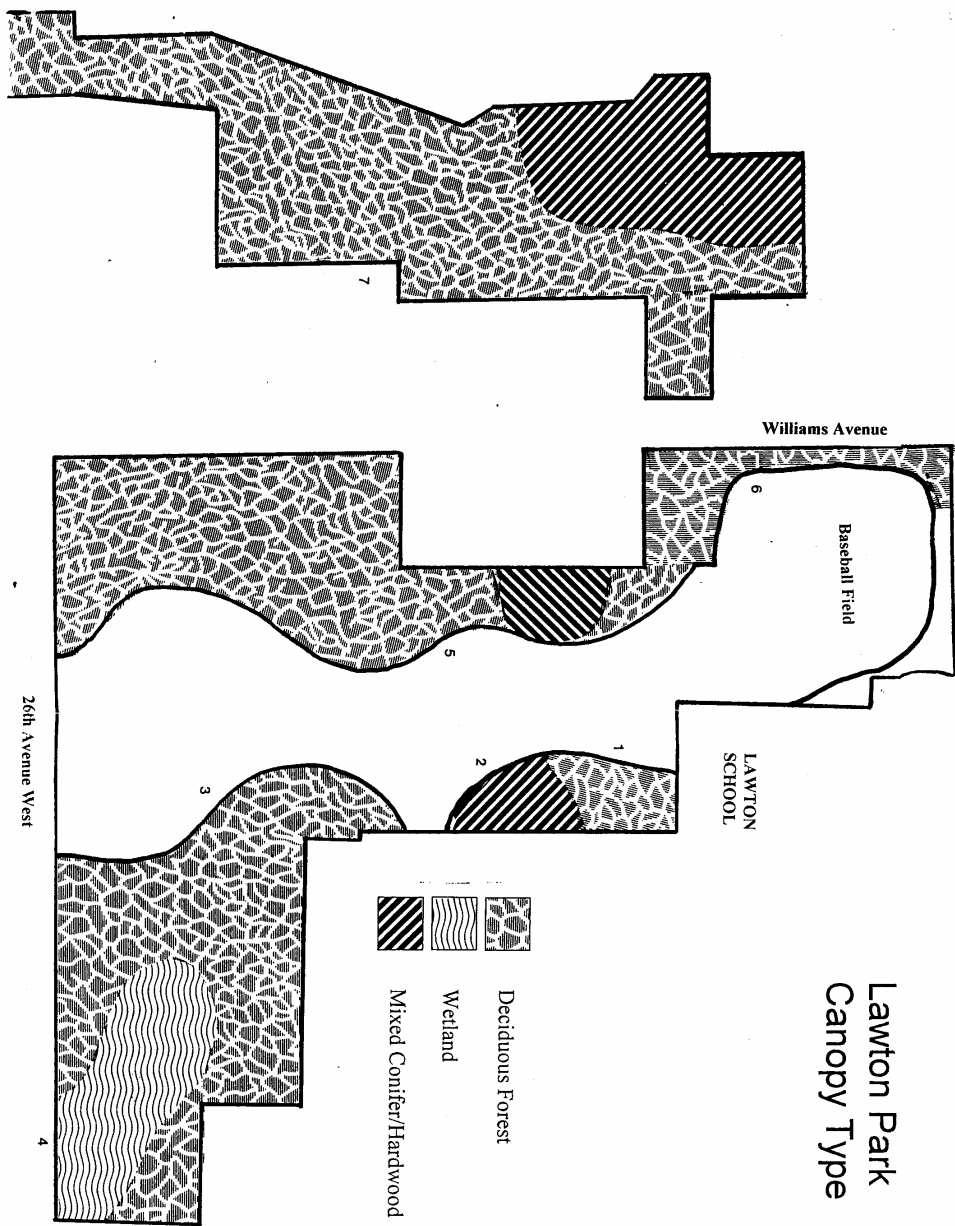
Williams Avenue

26th Avenue West

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Scale 1:1200

Lawton Park Canopy Type



Scale 1:1200



Restoration of Severely Eroded Bank

Williams Avenue

Lawton Park Priority Projects

LAWTON
SCHOOL

Prune and Maintain Park Entrance

Re-establishment of Park Trail

Invasive Removal and Planting

Build Boardwalk across Wetland

26th Avenue West



Scale 1:1200

