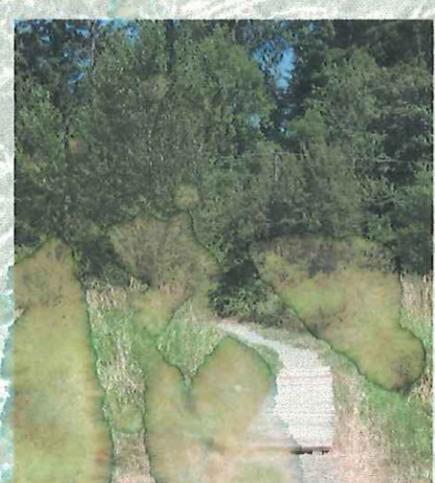


Jane H.

# CANAL AREA MASTER PLAN

CITY OF LAKE OSWEGO, OREGON



GREENWORKS P.C.  
LANDSCAPE ARCHITECTURE • ENVIRONMENTAL DESIGN

FEBRUARY 2001

# ACKNOWLEDGEMENTS

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# TABLE OF CONTENTS

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<b>Introduction</b> _____	1	<b>Implementation Plan</b> _____	24
Purpose of the Master Plan		Introduction	
Park Vision Statement		Immediate Implementation Phase	
		Phase One	
		Phase Two	
<b>Executive Summary</b> _____	2		
Master Plan Goals			
Key Elements of the Master Plan			
Description of Overall Costs			
<b>Site Description</b> _____	5		
Site History			
Hydrology			
Vegetation			
Neighborhood Context			
Key Features			
Previous Planning Efforts			
<b>The Master Plan</b> _____	8		
The Planning Process			
Master Plan			
Elements of the Master Plan			
<b>Management and Maintenance Plan</b> _____	14		
Introduction			
Goals and Objectives			
Existing Conditions			
Vegetation & Management Recommendations			
Invasive Plant Control			
Plant List			



# INTRODUCTION

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## Purpose of the Master Plan

The Canal Area Master Plan establishes a vision for the enhancement and connection of approximately 61 acres of natural open space for wildlife habitat, passive recreation, and natural resource protection. The master plan identifies goals and projects for implementation, accompanied by direction for city staff and volunteers to concentrate their enhancement and restoration efforts.

The protection and enhancement of this unique natural resource will provide the city and surrounding neighborhoods with a variety of benefits including:

- Protection and enhancement of natural vegetation
- Improvement of wildlife habitat
- Numerous environmental educational opportunities
- Opportunities for passive recreation
- Stormwater management
- Overall increase in awareness and appreciation for the surrounding natural resources

The Canal Area is a wonderful place for visitors to experience a variety of ecosystems. Visitors, volunteers, and school children will be able to experience nature first-hand through recreation, environmental education, and restoration projects.

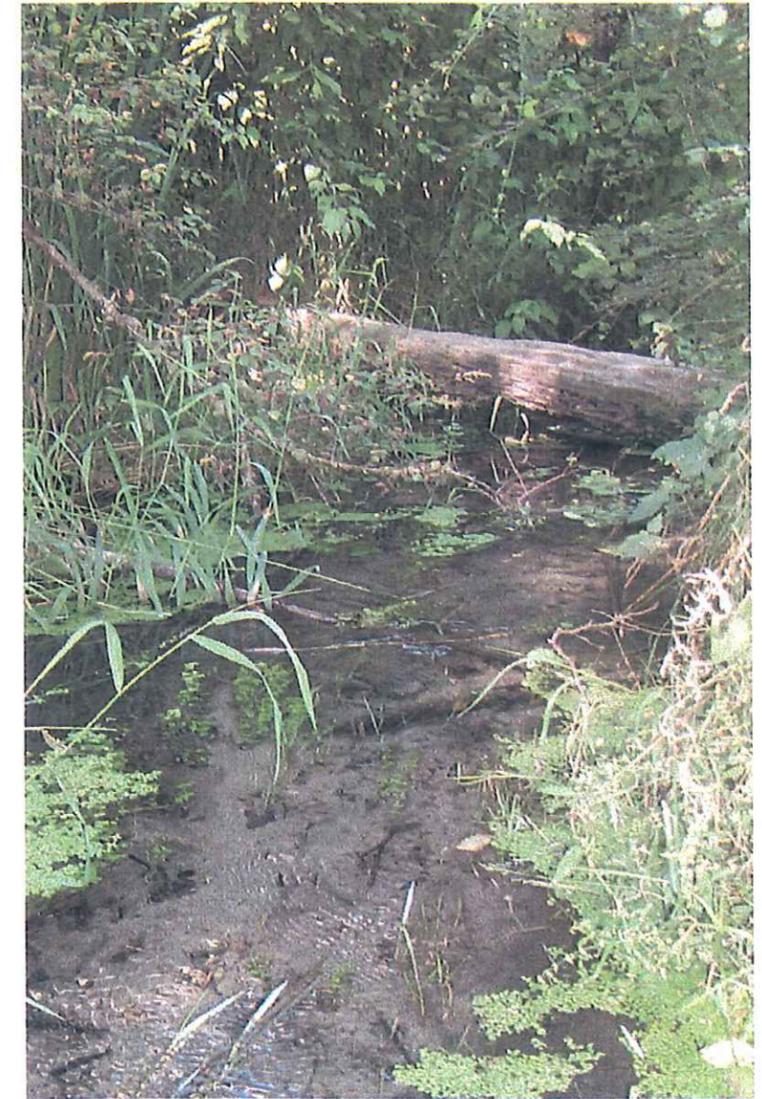
## Park Vision Statement

The Master Plan is formulated to accomplish the following vision statement developed by the Advisory Committee:

*The City and citizens of Lake Oswego will protect and conserve the natural resource values of the parks of the Canal Area, while providing public access to and enhanced appreciation of these natural areas for the general public.*



Bryant Woods Park



Bryant Woods Park

# EXECUTIVE SUMMARY

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River Run Park (West)

## Master Plan Goals

This Master Plan effort required a foundation of project goals and objectives. The Advisory Committee, made up of representatives from surrounding neighborhoods and local organizations, established the following goals to set the framework for the design and planning of the park (Advisory Board Members are listed on the inside cover under Acknowledgements). These goals take into consideration an entire range of opportunities for the protection and enhancement of the Canal Area Open Space:

- A. Protect the environmentally sensitive lands of Bryant Woods, Canal Acres and River Run Parks, consisting of wetlands, stream corridors, and tree groves.
- B. Improve pedestrian and bicycle routes along Childs Road between Sycamore Avenue and River Run Drive.
- C. Facilitate safe pedestrian access between all three parks: Bryant Woods, Canal Acres and River Run Park.
- D. Promote public appreciation of the beauty and ecological complexity of the parks.
- E. Create enhanced opportunities for wildlife movement in the area.
- F. Limit impacts of vehicle traffic and parking on surrounding neighborhoods.
- G. Encourage ease of access to the parks on foot.
- H. Reduce use of the parks for vandalism and illicit activities through improved security.
- I. Leave the east section of River Run Park unimproved until a later date.
- J. Minimize development of park facilities within Canal Acres Park.

## Key Elements of the Master Plan

The Master Plan envisions a dynamic natural area for people and wildlife alike made up of the three individual park tracts of Bryant Woods, Canal Acres and River Run. These tracts will be linked together to form a unified whole, with similar materials, themes and types of facilities and improvements. The resulting Canal Area complex of parks will function as a natural recreation facility for residents, providing for passive activities such as walking and nature study. Facilities will be developed in key high use locations to minimize impacts on natural functions and processes within the parks. Improvements will blend with the site by utilizing indigenous materials to the greatest extent possible, consisting of elements such as crushed rock trails, wood boardwalks, and low stone walls in select places.

The Master Plan is illustrated on page 11. Three of the primary goals are described below.

### 1. Connection to all three parcels

One of the major goals of the project was to provide a safe, user friendly connection to all three parcels of land. Currently Bryant Woods and Canal Acres are divided by Childs Road, a very busy arterial with no shoulder pathways. River Run Park lies at the southern most area of the site and is connected by a narrow section of land along the east bank of the canal.

In the Master Plan, safe pedestrian crossings of Childs Road have been located just east of the intersection at Indian Springs Road, and west of the new Childs Road bridge near the parking lot.

Bryant Woods Park is linked to the two other parcels by a pedestrian trail south of Childs Road on the eastern edge of Canal Acres Park. This trail continues south through Canal Acres Park, along the west side of the unimproved Canal Road.

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The connection between Canal Acres and River Run Park has been made by the placement of a new pedestrian bridge over the canal near the existing headgate.

The pathways provide the visitor with a loop trail through the whole range of ecosystems found throughout the three parcels.

## **2. Protection and enhancement of natural resources**

There are many significant natural resources found in the Canal Area. Native vegetation provides travel corridors, cover, and an abundant food source for many species of wildlife. The open water and wetlands also provide good habitat and ecological diversity while providing visual appeal for users of the park. Unfortunately, natural resources such as the ones found in Canal Area are disappearing rapidly due to development pressures.

It is the goal of this Master Plan to protect and enhance these natural resources. In doing this, the Canal Area will not only benefit ecologically, but users of the park will leave with a better appreciation for the natural environment.

## **3. Environmental education**

With the enhancement of the natural resources of the Canal Area comes the opportunity for environmental education. An example is the expansion of the open water wetland and construction of the site center. The site center is located to provide the user with long views down the wetland meadow and help connect the user with the open water wetland. Interpretive signs will be placed throughout the park to explain the natural processes or ecology of the park. One sign might compare the different types of vegetation found between upland and riparian forests. Another sign might be located near the water's edge and explain the hydrology of the site. It is these details that will provide the user with a deeper understanding and respect for the natural resources of the Canal Area.



*Bryant Woods Park*



Indian Springs

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### Description of Overall Costs

The proposed improvements included in this Master plan are expected to be implemented in phases, over time. The total estimated cost for complete implementation of the Master Plan, including design, engineering and construction is slightly over \$1,000,000. The following are the recommended phases and their estimated costs.

#### IMMEDIATE PHASE (FY 2000)

\$120,000

The following will be accomplished in this phase:

- Bryant Woods primary entry including: bus pull-out, parking, site identification sign, bulletin board and plaza, toilet enclosure, site furnishings, and related revegetation.
- Secondary entry sign at Canal Acres Park and site identification sign at River Run Park (West).

#### PHASE ONE

\$535,000

The following will be accomplished in this phase:

- Bryant Woods primary and secondary trails, site center, expanded open water wetland, boardwalks, secondary entry sign, wildlife observation deck, weir crossing, rest spots interpretive exhibits, site furnishings, nuisance plant removal and native plant enhancements.
- Primary Trail from Childs Road to new bridge crossing.
- New pedestrian bridge across canal into River Run Park.
- Fencing and planting of private encroachments.

#### PHASE TWO

\$350,000

The following will be accomplished in this phase:

- New secondary trails, interpretive signs, nuisance plant removal and native plant enhancements in Canal Acres Park.
- River Run Park primary and secondary trails, primary entry and parking area, expanded open water wetland with overflow control structure and pipe, boardwalk, bulletin board, river overlook, interpretive exhibits, site furnishings, nuisance plant removal and native plant enhancements.

# SITE DESCRIPTION

## Site History

The Canal Area is located in an area originally inhabited by Native Americans of the Tualatin and Clackamas tribes. Because of the area's wetness, the area may have been a foraging site for camas bulbs, an important food staple for the indigenous people.

Pioneer settlers arrived in the area during the 1850's. Many people settled around the area near "Sucker Lake", which is now commonly known as Oswego Lake. The canal, which cuts through the project area, was constructed from 1871 to 1873 to improve the transportation of goods from the Tualatin River to Lake Oswego. On January 21, 1873, a steamer carrying 200 bushels of wheat used the canal for the first time. In 1939, the canal was widened from 25 to 40 feet. With the construction of the canal, Oswego Lake increased from 2 3/4 miles to 3 1/2 miles in length.

From the 1940's through the 1970's much of the area surrounding the Canal Area was developed. Walter Durham owned 57 acres of land, which included much of Bryant Woods Park. The City attempted to purchase the land from Mr. Durham, but negotiations failed. In 1979, the City of Lake Oswego, with the help of The Friends of Bryant Woods Park and the Clackamas County League of Women Voters, purchased 18.8 acres of land, which is now known as Bryant Woods Park.

In 1994, the City purchased what is now Canal Acres Park to prevent the development of a 55-lot subdivision. In 1995, the City acquired the 2-acre Indian Springs property, which was then incorporated into Canal Acres Park.

## Hydrology

The hydrology of the Canal Area is primarily influenced by groundwater. Three perennial streams and an open water creek are found in Bryant Woods Park. Groundwater levels often rise to create seasonal ponds and wetlands throughout the site. A 50-ft. ditch along Childs Road collects water from the springs and a culvert under Indian Springs Road. The water then flows northeast through the perennial creek that has a gabion dam installed at its northeast end. The dam helps fill the excavated pond during the rainy season. There is a second excavated pond found in the northern portion of Bryant Woods Park.

During the rainy season, high seasonal surface water in Canal Acres is allowed to flow north through open culverts under Childs Road, and into Bryant Woods.

Groundwater levels in River Run reach levels that will inundate low-lying areas and create seasonal ponding in three identified seasonal wetlands in the park. The Tualatin River probably exerts the greatest influence over the site due to occasional flooding such as the '96 floods. The entire park falls within the FEMA 100-year floodplain.

The canal which brings water from the Tualatin River to Oswego Lake bisects the area.



Tualatin River - River Run Park



Canal Headgate



Springs - Bryant Woods Park



Bryant Woods Park



Bryant Woods Park

## Vegetation

The vegetation of Canal Area consists of a wide variety of vegetation types. The following vegetation types can be found in the area:

- Upland Coniferous Forest
- Upland Broadleaf Forest
- Riparian Broadleaf Forest
- Bottomland Deciduous/Broadleaf Forest
- Scrub-Shrub Thickets
- Meadow/Wetland/Marsh

Each of the three parcels that make up the Canal Area has a mix of these vegetation types. See pages 20-21 for vegetation maps.

Bryant Woods contains an upland mixed deciduous and coniferous forest along its western slope. A wetland meadow stretches through the middle of the parcel and contains native meadow species, reed canarygrass, and patches of alder stands. The remaining area of Bryant Woods consists of a riparian broadleaf forest made up of cottonwoods, alders, and maples.

Canal Acres consists of mostly bottomland broadleaf species. The park is in the floodplain and is inundated with water during the rainy season. Alders and Ash trees provide a dense cover for much of the site. The site has been protected, and therefore provides a significant amount of high quality habitat and vegetation for the Canal Area.

River Run Park provides the Canal Area with a wonderful connection to the Tualatin River. The west parcel consists of a large meadow with a few pockets of seasonal wetlands. A dense riparian forest exists along the entire southern bank of the parcel. The east parcel is covered with a riparian forest of alders and maples. This parcel has been protected over the years and contains a great amount of valuable vegetation and habitat along the Tualatin River. Some blackberries do exist along the property lines of the east and west parcel.

## Neighborhood Context

The Canal Area Open Space is surrounded on three sides by low-density residences. The park provides a necessary recreation area for the surrounding neighborhoods. Currently, many joggers, dog walkers, wildlife observers, and school children visit the site. Community support for the park is great, and will hopefully continue and increase with the development of this Master Plan.

Connection to the park is currently limited due to the lack of a safe pedestrian pathway along Childs Road and adequate parking facilities. Many people drive and park at the Bryant Woods parking lot and along River Run Drive to access River Run Park. Improving the parking and pedestrian access will greatly improve connection to the surrounding neighborhood and overall appreciation for the Canal Area.



North Entry - Bryant Woods



River Run Park

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## Key Features

One of the essential features of the Canal Area is the variety of vegetation types found throughout the park. This variety provides a unique opportunity for visitors to experience a whole range of ecological diversity in a limited area. From upland coniferous forests to wetland meadows, to riparian forests along the Tualatin, the Canal Area is a unique and valuable resource for the citizens of the city of Lake Oswego.

Another important feature is the abundance of open water and wetlands in the area. The perennial and seasonal ponds that can be found throughout the area provide wonderful habitat for many wildlife species. These areas also offer an opportunity for environmental education of visitors and school children. Wetland boardwalks and a wildlife observation deck have been proposed to bring the individual in for a closer view of the aquatic vegetation and wildlife.

Childs Road bisects the Canal Area east to west. This road is unsafe for pedestrians to walk along or to cross. Connection of all three parcels is important to the park experience. A safe pedestrian crossing has been proposed at the intersection of Childs Road and the primary pathway that connects all three parcels. This would provide visitors with safe access to all three parcels of the Canal Area. In addition, a new pathway along the south side of Childs Road is included in this Master Plan.

Another connection issue deals with the canal that runs north to south through the Canal Area and divides Canal Acres from River Run Park. Connection across the canal is important for access to all three parcels.

## Previous Planning Efforts

In 1984, a master plan for the Bryant Woods Park parcel was developed by Jones and Jones and Ames Associates. This new document outlines many concepts that are parallel to the ones outlined in the 1984 master plan. Suggestions such as enhancement of trails, enlargement of open water areas, replanting of native species, and improvement of parking area and pedestrian access were included in the previous master plan.



*Childs Road*



*Bryant Woods Park*

# THE MASTER PLAN

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Entrance to River Run Park (West)

## The Planning Process

The Master Planning process consisted of the following major steps:

1. Site Inventory and Analysis
2. Identification of Site Opportunities and Constraints
3. Development of Project Vision Statement, Goals, and Design Program
4. Design Alternatives
5. Site Master Plan
6. Construction Cost Estimating and Phasing Plan
7. Final Documentation

The Advisory Committee was integrally involved in the entire process, and ultimately approved each step along the way. The Committee relied extensively on the involvement and feedback from citizens, and incorporated public comment into Advisory Committee meetings as well as Public Meetings.

## Design Program

The Design Program was developed in conjunction with the Project Goals, but is a more detailed list of specific elements envisioned by the Advisory Committee. This design program is the list of facilities that were incorporated into the Site Master Plan. These program elements include:

1. Provide Primary Entries at Bryant Woods and River Run Parks, consisting of orientation & interpretive information, and an enclosure, which could house portable toilet facilities on a seasonal basis at Bryant Woods Park only.
2. Provide an interconnected series of walking loop trails, which pass through various vegetation communities of the parks, with strategically placed rest stops and interpretive information along the way.
3. Provide primary and secondary trails within the parks, with permeable soft surfaces such as crushed rock or bark dust.
4. Provide additional pedestrian access across the Canal.
5. Provide limited parking in the Canal Area: 10-15 cars at Bryant Woods, and 4-8 cars at River Run.
6. Expand and enhance the open water wetland at Bryant Woods Park.
7. Expand and enhance wetlands along north portion of River Run Park.
8. Investigate opportunity to daylight existing storm drain line which crosses River Run Park.
9. Provide an overlook of the Tualatin River at River Run Park.
10. Protect the river access beach along the southeast edge of River Run Park.
11. Create a new focal area in the center of the Bryant Woods site, with a view of the open water wetlands through a possible viewing blind or overlook, with seating and integrated interpretive elements.
12. Expand area of Bottomland Deciduous Forest community at north end of Bryant Woods Park to help buffer site from adjacent private residences.
13. Develop an area of Scrub-Shrub Thicket community along north end of Bryant Woods meadow, as enhanced hiding cover for birds.

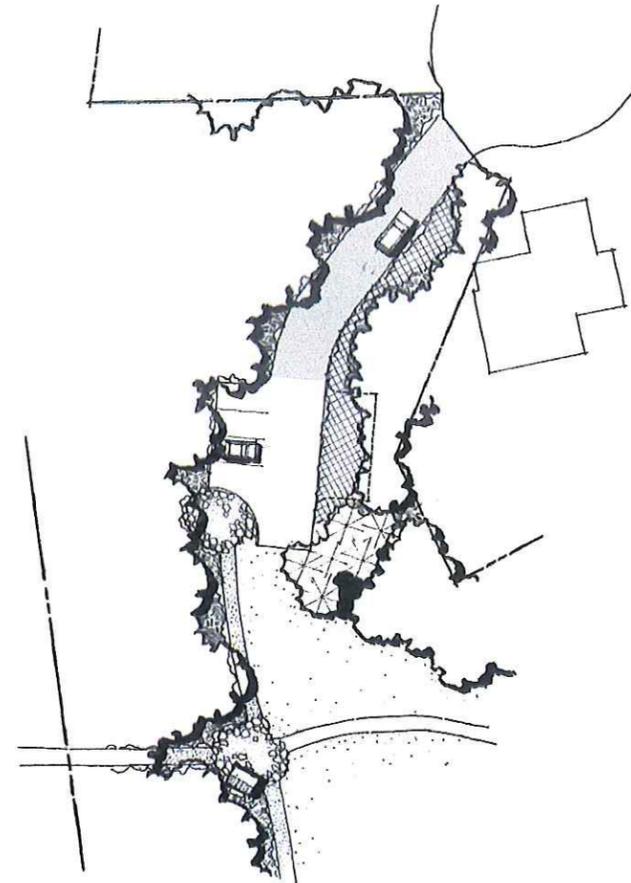
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14. Incorporate clumps of native shrubs and trees within large Meadow community.
  15. Eliminate overhead telephone wires, fencing and service access roads, if possible.
  16. Expand the Riparian Broadleaf Forest community along the top of bank of the Tualatin River in River Run Park.
  17. Discuss opportunities to improve the habitat value and aesthetics of the Canal Head Gate with the Lake Corporation.
  18. Consider providing pedestrian connection between Canal Acres and River Run Park along the west side of the Canal, with a new pedestrian bridge across the canal north of the head gate.
  19. Reduce and eliminate noxious weed species throughout the parks, including English ivy, Himalayan blackberry, and Reed canarygrass.
  20. Expand amount of Shrub Thicket community in River Run park as edge to Marsh/Pasture community.
  21. Develop a comprehensive pathway marking and signage system for the parks.
  22. Place structural elements such as downed logs or brush piles along edges of waterways and at forest edges.
  23. Incorporate interpretive and art elements in the parks, which help explain the history and ecology of the site utilizing vandal-resistant materials.



*Bryant Woods Park*



*River Run Park*



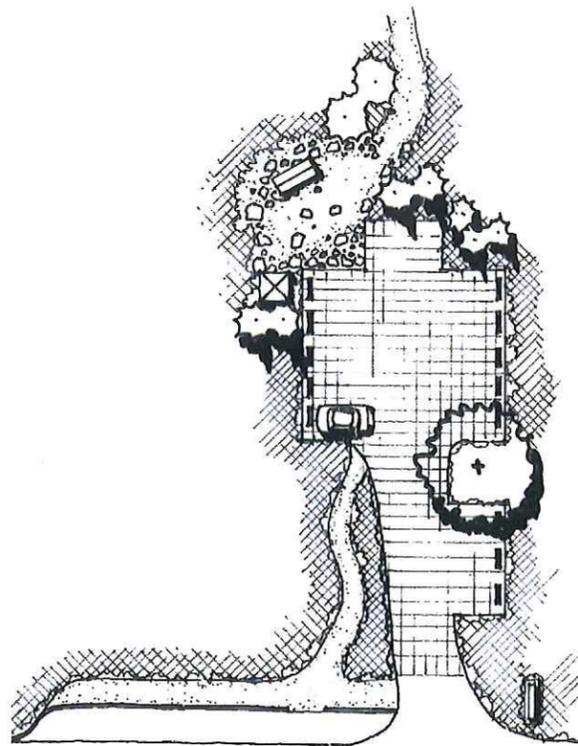
Primary Parking and Entry - River Run Park

## Elements of the Master Plan

Built upon the Vision Statement, Goals, and Design Program, the Canal Area Master Plan consists of the following key elements:

### General Improvements

- pathway along Childs Road
- connectivity between parks and bridge



Primary Parking and Entry - Bryant Woods Park

### Primary Entry in Bryant Woods

As you enter the parking area at Bryant Woods Park, you will notice a variety of site elements. To the right of the entry, a site identification sign is placed. A bus pullout to the left of the entry along Childs Road allows school buses to safely drop classes off for their environmental education day at the park. The parking area will accommodate 10-15 cars. The parking surface will consist of a pervious paving that will allow for infiltration of runoff into the soil below. To the northwest corner of the primary entry, a bulletin board with a map, local rules and regulations, and interpretive displays will help guide your way. Other nearby amenities includes a bench and an enclosure for a seasonal portable toilet.

### Primary Entry at River Run

The entry to River Run Park will include a parking area that will accommodate 4 cars (expandable to 8). The parking surface will consist of a pervious paving surface to allow for infiltration of runoff. A bulletin board with a map of the Canal Area and local rules and regulations will be located in a centrally located plaza space.

### Secondary Entry Points

These entry points will be marked by a small site identification sign and Canal Area Map.

### Primary and Secondary Trails

Primary Trails will consist of 5 foot wide crushed rock pathways that will connect Bryant Woods, Canal Area, and River Run Park. The secondary trails will consist of 3 foot wide native soil and bark mulch, most of which currently exist in the park.

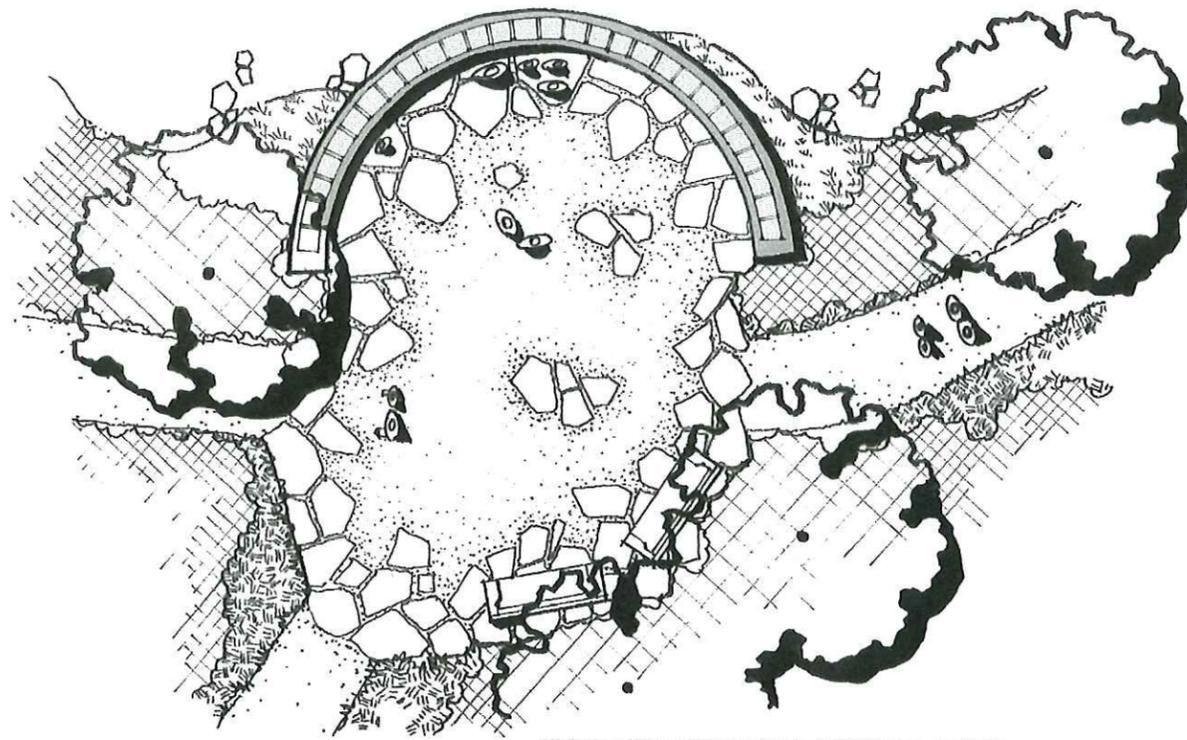


### Site Center

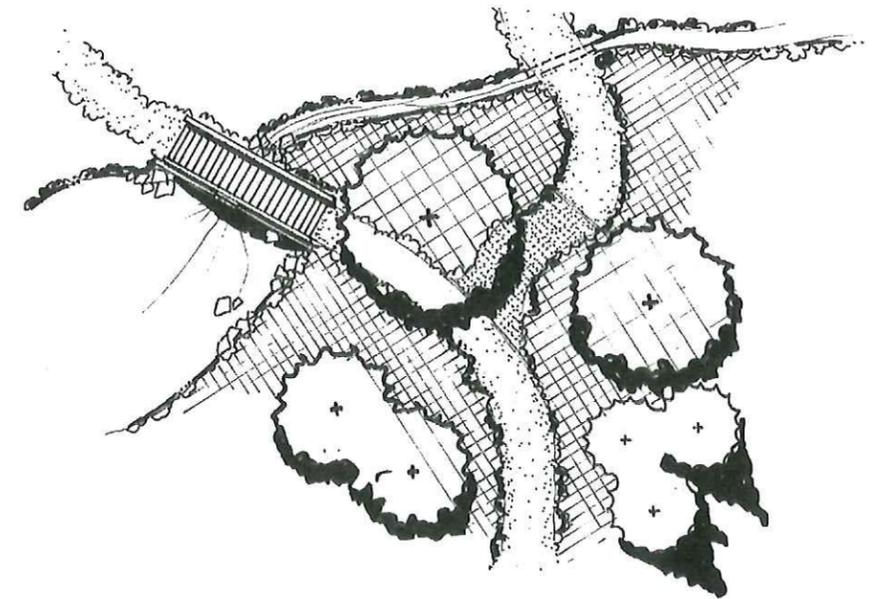
The site center in Bryant Woods Park is the environmental education hub of the park. It is designed to accommodate groups ranging from a few casual visitors to an entire environmental education class of up to 30 students. Its central location provides visitors with a place to gather, investigate the open water wetland, view wildlife, or begin the loop trail.

### Interpretive Exhibits

Tactile elements, wildlife sculptures, or interpretive panels explaining the ecology of the area will be placed at significant locations throughout the Canal Area.



Site Center - Bryant Woods Park



Weir Crossing - Bryant Woods Park

### Weir Crossing

This new crossing is located in Bryant Woods Park at the existing weir location. This crossing will allow the main pathway to diverge from the existing access road, cross the weir, and connect with the site center. The crossing will also provide the visitor with unique views of the open water and wetlands nearby.

### Access Road

The Master Plan envisions leaving this necessary service road in place, but obscuring it and directing park users off the road and on to a more pleasing internal primary trail. Overhead powerlines along the road will be located underground.

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### Rest Spots

These areas are designed to provide the visitor with a place to enjoy the surrounding natural environment. They consist of a bench and small amount of crushed rock and flagstones around the base.

### Wildlife Observation Deck

This structure in Bryant Woods Park will allow visitors to get up into the tree canopy and observe the wildlife and wetland views from a different perspective. The surrounding area will be planted to screen the base of the structure to reduce its visual impact upon the landscape.

### Expanded Open Water Wetlands

Reed Canarygrass currently dominates the wetlands in Bryant Woods Park. The expansion of the open water wetlands will remove reed Canarygrass and sediment from a portion of the wetlands and connect the existing open water with the seasonal pond. In addition, this expansion will provide more enhanced habitat and educational opportunities, while protecting significant red-legged frog habitat found in this area.

### River Overlook

The proximity of the Tualatin River to River Run Park provides an opportunity for a connection to this significant natural resource. The overlook will allow visitors of the park to enjoy extensive views up and down the river.

### “Daylighted” Stormdrain

A stormwater pipe runs from a nearby neighborhood, through River Run Park, and out to the Tualatin River. This stormdrain provides an opportunity to drain the pipe to a surface channel and treat the stormwater in the expanded open water wetlands before it enters the Tualatin River.



Canal Acres Park



Wildlife Observation Deck - Bryant Woods Park



Native and Non-Native Vegetation

## Vegetation & Management Recommendations

In the following pages are descriptions and management recommendations for specific vegetation patches. These descriptions correspond with the areas noted in the Vegetation Management Plan maps for Bryant Woods/Canal Acres and River Run Park following this section on pages 20-21. Management techniques for specific invasive plants have been included on page 22. Finally, a list of enhancement species for each vegetation type is included on page 23.

### *Bryant Woods Park*

#### Forest Enhancement Zones

##### FE1 Existing Conditions

The forest edge around the parking lot has been invaded by Himalayan Blackberry.

##### Management Recommendations

Re-establish native plants around parking lot by removing blackberries [See Invasive Plant Removal - Himalayan Blackberry pg. 22] and replanting with native understory species [See Forest Enhancement Species – Understory, pg. 23]. This area will need to be vigorously maintained because it is very susceptible to future blackberry invasion.

##### FE2 Existing Conditions

This vegetation patch lies between the existing access road and the proposed main pathway. Screening of the existing access road from the main pathway is desirable.

##### Management Recommendations

Plant patch with native forest species to provide screening of access road. [See Forest Enhancement Species, pg. 23]

##### FE3 Existing Conditions

Little vegetation exists between the existing pathway and fence along the north side of the park. Currently, private yards can be seen through the fence while walking through the park.

##### Management Recommendations

Re-plant patch with native plants to provide screening of private residences and property line fence. [See Forest Enhancement Species, pg. 23]

Planting should include Nootka Rose to match existing planting in this area, along with coniferous trees for screening.

#### Shrub Thicket Enhancement Zones

##### SE1 Existing Conditions

There is little vegetation buffer between the proposed pathway and the existing access road. This management area consists of patches of Reed Canarygrass to the north, and scrub/shrub community to the south. Enhancement of this area will provide a buffer from the access road while increasing valuable habitat in the park.

##### Management Recommendations

Due to the wetness of the area, water tolerant wetland shrubs should be planted in this area. [See Wetland Enhancement Species – Wetland Shrubs, pg. 23]

##### SE2 -

##### SE4 Existing Conditions

These patches currently are covered in meadow plant species. These areas are unique in the fact that they have no presence of Reed Canarygrass in them. Enhancement of these patches will provide the park with

more valuable shrub thicket habitat and visual interest.

Management Recommendations

Plant areas with shrub thicket species. [See Shrub Thicket Enhancement Species, pg. 23]

**SE5 Existing Conditions**

This patch is currently covered in a thin forest overstory with some large thickets of blackberries. There is a wildlife observation deck proposed for this area. It is desirable to provide screening around the base of the observation deck to reduce its visual impact upon the park while not impacting views from the top of the deck.

Management Recommendations

Remove non-native blackberries from patch [See Invasive Plant Control – Himalayan Blackberry, pg. 22]. Replant area around base of observation deck with larger shrub thicket species such as Vine Maple, Ninebark, and Elderberry. Remaining area can be replanted with general shrub thicket species. [See Shrub Thicket Enhancement Species, pg. 23]

**SE6 Existing Conditions**

Currently this patch is covered in blackberries, Reed Canarygrass, shrub thicket species, and meadow species.

Management Recommendations

Remove non-native blackberries and Reed Canarygrass from patch. Blackberries should be removed according to techniques outlined in the Invasive Plant Control Section. The patch of Reed Canarygrass should be planted with alders and seeded with native meadow species [See Meadow Enhancement Species, pg. 23]. Regular mowing twice a year will allow the alders to

begin to shade out the Canarygrass and the native species to get established. The remaining area should be planted with wetland shrubs due to the proximity to the open water [See Wetland Enhancement Species - Wetland Shrubs, pg. 23]

**Meadow Enhancement Zones**

**ME1 -**

**ME2 Existing Conditions**

These patches are currently covered in some forest and shrub thicket communities. Establishment of meadow species in these patches will open views along entire length of park while protecting valuable vegetation around the existing seasonal pond.

Management Recommendations

Remove forest and shrub thicket plants from patch and replant with native meadow species. [See Meadow Enhancement Species, pg. 23] There is some Reed Canarygrass found along the western edge of patch ME1. The Canarygrass should be mowed twice a year and seeded with native meadow species [See Invasive Plant Control - Reed Canarygrass, pg. 22].

**Wetland Enhancement Zone**

**WE1 Existing Conditions**

This patch of open water wetland will reconnect the existing open water to the seasonal pond to the north. Raising of the height of the weir structure to flood Reed Canarygrass will be included in the design and construction of the open water wetland. This expansion will increase the amount of valuable open water habitat while eliminating a suitable growing environment for Reed Canarygrass.



River Run Park



Bryant Woods Park

Management Recommendations

1. Grade area to connect existing delineated open water and seasonal pond while removing reed Canarygrass.
2. Construct Boardwalk along main pathway.
3. Construct weir crossing and raise height of weir to increase depth of pond.
4. Plant with native riparian wetland species.

Note: Expansion of the open water wetland will not include seasonal pond to the north of Bryant Woods Park where Red-legged frog egg masses were found during an inventory site visit.

*Canal Acres Park*

Vegetation enhancement in Canal Acres will include general removal of invasive, non-native species such as English Ivy and Himalayan Blackberry and replanting of disturbed areas [See Invasive Plant Control, pg. 22]. Removal of Himalayan Blackberry should be concentrated along the southern property line of the park due to its large presence found in this area. Replanting in this area should consist of forest enhancement species [See Forest Enhancement Species, pg. 23].

*River Run Park (East and West)*

**Forest Enhancement Zones**

**FE4 Existing Conditions**

The patch is currently covered with low meadow species. Screening of the private residence adjacent to the property is necessary.

Management Recommendations

Replant patch with native upland tree and shrub species. Plantings along property line should be denser to provide screening. Screen shrubs such as dogwood. [See Forest Enhancement Species, pg. 23]

**FE5 -**

**FE7 Existing Conditions**

Meadow plant species and blackberries dominate these patches of vegetation. There is little structural diversity found in these patches and they provide little screening of adjacent residences.

Management Recommendations

Remove existing exotic blackberries and plant with native upland trees and shrubs. Plantings in these areas will provide an increased amount of habitat, screening of adjacent residences, shading for wetland and visual interest for visitors. [See Forest Enhancement Species, pg. 23]

**FE8 Existing Conditions**

There is a very thin strip of riparian vegetation extending into the site from the top of the Tualatin River's bank. Beyond this, the patch is currently covered in meadow species and is maintained by yearly mowing.

Management Recommendations

Plant area with native upland and riparian forest species to restore connection from the park to the riparian forest. Removal of some exotic species such as blackberries and hawthorns may be necessary in this area. [See Forest Enhancement section, pg. 23 and Invasive Plant Control, pg. 22]

**FE9 Existing Conditions**

Because of the lack of woody vegetation in this patch, the canal headgate and related structures can be seen from the park. Access to the headgate from the main path is necessary for emergencies.

Management Recommendations

Planting in this area should consist of native riparian species. This proposed forest enhancement will extend the existing riparian forest while helping screen the headgate and related structures. [See Forest Enhancement Species, pg. 23]

**Shrub Thicket Enhancement Zones**

**SE10 Existing Conditions**

This patch consists almost entirely of blackberries. Although this patch provides good habitat for wildlife, the exotic plant will continue to spread throughout the park if it isn't eliminated.

Management Recommendations

Remove existing blackberries [See Invasive Plant Control, pg. 22]. Plant area with native shrub thicket species to restore natural vegetation and keep habitat value of vegetation patch. [See Shrub Thicket Enhancement, pg. 23]

**SE7, 8, 9, 11, & 12**

Existing Conditions

Little edge habitat currently exists in the park. These meadow patches are located in crucial transition areas between the proposed forest enhancements and the meadow. Proper planting of these areas is important for increasing the ecological diversity of the park.

Management Recommendations

Vegetation patches should be planted with native scrub/shrub species. These plantings will increase the amount of valuable edge habitat found throughout the park. [See Shrub Thicket Enhancement, pg. 23]

**Meadow Enhancement Zones**

**ME3 Existing Conditions**

This patch consists entirely of blackberries. Although the patch provides good habitat for wildlife, the exotic plant will spread throughout the park if it isn't eliminated.

Management Recommendations

Remove existing blackberries [See Invasive Plant Control, pg. 22]. Plant area with native meadow species to increase meadow. [See Meadow Enhancement, pg. 23]

**Wetland Enhancement Area**

**WE2 Existing Conditions**

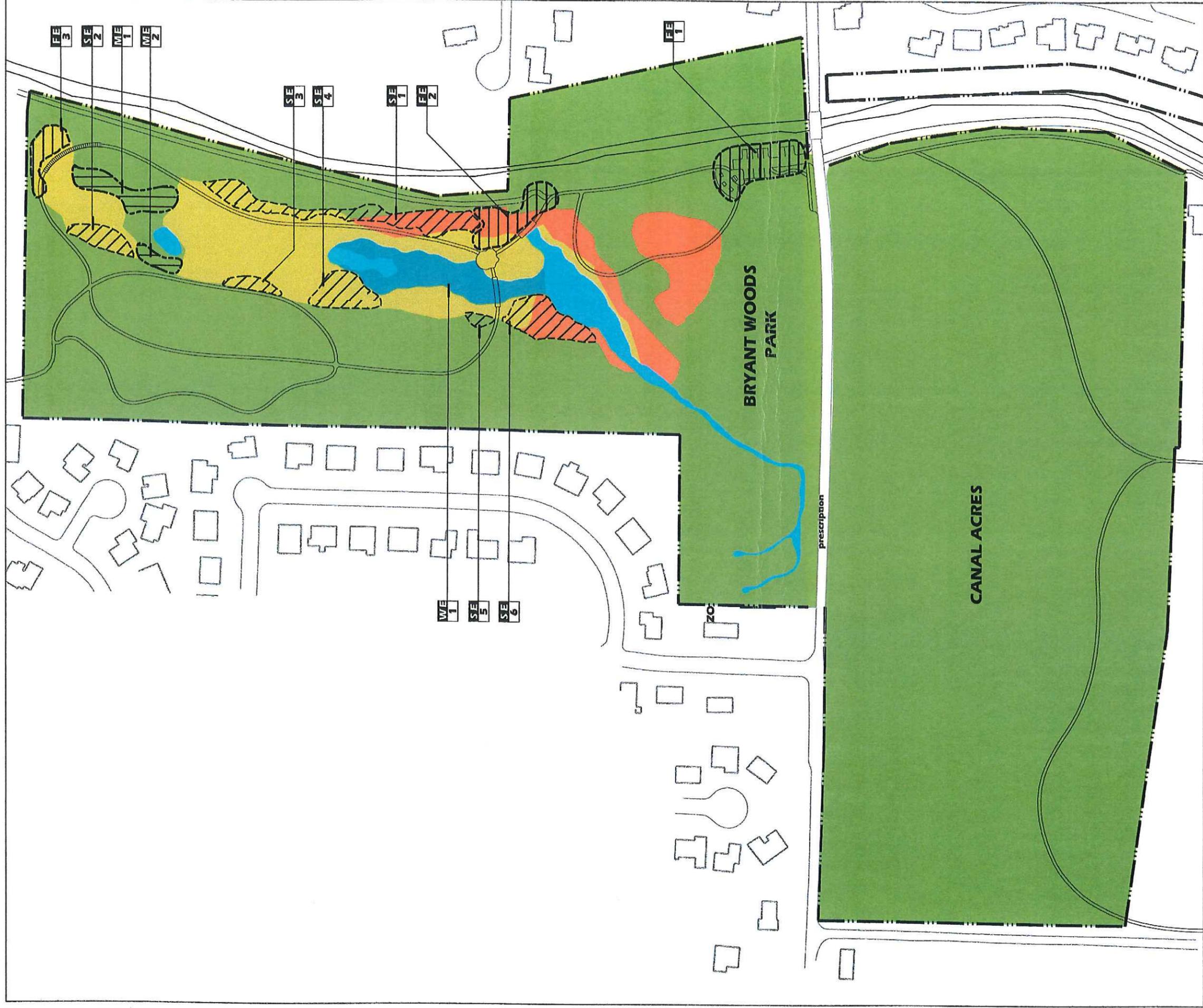
This area currently consists of two small designated wetlands with meadow species between them. A storm sewer pipe runs underneath these wetlands and out to the Tualatin River. Connection and expansion of these wetlands will help increase wetland habitat, provide an educational area for the park, and treat stormwater runoff from surrounding neighborhoods.

Management Recommendations

1. Grade area to connect existing delineated wetlands.
2. Construct boardwalk along main pathway.
3. Construct water control structure for flood events.
4. Daylight storm drain and connect to wetlands.
5. Plant with native riparian wetland species. [See Wetland Enhancement Species, pg. 23]



Bryant Woods Park



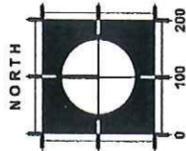
**EXISTING VEGETATION**

- Existing Forest Canopy
- Existing Shrub Thicket
- Existing Meadow

- Proposed Forest Enhancement
- Proposed Shrub Thicket Enhancement
- Proposed Meadow Enhancement
- Proposed Open Water Wetland

**ZONE LABEL**

- SE 9**
- Vegetation Type
- FE - Forest Enhancement Zone
  - SE - Shrub Thicket Enhancement Zone
  - ME - Shrub Thicket Enhancement Zone
  - WE - Wetland Enhancement Zone
- Zone Number - see narrative for management prescription



City of Lake Oswego, Oregon

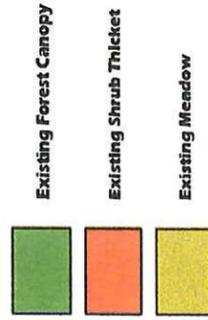
# CANAL AREA OPEN SPACE

## Vegetation Management Plan

February 2000



**EXISTING VEGETATION**



**ZONE LABEL**



City of Lake Oswego, Oregon

# CANAL AREA OPEN SPACE

## Vegetation Management Plan

February 2000



Reed Canarygrass

## **Invasive Plant Control**

These management techniques should be used in any patch, identified or not, of non-native vegetation found in the park.

### **Reed Canarygrass**

#### Existing Conditions

Much of the open meadows found in Bryant Woods Park are dominated by Reed Canarygrass. This robust and competitive wetland plant has been outcompeting the native meadow grasses.

#### Management Recommendations

Unfortunately, removal of Reed Canarygrass proves to be difficult due to its rapid growth ability. Heavy equipment has been used unsuccessfully in the removal of the grass. There is a rapid regrowth of the rhizomes and seeds left in the soil after removal. With the enlargement of the existing open water wetland, some of the Canarygrass will be physically removed. The disturbed areas will be inundated with water year round and therefore prevent regrowth of seeds and rhizomes.

It is recommended that the remaining Reed Canarygrass dominated areas be maintained by bag mowing twice yearly or a prescribed control burn and seeded with native meadow species [See Meadow Enhancement Species list]. The mowing will remove the seed heads before they have a chance to mature and expose the ground to light, which will promote growth of native species. The prescribed burn will cut the Reed Canarygrass to the ground and be more effective in opening up the ground layer to light. Burning is a better alternative, though much more controversial than mowing.

### **English Ivy Removal**

#### Existing Conditions

Many trees on the east and west sides of canal between Canal Rd. and the headgate are covered in English Ivy. If left alone,

the ivy will eventually choke out the trees. This is the main problem area of the site.

#### Management Recommendations

Ivy should be cut at base of tree and removed from the lower four feet of the tree trunk. Eventually the ivy in the upper parts of the tree will die and fall off, or can be pulled off. Removal of green ivy vines may damage the tree by pulling bark or limbs off the tree. Care should be taken because cutting of some large vines may reduce support of vine and increase risk of the vine falling overtime. The best use of volunteer help would be to concentrate removal in a particular area since the area of infestation is so large. Working on a smaller, and more manageable chunk of the ivy at a time will help in overall support and enthusiasm for the project.

### **Himalayan Blackberry Removal**

#### Existing Conditions

Many areas in the park have been identified as having Himalayan Blackberry in them. Removal of the plant is essential to reestablish native species and reduce spreading of the invasive plant. Even though complete abatement of the blackberry is difficult, removal efforts should not be discouraged because the plant can provide good habitat for native wildlife.

#### Management Recommendations

Volunteer groups can be used to physically remove the blackberry patches. The plant should be cut back and then the roots dug out to completely remove plant. Disturbed area should be replanted right away to prevent blackberries from competing with the native plants. The infested areas require frequent revisits to cut back new growth that quickly develops. Blackberries should be cut back approximately four times during the growing season to prevent spreading and reinfestation. Once the larger patches of blackberry have been removed, regular maintenance of the areas should prevent regrowth.

**Plant List**

**Forest Enhancement Species**

**Trees**

Acer macrophyllum	Big Leaf Maple
Alnus rubra	Red Alder
Fraxinus latifolia	Oregon Ash
Populus trichocarpa	Black Cottonwood
Pseudotsuga menziesii	Douglas Fir
Salix lasiandra	Pacific Willow
Salix scouleriana	Scouler's Willow

**Understory**

Acer circinatum	Vine Maple
Berberis spp.	Oregon Grape
Corylus cornuta	Beaked Hazelnut
Holodiscus discolor	Oceanspray
Oemleria cerasiformis	Indian - Plum
Philadelphus lewisii	Mockorange
Physocarpus capitatus	Pacific Ninebark
Rosa nutkana	Nootka Rose
Rubus parviflorus	Western Thimbleberry
Sambucus racemosa	Red Elderberry
Spiraea douglasii	Douglas' Spiraea
Symphoricarpus albus	Snowberry
Vaccinium parvifolium	Red Huckleberry

**Shrub Thicket Enhancement Species**

Amelanchier alnifolia	Saskatoon Serviceberry
Berberis spp.	Oregon Grape
Cornus stolonifera	Red Osier Dogwood
Holodiscus discolor	Oceanspray
Oemleria cerasiformis	Indian Plum
Philadelphus lewisii	Mockorange
Physocarpus capitatus	Pacific Ninebark
Rosa nutkana	Nootka Rose

Rubus parviflorus	Western Thimbleberry
Sambucus racemosa	Red Elderberry
Symphoricarpus albus	Snowberry
Vaccinium parvifolium	Red Huckleberry

**Meadow Enhancement Species**

Deschampsia caespitosa	Tufted Hairgrass
Elymus Glaucus	Blue Wildrye
Festuca subulata	Bearded Fescue
Fragaria virginiana	Wild Strawberry

**Wetland Enhancement Species**

**Wetland Shrubs**

Cornus stolonifera	Red-osier Dogwood
Pysocarpus capitatus	Pacific Ninebark
Rosa nutkana	Nootka Rose
Salix sitchensis	Sitka Willow
Sambucus racemosa	Red Elderberry
Spiraea douglasii	Douglas' Spiraea

**Perennial Wet Areas**

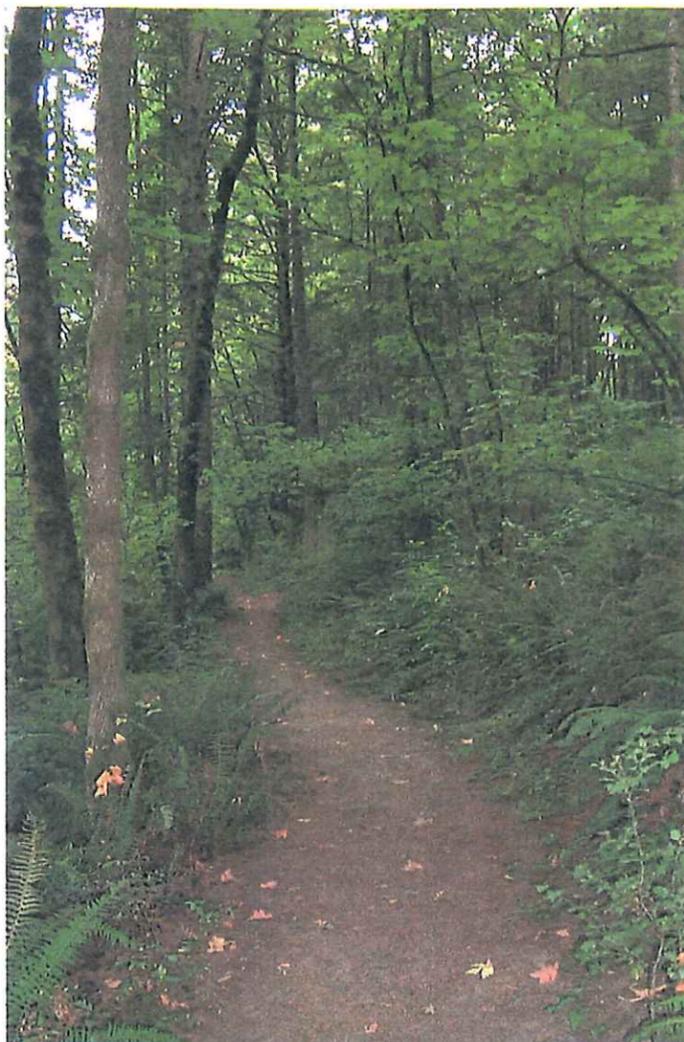
Glyceria elata	Fowl Mannagrass
Carex obnupta	Slough Sedge
Juncus effusus	Common Rush
Juncus tenuis	Slender Rush
Scirpus microcarpus	Small-fruited Bulrush
Elocharis paulustris	Common Spikerush
Veronica americana	American Speedwell

**Seasonally Wet Areas**

Carex densa	Dense Sedge
Carex deweyana	Short-scale Sedge
Deschampsia caespitosa	Tufted Hairgrass
Mentha arvensis	Field Mint
Veratrum californicum	California False-hellebore



# IMPLEMENTATION PLAN



Bryant Woods Park

## Introduction

The following is the Implementation Plan cost estimate. The Implementation Plan is broken down into three phases. First is the Immediate Phase, which will happen during the 2000 fiscal year. The second is Phase 1, which is slated to happen in 2 to 3 years. The last, Phase 2, is planned to be built within 3-5 years. The costs for the phases were generated assuming the contractor would install items listed. However, items denoted by a bullet (\*) indicate projects that can be done by volunteers under adequate supervision.

## Immediate Implementation Phase

### I. Bryant Woods Park

CSI Sec.	ITEM	QTY.	UNIT	UNIT COST	EXT. COST	REMARKS
02200	<b>SITE PREPARATION &amp; DEMOLITION</b>					
	• Clear and Grub for trails & revegetation	1600	SF	\$0.15	\$240	
02300	<b>EARTHWORK</b>					
	Rough Grading for New Trails & Park Entry	7400	SF	\$0.25	\$1,850	
	Finish Grading for all disturbed areas	7200	SF	\$0.30	\$2,160	
02700	<b>PAVINGS</b>					
	Ecostone Unit Pavers in parking area	5600	SF	\$7.00	\$39,200	
	Flagstone/Crushed Rock @ Park Entry	800	SF	\$5.00	\$4,000	
	Crushed Rock Primary Trails (5' wide)	800	LF	\$15.00	\$12,000	
	A.C. transition at Parking Area Entry	200	SY	\$6.00	\$1,200	
02800	<b>SITE IMPROVEMENTS</b>					
	• Bulletin Board	1	EA	\$5,000.00	\$5,000	
	Park I.D. Sign	1	EA	\$2,500.00	\$2,500	Stone Pilasters
	Portable Toilet Enclosure	ALLOW		\$1,500.00	\$1,500	
	Bollards	3	EA	\$250.00	\$750	
	Picnic Tables	3	EA	\$750.00	\$2,250	
	Trash Receptacles	2	EA	\$300.00	\$600	
	Benches	1	EA	\$400.00	\$400	
02900	<b>PLANTING</b>					
	• Shrub Thicket Habitat Planting Enhancement	500	SF	\$0.40	\$200	Seed & container plants
	• Forest Habitat Planting Enhancement	2000	SF	\$0.50	\$1,000	Trees & container plants

**II. Canal Area**

**02800 SITE IMPROVEMENTS**

Secondary Entry Sign	1	EA	\$1,500.00	\$1,500	
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**III. River Run**

**02800 SITE IMPROVEMENTS**

Park I.D. Sign	1	EA	\$2,500.00	\$2,500	Stone Pilasters
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<b>Subtotal</b>				\$78,850	
Design Contingency (7%)				\$5,519.50	
Estimated Base Construction Cost				\$84,370	
Soft Costs - Design, Engineering & Permitting) (20%)				\$16,873.90	
G.C. General Conditions, Bonds and Insurance (12%)				\$10,124.34	
G.C. Overhead and Profit (7%)				\$5,905.87	

**Total Construction Cost \$117,274**

**Notes**

1. Assumed that 50% of trails will utilize existing trail alignment.



Bryant Woods Park

**Phase 1**

**I. Bryant Woods Park**

<i>CSI Sec.</i>	<i>ITEM</i>	<i>QTY.</i>	<i>UNIT</i>	<i>UNIT COST</i>	<i>EXT. COST</i>	<i>REMARKS</i>
02200	<b>SITE PREPARATION &amp; DEMOLITION</b>					
	• Clear and Grub for trails & revegetation	58400	SF	\$0.15	\$8,760	
	Utility Relocation Underground	1600	LF	\$7.50	\$12,000	
	Misc. Site Demo	ALLOW	\$1,000.00	\$1,000		
02300	<b>EARTHWORK</b>					
	Grading for expanded Open Water Wetland	2700	CY	\$6.00	\$16,200	Avg. 3' deep, spoil on site
	Rough Grading for New Trails, Rest Spots & Pl	6400	SF	\$0.25	\$1,600	
	Finish Grading for all disturbed areas	300	SF	\$0.30	\$90	
02600	<b>DRAINAGE</b>					
	Culvert Crossings under trails	10	EA	\$150.00	\$1,500	
02700	<b>PAVINGS</b>					
	Flagstone/Crushed Rock @ plazas	2400	SF	\$5.00	\$12,000	
	Crushed Rock Primary Trails (5' wide)	2200	LF	\$15.00	\$33,000	
	Crushed Rock Secondary Trails (3' wide)	1845	LF	\$11.00	\$20,295	
	• Boardwalk Trail (5' wide)	150	LF	\$150.00	\$22,500	



Bryant Woods Park

<b>02800</b>	<b>SITE IMPROVEMENTS</b>					
	Secondary Entry Sign	1	EA	\$1,500.00	\$1,500	
	Stone Site Walls - 30" high	138	LF	\$200.00	\$27,600	
	Wildlife Observation Deck	1	ALLOW	\$25,000.00	\$25,000	Includes stone base & paving
	Interpretive Exhibits, Signs, Displays	1	ALLOW	\$10,000.00	\$10,000	
	Trash Receptacles	1	EA	\$300.00	\$300	
	Benches	2	EA	\$400.00	\$800	
	Wier Structure	ALLOW		\$10,000.00	\$10,000	
<b>02900</b>	<b>PLANTING</b>					
	• Nuisance Plant Removal	ALLOW		\$1,500		
	• Meadow Habitat Planting Enhancement	9700	SF	\$0.25	\$2,425	Seed & propagules
	• Shrub Thicket Habitat Planting Enhancement	7900	SF	\$0.40	\$3,160	Seed & container plants
	• Forest Habitat Planting Enhancement	28000	SF	\$0.50	\$14,000	Trees & container plants
<b>II. Canal Acres</b>						
<b>02300</b>	<b>EARTHWORK</b>					
	Rough Grading for New Trails	5000	SF	\$0.25	\$1,250	
<b>02700</b>	<b>PAVINGS</b>					
	Crushed Rock Primary Trails (5' wide)	1000	LF	\$20.00	\$20,000	
<b>III. River Run</b>						
<b>02800</b>	<b>SITE IMPROVEMENTS</b>					
	Pedestrian Bridge	1	EA	\$80,000.00	\$80,000	
	Property Line Fencing (encroachments)	1000	LF	\$8.00	\$8,000	black chain link 5' high
<b>02900</b>	<b>PLANTING</b>					
	Encroachment Plantings (1200 lf x 15' avg. wi	15000	SF	\$1.50	\$22,500	incl. demo existing
	<b>Subtotal</b>				\$356,980	
	<b>Design Contingency (7%)</b>				\$24,988.60	
	<b>Estimated Base Construction Cost</b>				\$381,969	
	<b>Inflation to Project Start (5% per yr.x 2yrs.=10%)</b>				\$2,498.86	
	<b>Soft Costs - Design, Engineering &amp; Permitting) (20%)</b>				\$76,393.72	
	<b>G.C. General Conditions, Bonds and Insurance (12%)</b>				\$45,836.23	
	<b>G.C. Overhead and Profit (7%)</b>				\$26,737.80	
	<b>Total Construction Cost</b>				\$533,435	

**Notes**

1. Assumed that 50% of trails will utilize existing trail alignment.

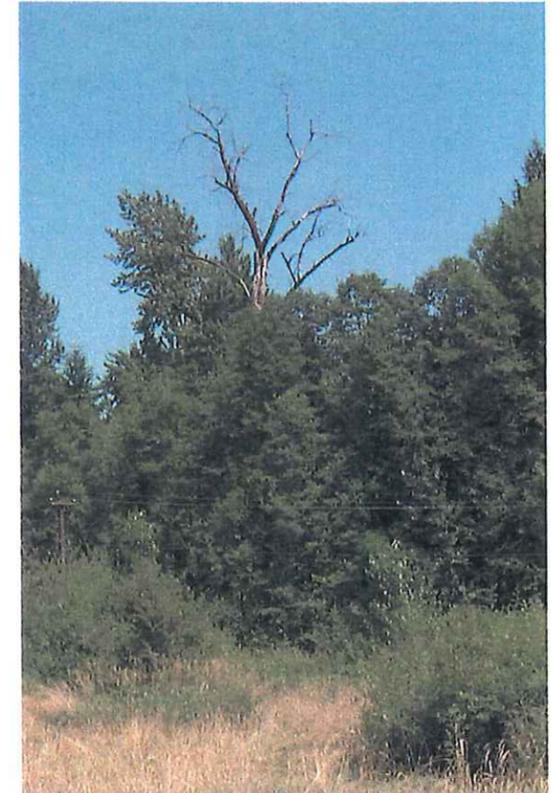
**Phase 2**

**I. Canal Acres**

CSI Sec.	ITEM	QTY.	UNIT	UNIT COST	EXT. COST	REMARKS
02200	<b>SITE PREPARATION &amp; DEMOLITION</b>					
	• Clear and Grub for trails & revegetation	12200	SF	\$0.15	\$1,830	
	Misc. Site Demo	ALLOW	\$500.00	\$500		
02300	<b>EARTHWORK</b>					
	Rough Grading for New Trails	7000	SF	\$0.25	\$1,750	
02600	<b>DRAINAGE</b>					
	Culvert Crossings under trails	5	EA	\$150.00	\$750	
02700	<b>PAVINGS</b>					
	Crushed Rock Secondary Trails (3' wide)	2400	LF	\$11.00	\$26,400	
	Interpretive Exhibits, Signs, Displays	ALLOW	\$2,500.00	\$2,500		
	Trash Receptacles	1	EA	\$300.00	\$300	
02900	<b>PLANTING</b>					
	• Nuisance Plant Removal	ALLOW	\$750.00	\$750		
	• Forest Habitat Planting Enhancement	6000	SF	\$0.50	\$3,000	

**II. River Run Park (West and East Parcels)**

02200	<b>SITE PREPARATION &amp; DEMOLITION</b>					
	• Clear and Grub for trails & revegetation	60000	SF	\$0.15	\$9,000	
	Misc. Site Demo	ALLOW	\$500.00	\$500		
02300	<b>EARTHWORK</b>					
	Grading for expanded Open Water Wetland	3500	CY	\$6.00	\$21,000	Avg. 3' deep, spoil on site
	Rough Grading for New Trails, Rest Spots & Pla	12000	SF	\$0.25	\$3,000	
	Finish Grading for all disturbed areas	4000	SF	\$0.30	\$1,200	
02600	<b>DRAINAGE</b>					
	Culvert Crossings under trails	5	EA	\$150.00	\$750	
02700	<b>PAVINGS</b>					
	Ecostone Unit Pavers in parking area	2000	SF	\$7.00	\$14,000	
	Flagstone/Crushed Rock @ plazas	1200	SF	\$5.00	\$6,000	
	Crushed Rock Primary Trails (5' wide)	1700	LF	\$20.00	\$34,000	
	Crushed Rock Secondary Trails (3' wide)	1650	LF	\$12.00	\$19,800	
	• Boardwalk Trail (5' wide)	100	LF	\$150.00	\$15,000	
	A.C. Parking Access Drive	240	SY	\$6.00	\$1,440	
02800	<b>SITE IMPROVEMENTS</b>					
	• Bulletin Board	1	EA	\$5,000.00	\$5,000	
	River Overlook	ALLOW	\$15,000.00	\$15,000		
	Bollards	3	EA	\$250.00	\$750	
	Interpretive Exhibits, Signs, Displays	ALLOW	\$7,500.00	\$7,500		



Bryant Woods Park



Bryant Woods Park

	Trash Receptacles	1	EA	\$300.00	\$300	
	Benches	1	EA	\$400.00	\$400	
	Wetland Control Structure & Pipe	ALLOW	\$5,000.00	\$5,000		
02900	<b>PLANTING</b>					
	• Nuisance Plant Removal	10000	SF	\$0.15	\$1,500	
	• Meadow Habitat Planting Enhancement	10000	SF	\$0.25	\$2,500	Seed & propagules
	• Shrub Thicket Habitat Planting Enhancement	8500	SF	\$0.40	\$3,400	Seed & container plants
	• Forest Habitat Planting Enhancement	40000	SF	\$0.50	\$20,000	Trees & container plants
	<b>Subtotal</b>				\$224,820	
	<b>Design Contingency (7%)</b>				\$15,737.40	
	<b>Estimated Base Construction Cost</b>				<b>\$240,557</b>	
	Inflation to Project Start (5% per yr.x 2yrs.=10%)				\$22,482	
	Soft Costs - Design, Engineering & Permitting) (20%)				\$48,111	
	G.C. General Conditions, Bonds and Insurance (12%)				\$28,867	
	G.C. Overhead and Profit (7%)				\$16,839	
	<b>Total Construction Cost</b>				<b>\$356,857</b>	

