

BEFORE THE BOARD OF COUNTY COMMISSIONERS  
OF MULTNOMAH COUNTY, OREGON

In the Matter of Considering Approval     )  
of Event Sponsors Charging Admission     )  
for Use of the Public Right-of-Way for     )  
a Special Event                             )  
RESOLUTION  
#90-39

WHEREAS, ORS 374.310 grants counties the authority to control the use of county rights-of-way including streets, bridges, and facilities, and

WHEREAS, ORS 374.310 expressly requires a person to obtain written permission from the county before doing so, and

WHEREAS, MCC 11.60.070 establishes the requirement for a permit and a fee for use of the county right-of-way, and

WHEREAS, the Multnomah County adopted street standards establish rules for special events in the public right-of-way, and

WHEREAS, those rules provide for use of the public right-of-way by private enterprise sponsors, but do not make provision for events at which admission is charged for the use of the public right-of-way.

NOW, THEREFORE, BE IT RESOLVED, that the Board of County Commissioners approves consideration of special events in which the sponsors will charge admission for use of the public right-of-way, and assigns the Director of Environmental Services the responsibility to create and implement such rules necessary to maximize public safety and convenience when such events are allowed.

ADOPTED this 8th day of March, 1990.

BOARD OF COUNTY COMMISSIONERS  
MULTNOMAH COUNTY, OREGON

  
Gladys McCoy, Chair

REVIEWED:

LAURENCE KRESSEE, County Counsel  
for Multnomah County, Oregon

By 

Assistant County Counsel

**Multnomah County**

**Natural Area Protection and  
Management Plan**

**Board of County Commissioners**

**Gladys McCoy, Chair of the Board**

**Commissioner Pauline Anderson**

**Commissioner Gary Hansen**

**Commissioner Rick Bauman**

**Commissioner Sharron Kelley**

## Department of Environmental Services

Paul Yarborough, Director  
Charles Ciecko, Director Parks Services Division

### Parks Advisory Committee

Robert Findley  
Dr. Arch Diack  
Jean Ridings  
Vivian Starbuck  
Dr. Charles Becker Sr.  
Christine Lightcap  
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### Natural Area Subcommittee

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## THE VISION

Multnomah County will be a community where both people and nature flourish.

**PLAN PURPOSE:**

In acknowledgment of the 20th anniversary of Earth Day, the Multnomah County Board of County Commissioners passed a resolution which created a Natural Area Acquisition and Protection Fund. The creation of this fund coincided with the dedication of Multnomah County's first wildlife refuge, Beggars Tick Marsh, a 20 acre wetland in SE Portland.

These actions are reflective of a growing awareness that the natural resources in and around the Metropolitan Area are essential to maintaining the quality of life associated with a healthy community.

Clean air, water, a diversity of fish and wildlife, accessible and beautiful natural areas affording a wide range of recreational and educational opportunities have all made Multnomah County a desirable place to live, work and recreate. As more and more people are attracted to our region, it is essential to develop strategies which promote well planned growth. A healthy, viable natural area system which conserves the region's natural resources is an integral element of successful growth management.

The Natural Area Protection and Management Plan is a conscious effort by the Board of County Commissioners to be proactive rather than reactive in regard to this critical issue. The purpose of this plan is to create a framework to select natural areas for acquisition by the county and to identify means to preserve, protect and enhance natural resource values on such lands. Because natural areas often transcend political boundaries, the county must work cooperatively with other agencies to protect biologically functional systems in natural areas included on Goal 5 inventories.

A critical element in the long-term protection of a viable natural area system will be the creation of a comprehensive environmental education and interpretation program for county residents and visitors. This program will promote the wise use and enjoyment of natural areas and informed decisions regarding environmental issues facing the region.

Direct daily contact with nature should not become a story from our past but rather a living legacy for future generations.

## POLICIES

**POLICIES:**

To achieve the vision the following policies are hereby adopted:

**Policy #1 - Acquisition and Protection**

- A. The county shall work towards the restoration/protection of the region's natural area systems by acquiring ownership of sufficient habitat to support the historic diversity of flora and fauna native to Multnomah County. The following areas may include remnants of functioning natural area systems:

Southwest Hills - Tryon Creek

Tualatin Mt. Corridor

Columbia River Lowlands/Slough/Islands

Willamette River

Fairview Lake and Creek

Multnomah Channel/Sauvie Island

Sandy River/Tributaries

Columbia River Gorge

Larch Mountain

Boring Lava Hills

Volcanic Buttes

Johnson Creek and tributaries/Beggars Tick Marsh

However, this list is not intended to identify Goal 5 resources.

Additional study may indicate that an update to the county's Goal 5 inventory is necessary.

NOTE: See page 28 for system descriptions.

B. Corridors that connect and help form these natural area systems shall be protected in order to minimize fragmentation of habitat and isolation of species.

C. Publicly-owned natural areas should be protected and their value enhanced through the appropriate management of adjacent properties.

This may be achieved by:

- the adoption of land use regulations to protect Goal 5 resources listed on the county's inventory,
- the provision of incentives which encourage wise land stewardship and
- education of property owners.

D. Through its Department of Environmental Services, the county shall act as an advocate for the protection, conservation and

restoration of natural areas.

- E. The county shall work cooperatively with appropriate federal, state, regional, local agencies and non-profit organizations to protect and enhance the natural resources of Multnomah County.

**Policy #2 Finance**

- A. The county shall endeavor to review, evaluate and dispose of surplus property in a timely manner in order to provide revenue for the implementation of this plan. (In April 1990, the Board of County Commissioners created a Natural Areas Acquisition and Protection Fund, and allocated 50% of the proceeds from the sale of unrestricted county surplus property.)
- B. In order to leverage county resources, efforts will be made to create and foster partnerships with other agencies, businesses, service groups and citizens.
- C. The county shall support the development of new funding sources on a regional, state and federal level.
- D. When feasible, the county shall recover a portion of operation and maintenance costs through the implementation of a user fee system

and/or development of revenue generating recreational facilities.

**Policy #3 Management**

- A. As natural areas are acquired, measures shall be taken to protect the land from uses that have had or may have a detrimental impact on fish and wildlife habitat or recreational resources.
- B. A resource information base shall be established for the purpose of monitoring the ongoing integrity and health of each site.
- C. To ensure wise stewardship, a management plan shall be adopted for each site. The plan shall identify guidelines for resource protection, enhancement, utilization and maintenance.
- D. Prior to allowing public use, sufficient funds shall be appropriated for operations and maintenance costs consistent with the approved management plan.
- E. The development of recreational facilities may be pursued when consistent with approved management plans.

**Policy #4 Public Involvement**

- A. The public shall be encouraged to participate in the selection of natural area sites for acquisition of fee title or conservation

easements.

- B. The management planning process for each site shall incorporate a public involvement element.
- C. The county will foster the development and use of alternative labor, in the form of citizen volunteers, service groups, inmate crews, etc., for various aspects of operations and maintenance of natural areas.

**Policy #5 Education**

- A. The county shall endeavor to provide an educational and interpretive program which:
  - 1. Promotes public awareness of our relationship to and dependence on finite natural resources.
  - 2. Provides a foundation for informed public decisions regarding the management of natural resources.
  - 3. Encourages appropriate use and appreciation of publicly-owned natural areas.
- B. Site specific educational and recreational opportunities shall be identified in each management plan.

**Policy #6 Land Use and Development**

- A. It is not feasible to protect all natural areas and corridors by placing them in public ownership. The county should utilize its land use planning authority to protect significant natural areas by amending the county's land use planning documents where appropriate.

**Policy #7 Transportation**

- A. It is the intent of Multnomah County to design, construct and maintain transportation systems which avoid or minimize impacts to the natural areas identified under Policy #1 of this plan.

## PLAN IMPLEMENTATION

## **POLICY IMPLEMENTATION PLAN:**

The work tasks outlined in the implementation plan are dependent on budget and staffing constraints. Consequently, a phased schedule may be required.

### **Policy #1 Acquisition and Protection**

The remaining natural areas in Multnomah County range in size from tiny islands surrounded by urbanization to areas over 100 acres located outside of the urban growth boundary. Preliminary figures indicate governments own approximately 10% of the natural areas in the Metropolitan area.

In order to create a viable system of natural areas with the funding available, the county should concentrate its resources on acquiring areas that are of county-wide significance, while encouraging private and local government protection of other significant areas.

Conservation will, in most cases, require cooperative partnerships with other jurisdictions, citizens groups and private property owners.

The values of natural areas are greatly increased if sites are connected by natural land and water corridors that prevent isolation of animal and plant species. Prior to acquiring natural areas attention will be given to how a site will enhance the connectivity of a system. Interconnected natural areas contribute to the long-term integrity of natural area systems. A diverse biological habitat is possible only if corridors of sufficient size are preserved or restored. Smaller natural area remnants or "islands" of natural areas are vulnerable to human disruption and require constant management and protection to maintain their natural condition (Pyle 1980).

Acquisition of property or conservation easements will be evaluated based on criteria listed on page 42-43.

In order to implement Policy #1, the following work tasks should be initiated or continued:

1a. The Parks Services Division shall work with the Metropolitan Greenspaces Program to identify natural areas to be acquired and to designate the lead agency for acquisition. For instance, Multnomah County may be the lead agency for acquisition of properties along the portion of Johnson Creek located outside the urban growth boundary, while Gresham or Portland may be the lead agency within their jurisdictional boundaries with the county as a potential partner.

Where Multnomah County will be the lead agency, the county will develop a work plan to identify property boundaries, existing zoning, ownership patterns, protection strategies, potential partnerships and other relevant factors.

1b. Establish procedures to regularly review all county properties and tax foreclosed properties to determine if any have value as natural areas. Properties with natural area values may be retained by the county or transferred to another appropriate jurisdiction.

- 1c. Continue biological surveys and data analysis necessary to identify target sites for acquisition or protection.
- 1d. Share information with cities and service groups and non-profit organizations about natural areas of interest and encourage their participation in the protection of these areas.

### Policy #2 Finance

The vision of creating a community where nature and people both flourish can be accomplished only by timely action. Multnomah County is expected to experience significant growth over the next 20 years. As the region continues to urbanize, land values will escalate and opportunities to acquire large tracts of undeveloped land will become increasingly rare. To assure adequate open space and protection of natural systems, the majority of the Parks Services Division's resources should be concentrated on acquisition and revenue generation. Since revenue for the acquisition fund is derived from the sale of county surplus property (see page \_\_\_\_), it is essential that surplus properties be reviewed and sold expeditiously. As Fund resources will be limited in relationship to the need, all opportunities to leverage county funds should be explored.

In the past, the Park Services Division has emphasized revenue generation in order to minimize dependence on the general fund. This emphasis should continue to assure a financially secure future for the maintenance and management of the county's natural area sites. It is likely, however, that "user fees" will not provide adequate resources for this purpose. Therefore, the Division must pursue other funding options outside of the General Fund.

In order to implement Policy #2 the following work tasks are recommended:

- 2a. The Property Management Division and the Park Services Division will develop a work plan for the sale of surplus properties and the purchase of natural area sites. This work plan will include a process to evaluate natural area values on land which may be sold.
- 2b. The Park Services Division will determine methods by which new revenue can be generated and resources leveraged after reviewing existing roles, responsibilities and budget resources.

### Policy #3 Management

Once acquired, natural areas will need clear, concise management plans to guide current and future administration.

Without a management plan, well intentioned improvements can quickly become threats to the integrity of the resources which acquisition was intended to protect. Too many trails, roads, parking lots, etc., and the resulting visitation can quickly erode a site's value. The type and level of public use should be determined with the appropriate expertise and public participation.

To measure the impact of outside influences and public use, an information base of a site's air and water quality, soil condition, botanical and wildlife components should be developed and regularly updated. Resource monitoring is essential to maintain the integrity of the site and the public's investments.

In addition to a specific management plan for each site, appropriate maintenance techniques should be identified to guide park staff. Maintenance of a natural area will require, for example, education in areas such as Integrated Pest Management, and the identification and removal of exotic plant species. Appropriate maintenance techniques shall be incorporated into the Division Maintenance Standards and Baseline Maintenance Schedule documents.

In order to implement Policy #3 the following work tasks should be initiated:

- Task 3a. The Park Services Division shall establish indicators by which site quality can be monitored.
- 3b. The Park Services Division shall develop a work plan for the gathering of historical, current and future base information for all county-owned natural areas.
- 3c. The Park Services Division shall develop a management manual or incorporate into existing manuals appropriate techniques for the maintenance of natural areas.

#### Policy #4 Public Involvement

Historically the Park Services Division has encouraged and solicited public involvement not only for planning and policy guidance but also for the donation of individual skills and services.

Participating in the Environmental Education program, leading salmon walks, serving on the Park Advisory Committee or the Blue Lake Task Force, or providing labor for maintenance and conservation projects are all examples of citizen involvement with Multnomah County park programs.

As part of this plan, the public was encouraged to become involved by nominating natural area sites worthy of consideration for protection. In all, 20 sites were nominated. This nomination process will occur annually to help communicate to the County, a site's importance to residents. Public interest is an important factor to consider in ranking sites for acquisition. For long-term stability and protection of a site, public involvement and support is essential. Development of "friends" groups also involves residents effectively.

In order to implement Policy #4 the following work tasks should be initiated:

- Task 4a. The Park Services Division will continue established public involvement procedures.
- 4b. The Park Services Division will continue co-operative efforts with the Metropolitan Greenspaces Program to heighten public awareness regarding natural area values.
- 4c. The office of Citizen Involvement shall develop a work plan to facilitate and encourage the development of "friends" groups.

## Policy #5 Education

The long-term success of any program undertaken by a governmental agency depends on public education. Education is a prerequisite to public involvement and the development of a constituency for natural areas.

Taxpayers should be made aware of the resources available for their enjoyment, and the long-term economic value of wise land stewardship.

Education programs can include passive elements such as signage and brochures or active elements such as school programs, living history, nature centers and special events.

To be effective, a multifaceted education program will be required.

In order to implement Policy #5 the following work tasks should be initiated:

- 5a. The Park Services Division will maintain or expand educational efforts within financial constraints.
- 5b. The Park Services Division will develop partnerships with other agencies, non-profit organizations, and volunteers to leverage education resources.

5c. The Park Services Division will identify educational opportunities as part of the management planning process for natural area sites.

Policy #6 Land Use and Development

As the county's land use and development focus continues to shift from urban issues to rural issues, significant natural areas on privately-owned lands that are listed on the Goal 5 inventory must be protected to conserve resource values without preventing reasonable use of the land.

Private land, within identified natural systems, may be integral to maintaining valuable habitats, connecting corridors and their associated values.

Development densities, vegetation management, development setbacks, storm water management, and construction site standards are elements which may affect the quality and viability of natural systems.

Although the Board of County Commissioners is mindful of concerns regarding the rights of property owners, it also recognizes the responsibility of all landowners to develop and manage property in a manner which is consistent with the conservation of "publicly-owned" resources such as fish, wildlife, scenery, air and water.

In order to implement Policy #6 the following work tasks should be initiated:

The Land Use and Development Division will:

- 6a. Evaluate whether lands acquired by the county as natural areas and nearby lands should be considered for protection under Goal 5.
- 6b. Determine if sufficient information exists about the location, quality and quantity of Goal 5 resources on such lands to properly complete the Goal 5 process.
- 6c. Identify the steps necessary to obtain additional information and the estimated costs if insufficient information exists to complete the Goal 5 process.
- 6d. Begin the Goal 5 process where indicated if sufficient information is available to complete the Goal 5 process in accordance with statewide land use planning goals and implementing regulations.

## Policy #7 Transportation

Policy #7 also recognizes the need for an integrated approach to natural resource conservation. As new road systems are designed and existing roads reconstructed, potential impacts on natural resources should be assessed and efforts made to avoid or mitigate these impacts.

The proliferation of heavily traveled roads within Multnomah County can contribute to the degradation of natural areas in several ways. Examples include:

- increased storm water run-off.
- barriers to migration - both terrestrial and aquatic species.
- potential contamination of surface water resulting from the use of herbicides.
- sedimentation of streams resulting from road construction projects.
- high "road-kill" rates along seasonal migration routes.

In order to address these concerns and implement Policy #7, the Transportation Division should develop a work plan to:

- 7a. Identify roads within natural area systems in Multnomah County.

- 7b. Develop road design and construction standards which incorporate bio-engineering techniques.
- 7c. Review and evaluate use of herbicides along roads located adjacent to perennial streams.
- 7d. Document locations of chronic unauthorized garbage dumping for clean-up and installation of physical barriers.
- 7e. Develop a storm water management program which meets or exceeds current state and federal standards.
- 7f. Work with Oregon Department of Fish and Wildlife to identify stream crossings which have created migration barriers and schedule corrective measures.
- 7g. Work with Oregon Department of Fish and Wildlife to identify areas with high "road-kill" rates and develop strategies to reduce mortality.

## NATURAL AREA SYSTEMS

## **NATURAL AREA SYSTEMS:**

### **Southwest Hills - Tryon Creek**

The Southwest Hills are located in southwest Portland, south of the Balch Creek Watershed and downtown. It is an area characterized by steep forested ravines and drainages. This landscape was once dominated by fir, hemlock, maple, and a few stands of Oregon ash. Many of the once forested tracts have been replaced by residential development, resulting in a highly urbanized area of the city.

Tryon Creek is a 4,477 acre drainage basin with its headwaters at the confluence of Fall Creek near SW 26th and Taylors Ferry and an unnamed creek. The tributaries and mainstem of Tryon Creek flow through narrow canyons primarily forested with deciduous species. Residential development is beginning to encroach on many of the steep narrow drainages that are tributary to Tryon Creek, affecting water quality and wildlife habitat values. However, Tryon Creek still supports a remarkable assemblage of natural vegetation and wildlife. Tryon Creek and its tributaries create linkages to the upland

forests of the Tualatin Mountains. Tryon Creek State Park, located within this drainage, is rather unique for its size and natural qualities, although it is somewhat overshadowed in the Portland area by the much larger Forest Park.

#### **Tualatin Mt. Corridor**

The Tualatin Mountains, named by Native Americans, are commonly known as the Northwest Hills. They are a narrow northwest trending, complexly faulted range that rises about 1,000 feet above the City of Portland and Tualatin Basin. The eastern slopes of the Tualatin Mountains are drained by creeks flowing to the Willamette River. Several of these creeks have managed to escape the ravages of urban development and continue to support viable population's of resident and anadromous fish species. Examples of these important remnants include Balch, Miller and McCarty Creeks. The western face of the range slopes more gently to the Tualatin Valley. This mountainous landscape was once dominated with fir, hemlock and maple forests, with a few stands of Oregon ash along streams. Many of the once forested tracts have

been cleared and large tracts of residential development now prevail. Five thousand acre Forest Park, the largest natural park in the Portland/Vancouver Metro area is located within the Tualatin Mountains. The range provides a travel corridor for wildlife between Forest Park, the Tualatin Valley and Coast Range to the west and northwest.

The Fanno Creek Corridor drains the west side of the Tualatin Mountains including Portland, portions of Multnomah County, Beaverton and Tigard. Fanno Creek meanders 14 miles through residential, commercial and industrial lands before entering the Tualatin River. The upper reaches and headwater tributaries of Fanno Creek (to SW Oleson Road), partially within Multnomah County, flow through densely forested and residential areas. There are still scattered wetlands throughout the upper reaches of the creek. Cutthroat trout are known to spawn in the few remaining silt-free gravel beds. The lower stretches of the creek have been seriously degraded due to increased urbanization, residential, commercial and industrial encroachment.

## Columbia River Lowlands/Slough/Islands

The Columbia River, the largest river on the Pacific Coast of North America, cuts through the Cascade Mountains on its course westward to the Pacific Ocean. The Columbia River lowlands were once a mosaic of lakes, sloughs, creeks and wetland forests. Within Multnomah County, Smith and Bybee Lakes, Burlington Bottom (and adjacent lands to the north and south), the Columbia Slough and parts of Sauvie Island are remnants of this historic landscape. Columbia River dams, levee systems and industrial, commercial and agriculture development have contributed to the decline of this historic wetland landscape. Bald eagles, yellow-billed cuckoos, western pond turtles, red-legged frogs, wapato and Columbia cress, formerly common plant and animal inhabitants of the Columbia River system, are currently rare at best.

From its headwaters at Fairview Lake, the Columbia Slough flows west through agricultural, industrial and airport properties, 21 miles to its confluence with the Willamette River at Kelly Point Park. Formerly an active floodplain, lands surrounding the Slough have been diked, drained and filled leading to their utilization for agricultural and industrial purposes.

These alterations have transformed a system of braided channels, wetland and riparian areas into a single channel plagued with water quality problems associated with storm water run-off, sewage discharges and nearby land uses.

Despite its problems, the Columbia Slough continues to provide the important function of linking remnants of this once vast complex.

Blue Lake and the various Columbia River Islands (i.e., Government, McGuire, Gary, Flagg Islands, Hayden, etc.) are included in this Natural Area System.

#### **Willamette River**

The Willamette River weaves its way through the Willamette Valley from its headwaters in both the Cascades and Coast Ranges south of Eugene to its confluence with the Columbia River at Kelly Point Park. Once a mosaic of braided channels, lakes, sloughs, creeks and wetland forests, the Willamette has been altered by intensive dredging, filling and development along its banks. Within Multnomah County, the shores of the Willamette are predominated by industrial, commercial and residential uses including downtown Portland.

Elk Rock Island, Ross and Toe Islands, Oaks Bottom Wildlife Refuge, Kelly Point Park and portions of Sauvie Island are examples of natural areas remaining along the river. Today, place names on a map of the city describe rich wetland and riparian areas once prevalent. These names are poetic reminders of a time when Swan Island actually was an island, Mock's Bottom--a productive wetland system and Guild's Lake--a 50-acre pond.

#### **Fairview Lake and Creek**

Fairview Creek originates in a highly urbanized portion of Gresham, and flows north passing through areas characterized by urban development. After passing under Interstate 84 at Fairview, the creek flows briefly through agricultural lands and then into Fairview Lake. The entire Fairview Creek watershed is located within the Urban Growth Boundary. This stream is characterized by a patchwork of healthy native riparian vegetation, urban development, agricultural uses (to the edge of the creek) and underground culverted portions. Fairview Lake, the headwaters of the Columbia Slough was formerly an emergent wetland that has been dredged to enhance storm water retention. Fairview Creek and Lake links the forested buttes in Gresham with the Columbia Slough and the Columbia River.

### **Multnomah Channel/Sauvie Island**

Multnomah Channel/Sauvie Island are located in northwest Multnomah County near the confluence of the Willamette and Columbia Rivers. The area is a remnant of a once vast system of braided channels, wetlands and riparian areas along the Willamette and Columbia Rivers. The combination of wetland forests, upland forests, emergent wetlands, open water and agricultural areas contribute to great biodiversity. This area provides habitat for tundra swan, bald eagle, western pond turtle, yellow-billed cuckoo, red-legged frog, Columbia White-Tailed Deer and several rare plant species.

### **Sandy River**

The Sandy River rises on the west side of Mt. Hood at the Reid and Sandy glaciers and flows northwest to its confluence with the Columbia River. The Sandy River is notable for its oxbows, timber growth down to the waterline, native salmon and steelhead populations and recreation opportunities. Early surveyors described the Sandy drainage as a township containing a large amount of fine farming lands and some excellent fir and cedar timber. Today, the general health and vitality of the Sandy's aquatic and adjacent riparian and

upland habitats are good to excellent. The Sandy River is an important corridor connecting the Cascade Forests with the Columbia River while providing important habitat for a myriad of wildlife including elk, bear, deer, coyote, beaver, osprey and bald eagle. The segment of the Sandy located between Dodge and Dabney Parks is included in both the State Scenic Waterway Program and National Wild and Scenic River System. The lower six miles is included in the Columbia Gorge National Scenic Area.

Salmon and Steelhead utilize the Sandy and its tributaries for spawning and rearing purposes. A variety of resident fish species are also found throughout the basin.

Several tributaries (Gordon Creek, Buck Creek, Trout Creek and Big Creek) flow into the Sandy near Oxbow Park from the northeast. These streams are considered to be some of the healthiest in the Metropolitan region.

Beaver and Kelly Creeks flow northeast into the Sandy near Lewis and Clark State Park. The latter originates near Pleasant Home and flows into Beaver Creek near Mt. Hood Community College. Much of the area surrounding Kelly

Creek is currently being developed for residential uses. Agricultural uses are common in the upper reaches of Beaver Creek while residential uses predominate within Troutdale city limits. These land uses have degraded the value of these two riparian systems as well as water quality, quantity and associated fish production potential. Nonetheless, Beaver and Kelly Creeks continue to provide riparian corridor habitat for a variety of birds, deer, and small mammals.

### Columbia River Gorge

The Columbia River Gorge National Scenic Area extends 80 miles along the Columbia River, from the Sandy River east to the Deschutes River. The diverse and unique features and formations within the Gorge are a result of cataclysmic floods, volcanic action and landslides. A combination of moss covered basalt cliffs, lush temperate rain forest and waterfalls characterize the portions of the scenic area within Multnomah County. The National Scenic Area is jointly managed by the U.S. Forest Service and Columbia Gorge Commission. A Comprehensive Management Plan was adopted by the Gorge Commission in late 1991.

## **Larch Mountain**

At 4,056 feet, Larch Mountain is the highest point in Multnomah County. Much of Larch Mountain is located within the Mt. Hood National Forest where streams rise and flow north to form the Columbia Gorge waterfalls or southwest into the Sandy River. These streams provide important habitat for resident and anadromous fish species.

Larch Mountain's elevation makes it the only place in the County where Pacific Silver and Noble Fir grow. The forests of Larch Mountain are habitat for a variety of large mammals including elk, deer, cougar and bobcat while providing a scenic backdrop to the urbanized lowlands.

## **Boring Lava Hills**

The Boring Lava Hills, located in southern Multnomah and eastern Clackamas Counties, are of the Kelso Slope geologic formation and are characterized by clay soils and steep slopes. The hills form a forested mosaic resulting from logging practices, agriculture and residential development. The forested area are dominated by mixed conifer and deciduous species (Douglas fir, red alder, and big leaf maple). The Boring Lava Hills are linked to many of the forested buttes by the Johnson Creek Corridor.

## **Volcanic Buttes**

East of the Willamette, the nearly flat terrain which rolls gently upward toward the foothills of the Cascades is broken by numerous forested, volcanic buttes. The volcanic buttes begin at Mt. Tabor and extend east and include Rocky Butte, Powell Butte, Gresham Butte, Gabbert Hill, Towle Butte, Butler Ridge, Jenne Butte, Grant Butte, and Hogan Butte. Historically, the buttes were heavily timbered with fir, cedar, hemlock and maple. Hillsides that were once covered by predominantly coniferous forest are now characterized by mixed forests--a successional stage of regrowth associated with forest practices. Some volcanic buttes are subject to increasing residential development pressures.

These major topographic features provide relatively large blocks of upland forest habitat which are loosely connected by riparian corridors such as Johnson Creek. The volcanic buttes also provide scenic overlooks and backdrops throughout urbanized East Multnomah County.

## Johnson Creek and Tributaries/Beggars Tick Marsh

Johnson Creek is a tributary of the Willamette River originating west of the Sandy River near Orient. Flowing approximately 18 miles west through the City of Gresham, unincorporated East Multnomah County, Portland, and unincorporated North Clackamas County, Johnson Creek enters the Willamette River in the City of Milwaukie. The Johnson Creek Corridor is a mosaic of natural areas interspersed with large areas which have been developed to various intensities, integrated with the water course which provides food, shelter, breeding and rearing areas for aquatic and terrestrial wildlife. Agricultural and residential uses characterize the Creek from the headwaters to SE 92nd Avenue. West from this point, predominant land uses include: residential, industrial and commercial development. Land uses throughout the watershed have impacted water quality and quantity. Subsequently, the productivity of this urban stream has been significantly compromised. Johnson Creek is an important wildlife corridor connecting various volcanic buttes and

wetland areas with the Willamette River. It is one of the few remaining free-flowing creeks of its size in the Metropolitan Area. The less disturbed stretches of the creek are characterized by western red cedar, red alder, cottonwood and willow riparian forests. Beggars Tick Wildlife Refuge, located within the Johnson Creek watershed, is a 20+ acre wetland complex situated near SE 111th and Foster Road.

## SITE EVALUATION CRITERIA

## **Natural Area Site Evaluation Form:**

In addition to a biological survey (see page \_\_\_\_\_) all sites considered for acquisition will be reviewed based on the items listed in this form. The criteria in this form is a mixture of objective and subjective observations on the part of the field inspector. This information will be used to narrow down properties targeted for acquisition. A copy of the form is on page 44.

The topics evaluated are:

### **Rare or Unique Plants, Plant Communities or animals:**

- Are there any rare species on the site?
- Does the site provide habitat or a food sources for a rare species in the general area?
- Are the above questions relevant to any species that is unique to the urban area?

### **Connectivity:**

- Does the site provide a linkage to other natural areas?
- Is the site important in preserving a terrestrial or aquatic migration corridor?
- Does the site provide habitat in the life cycle of a species, i.e., nesting area for birds, winter range, etc.
- Is the site hydrologically important to adjacent streams or wetlands?

### **Biodiversity:**

- How many habitat types are represented on the site?
- Are the habitat types sufficient in size to support a variety of species.

### **Historic Losses:**

- Is the site representative of a vegetative community that is threatened or in short supply in the region?

### **Expansion to a protected natural area:**

- What protected natural area is the site related to?
- Will the site help expand or buffer the protected natural area?
- Will protection of this site increase the protected site's biodiversity or connectivity?

### **Resource degradation:**

- Does the site show evidence of anything that could prove a management problem?
- For instance is there illegal dumping, off-road vehicle use, evidence of hazardous waste, or poaching activity?
- How serious is this problem?

### **Developments Potential:**

- What types of development, if any, can take place without jeopardizing the resource?
- Does the whole site need to be acquired?
- What kind of development would be compatible with the resource?

**MULTNOMAH COUNTY NATURAL AREA PROTECTION AND  
MANAGEMENT PROGRAM**

**SITE EVALUATION FORM**

Site Name:

Natural Area System:

Site Location; streets, tax lots:

Site Size:

Numbers of Applicable Polygons:

One paragraph overall description of site:

Rare plants or animals    yes   or   no  
Description:

Connectivity    yes   or   no  
Description:

Biodiversity    yes   or   no  
Description:

**Site Evaluation Form**  
**Page 2**

**Historic losses    yes   or   no**  
**Description:**

**Area Deficient in Natural Areas    yes   or   no**  
**Description:**

**Expansion to Existing Natural Area    yes   or   no   (polygon numbers)**  
**Description:**

**Preliminary Assessment of Resource Degradation:**

**Development Potential:** (What types of development, if any, can take place on the site without conflicting resource.)

**Recommendation for Acquisition    yes   or   no**  
**Rationale:**

Info. Source Code \_\_\_\_\_ Site Code \_\_\_\_\_

Date this form filled out: \_\_\_\_\_

**NATURAL AREA INFORMATION DATABASE**

The items on the left side of the page are coded into the master database which will eventually go into Metro's arcinfo system for their Natural Area inventory. A number of other data files containing species occurrence information for plants and animals will also be generated. For details, see the attached appendices.

\_\_\_\_\_ (1-4) Site Number (from workshop)

\_\_\_\_\_ (5-7) Information Source Code \_\_\_\_\_ W - workshop, F-field trip, O - other including subsequent professional field surveys, S - field ABC survey by Natural Area Inventory (NAI) staff, H - historical survey

\_\_\_\_\_ (8-17) Investigator's Name(s) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_ (18-23) Date of field survey of site \_\_\_\_\_ MM/DD/YY  
MMDDYY

\_\_\_\_\_ (24-27) Time of field survey \_\_\_\_:\_\_\_\_ to \_\_\_\_:\_\_\_\_ HH:MM, use 24-hour  
0000

Date(s) of other visit(s) \_\_\_\_\_  
\_\_\_\_\_ MM/DD/YY

\_\_\_\_\_ (28-30) Total hrs on site, should be cumulative total as additional  
000 time is spent there.

Purpose of visit \_\_\_\_\_ for other  
and workshop data

\_\_\_\_\_ (31-36) Site Number 0:00:000 County:City:Number  
000000 County: 1-Clackamas, 2-Clark, 3-Multnomah, 4-Washington  
ities: 1-Beaverton, 2-Camas, 3-Cornelius, 4-Durham, 5-Fairview,  
6-Forest Grove, 7-Gladstone, 8-Gresham, 9-Happy Valley, 10-  
Hillsboro, 11-Johnson City, 12-King City, 13-Lake Oswego, 14-  
Milwaukie, 15-Oregon City, 16-Portland, 17-Rivergrove, 18-Sherwood,  
19-Maywood Park, 20-Tigard, 21-Tualatin, 22-Troutdale, 23-  
Vancouver, 24-Washougal, 25-West Linn, 26-Wilsonville, 27-Wood  
Village.

Site Number: 1-999

Subbasin \_\_\_\_\_ Use State Water Resources or ODFW codes  
River mile \_\_\_\_\_  
Site name \_\_\_\_\_ (words)

Info. Source Code \_\_\_\_\_ Site Code 09

\_\_\_\_\_ (37-48) Site coordinates \_\_\_\_\_ (gis  
000000000000 coordinates)

\_\_\_\_\_ (49-51) Land Classification Code \_\_\_\_\_ 3-letter code, same as used  
AAA in NY City study (Cornell Laboratory for Environmental  
Applications of Remote Sensing, undated).

\_\_\_\_\_ (52-57) Cover type code from aerial photo \_\_\_\_\_ : upland or  
AAA00A wetland, veg code, density, percent deciduous, riparian

(52) Upland or wetland: U-upland, W-wetland; based on National  
Wetland Inventory maps or other wetland inventories

(53) Veg code: F-forest (dominated by trees), S-shrub-scrub  
(dominated by shrubs, few or no trees present), M-meadow,  
grassland, or emergent (dominated by herbaceous  
vegetation, few or no trees or shrubs present), B-bare  
ground (little or no vegetation present), R-rock outcrop,  
W-water body (these are self-explanatory)

(54) Veg density:

C-closed, crowns mostly touching or open by less than 1/4  
crown diameter

O-open, crowns mostly not touching, separated by 1/4 to  
1 1/2 crown diameter

S-savannah like, scattered crowns separated by more than  
1 1/2 crown diameter

(55-56) Percent deciduous species, estimated visually and  
recorded as increments of 10%: e.g., 0,10,20,...90,99.  
Ninety-nine percent is used to represent 100% to save  
space in the database. This variable relates only to  
woody vegetation classes (forest and shrub-scrub).

(57) Riparian or adjacent to water body. If this is the case,  
an R is added as the last letter of the code.

— (58) Site Character: \_\_\_\_\_ 1-natural, 2-developed/disturbed, 3-agri-  
cultural

Trees: (Information to TREES file, place 1 for each species  
present)

— (59-60) Number of tree species identified \_\_\_\_\_  
Dominant species (most abundant species whose percent cover  
collectively reaches 50% or more, plus any other species  
comprising 20% cover or more [as defined in Wetland  
Training Institute 1989]): \_\_\_\_\_

\_\_\_\_\_

Listed as 4-letter species codes given in Garrison and  
Skovlin (1976, first two or three letters of genus  
and species)

Place a mark in the square containing all species  
observed on the TREES sheet, attached.

— (61) Rare/Unique species: \_\_\_\_\_  
Y for yes \_\_\_\_\_ list codes, drawn from

Info. Source Code \_\_\_\_\_ Site Code \_\_\_\_\_

above lists

- (62) Does this forest have old-growth elements (big native trees > 36" dbh, usually more than one) present? \_\_\_\_\_ y/n  
Approx. forest height in ft \_\_\_\_\_

Shrubs: (woody vegetation 3-15 ft tall) This will need to be filled in for all forest and shrub sites, plus any other types which have shrubs present.

- (63) Shrub density:  
C-closed, crowns mostly touching or open by less than 1/4 crown diameter  
O-open, crowns mostly not touching, separated by 1/4 to 1 1/2 crown diameter  
S-savannah like, scattered crowns separated by more than 1 1/2 crown diameter

- (64-65) Percent deciduous species, estimated visually and recorded as increments of 10%: e.g., 0,10,20,...90,99. Ninety-nine percent is used to represent 100% to save space in the database.

- (66-67) Number of shrub species identified \_\_\_\_\_

Dominant shrub species. This information is placed in the SHRUBS file, where 1 is placed by each species present. Dominants are defined as the most abundant species whose percent cover collectively reaches 50% or more, plus any other species comprising 20% cover [as defined in Wetland Training Institute 1989]: \_\_\_\_\_

\_\_\_\_\_ Listed as 4- or 5-letter species codes given in Garrison and Skovlin (1976, first two or three letters of genus and species)

Other species: \_\_\_\_\_

\_\_\_\_\_ list codes, as above

y for yes

- (68) Rare/Unique species: \_\_\_\_\_  
\_\_\_\_\_ list codes, drawn from above lists

Ground Cover: (herbaceous and small shrub vegetation 0 to 3 ft), this will be filled in for probably almost all sites.

- (69-70) Density of ground cover \_\_\_\_\_ Estimate of percent of ground covered by vegetation, to nearest 10 percent, 99=100%.

- (71) Mowed or grazed? \_\_\_\_\_ y=yes, n=no

- (72-74) Number of ground cover species observed \_\_\_\_\_

000 Dominant species: Species observed are given 1's in the GROUND file, codes used are as above for trees, shrubs) \_\_\_\_\_

Other species: (as above) \_\_\_\_\_

Info. Source Code \_\_\_\_\_ Site Code \_\_\_\_\_

(75) Rare/Unique species: (as above) \_\_\_\_\_  
 y for yes \_\_\_\_\_  
 (76-77) Percent bare ground: \_\_\_\_\_ (to nearest 10 percent)  
 (78-79) Percent rock outcrop: \_\_\_\_\_ (to nearest 10 percent)  
 [NOTE: percent veg. cover, bare ground, rock outcrop should  
 total 100%]

Community Type: \_\_\_\_\_ listed by  
abbreviations of dominant species  
Comments on Apparent History of Site: \_\_\_\_\_

**Plant Interest:**

(80) Bryophytes \_\_\_\_ y - yes, m - maybe  
(81) Lichens \_\_\_\_ y - yes, m - maybe

**Wetlands:**

Wetlands.  
 (82-85) Wetland Classification of Site: \_\_\_\_\_ 3- or 4-letter  
 code, from National Wetland Inventory USGS Quadrangle Maps

- POW - Palustrine open water
- PEM - Palustrine emergent
- PSM - Palustrine emergent/shrub-scrub
- PSS - Palustrine shrub-scrub
- PFO - Palustrine forested
- LOW - Lacustrine open water
- ROW - Riverine open water
- REM - Riverine emergent
- RRB - Riverine rock bottom
- RUB - Riverine unconsolidated bottom
- RAB - Riverine aquatic bed
- RFL - Riverine flat
- RSB - Riverine stream bed
- RRS - Riverine rocky shore
- RBB - Riverine beach bar

- (86) Springs present? \_\_\_\_ y-yes, n-no  
 - (87) Storm drainage sources present? \_\_\_\_ y-yes, n-no  
 - (88) Other sources of pollution? \_\_\_\_ y-yes, n-no  
           comments \_\_\_\_\_

— (89) Water \_\_\_\_ 1-stagnant, 2-seasonally flushed or inundated for standing water areas, 3-flowing

— (90) Water appearance — 1-clear, 2-scummy, 3-foamy,  
4-muddy, 5-milky, 6-oily sheen, 7-green,  
8-other

— (91) Stream bottom color \_\_\_\_\_ 1-none, 2-yellowish, 3-orange to red, 4-brown, 5-black, 6-green, 7-other

— (92) Water odor \_\_\_\_\_ 1-none, 2-rotten egg, 3-musky, 4-acrid, 5-chlorine, 6-other

\_\_\_\_ (93-94) Estimated water depth \_\_\_\_\_ in ft. (use decimals if < 1 ft)

(95-96) Stream width \_\_\_\_\_ ft.

Info. Source Code \_\_\_\_\_ Site Code \_\_\_\_\_

- \_\_\_\_ (97) Stream/pond substrate \_\_\_\_\_ 1-rock, 2-mud, 3-gravel,  
4-sand, 5-can't tell, 6-other
- \_\_\_\_ (98) Stream flow \_\_\_\_\_ 1-fast moving, 2-slow moving, 3-pools
- \_\_\_\_ (99) Stream cover \_\_\_\_\_ At time of leaf-on:: 1-Fully shaded: at  
noon, 75-100% of stream is shaded from the sun; 2-  
partially shaded (50-75% shaded); 3-partially exposed  
(25-50% shaded); 4-fully exposed (0-25% shaded)
- \_\_\_\_ (100) Stream channel alterations \_\_\_\_\_ 1-none, banks appear natural,  
2-dredged or ditched, 3-wall/bulkhead, 4-riprap, 5-  
culverts, 5-stream is in underground pipe, 6-other
- \_\_\_\_ (101) Structures or barriers in the stream \_\_\_\_\_ 1-dams, 2-bridges,  
3-islands, 4-waterfalls, 5-rapids, 6-debris jams, 7-other  
Paper & small trash litter in representative 100-ft stretch  
of stream \_\_\_\_\_ 1: 0-5, 2: 5-10, 3: 10-50, 4: over 50  
Cans and bottles litter in representative 100-ft stretch  
of stream \_\_\_\_\_ 1: 0-5, 2: 5-10, 3: 10-50, 4: over 50  
Large items litter in representative 100-ft stretch  
of stream \_\_\_\_\_ 1: 0-5, 2: 5-10, 3: 10-50, 4: over 50  
Hazardous waste litter in representative 100-ft stretch  
of stream \_\_\_\_\_ 1: 0-5, 2: 5-10, 3: 10-50, 4: over 50  
Yard debris litter in representative 100-ft stretch  
of stream \_\_\_\_\_ 1: 0-5, 2: 5-10, 3: 10-50, 4: over 50
- \_\_\_\_ (102) Undercut banks \_\_\_\_\_ y-yes, n-no
- \_\_\_\_ (103) Large organic debris \_\_\_\_\_ 1-log piles, 2-tree roots,  
3-logs or stumps, 4-other
- \_\_\_\_ (104) Rocks \_\_\_\_\_ 1-rock ledges, 2-gravel deposits, 3-large  
boulders, 4-small boulders
- \_\_\_\_ (105) Bank erosion severity: N - none, M - moderate, S -severe
- \_\_\_\_ (106) Bank erosion distribution: L - local, W - widespread
- Adjacent Corridors:
- \_\_\_\_ (107) Number of adjacent corridors \_\_\_\_\_
- \_\_\_\_ (108) Presence of game or people trails? \_\_\_\_\_ y-yes, n-no  
Other comments on quality, etc. of corridors \_\_\_\_\_

Generalized Adjacent Land Uses:

List types, using the NYC inventory 3-letter codes (see  
Appendices)

Comments \_\_\_\_\_

Water Uses:

Circle appropriate known uses:

1-recreation, 2-swimming, 3-fishing, 4-drinking water,  
5-industrial water, 6-irrigation, 7-livestock, 8-other  
\_\_\_\_\_ describe other uses

Sources of Wastewater:

Are there pipes emptying into the stream? \_\_\_\_\_ yes/no

Source of pipes \_\_\_\_\_ 1-industry, 2-farm lots, 3-streets  
4-roadside ditches, 5-unknown, 6-other

Info. Source Code \_\_\_\_\_ Site Code \_\_\_\_\_

**Potential Problems:**

Circle problems: 1-overflowing manholes, 2-water running into manholes, 3-fish kills, 4-construction activities, 5-trucks with hoses down manholes or other evidence of illegal dumping, 6-illegal fill of wetlands, 7-possible illegal fills (need to check with DSL to see whether permits were obtained), 8-other (describe)

**Wildlife Species Observed:** use 4- or 5-letter codes given in Brown (1985), write out insect species names

**Insects:** species observed are given 1's in the INSECTS file.

\_\_\_\_ (109-111) Number of Species observed: \_\_\_\_\_  
\_\_\_\_ (112) Insect Interest: \_\_\_\_\_ y - yes, m - maybe, blank - no  
Species observed: \_\_\_\_\_  
Rare/unique species: \_\_\_\_\_

**Macroinvertebrates:** MACROINV file.

\_\_\_\_ (113-115) Number of Species observed: \_\_\_\_\_  
\_\_\_\_ (116) Macroinvertebrate Interest: \_\_\_\_\_ as in insects  
Species observed: \_\_\_\_\_  
Rare/unique species: \_\_\_\_\_

**Fish:** FISH file.

\_\_\_\_ (117-118) Number of species observed: \_\_\_\_\_  
\_\_\_\_ (119) Fish Interest: \_\_\_\_\_ as in insects  
Species observed: \_\_\_\_\_  
Rare/unique species: \_\_\_\_\_

**Reptiles:** REPTILE file.

\_\_\_\_ (120-121) Number of species observed: \_\_\_\_\_  
\_\_\_\_ (122) Reptile Interest: \_\_\_\_\_ as above  
Species observed: \_\_\_\_\_  
Rare/unique species: \_\_\_\_\_

**Amphibians:** AMPHIB file.

\_\_\_\_ (123-124) Number of species observed: \_\_\_\_\_  
\_\_\_\_ (125) Amphibian Interest: \_\_\_\_\_ as above  
Species observed: \_\_\_\_\_  
Rare/unique species: \_\_\_\_\_

Info. Source Code \_\_\_\_\_ Site Code \_\_\_\_\_

Birds: BIRDS and BRDBR file.

\_\_\_\_ (126-128) Number of species observed: \_\_\_\_\_

\_\_\_\_ (129) Bird Interest: \_\_\_\_\_ as above

Breeding bird survey results in BRDBR file. List species codes and number of each observed during the 8-minute count period (after Reynolds et al. 1982) to gather information on relative abundance, numbers placed by species in the BRDBR file.

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Additional species observed during rest of field visit or during other observations. In the case of woodpeckers and other species leaving signs rather than being actually observed, use the species code followed by S-seen, H-heard, O-old sign, N-new sign, B-nest, R-remains. Example: pileated woodpecker new sign observed would be coded as drpin. These species are recorded in the BIRDS file as 1's by species occurring.

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Rare or unique species

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Mammals: Additional information goes into the MAMMAL file, where species known to occur are indicated with a 1 by the species name.

\_\_\_\_ (130-131) Number of species observed: \_\_\_\_\_

\_\_\_\_ (132) Mammal Interest : \_\_\_\_\_ as above

Species observed on standard transect of variable length and width walked through the site. Length and width will be determined by size and layout of site and visibility through the vegetation. List species, number of animals when actually observed, leave number blank for recognizable signs. Observation type: S-seen, H-heard, D-droppings, T-tracks, B-burrows, M-gopher/mole dirt mounds, R-remains, etc. Code species abbreviation and observation type as for birds.

Example: coyote tracks coded as calat

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Other species observed elsewhere during survey

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Rare/unique species

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Info. Source Code \_\_\_\_\_ Site Code \_\_\_\_\_

Fish and Wildlife Habitat Features -- list presence of:

- (133) Snags \_\_\_\_\_ (defined as dead trees 6 inches or larger dbh, classed as 4-abundant, 3-common, 2-uncommon, 1-rare, 0-none)
- (134-136) Number of snags observed from bird point survey site \_\_\_\_\_
- (137-139) Radius to which snags can be accurately censused \_\_\_\_\_ in yds
- (140) Dead/down wood \_\_\_\_\_ as above for snags
- (141) Rocks \_\_\_\_\_ as above
- (142) Cover type \_\_\_\_\_ 2-year round, 1-seasonal, 0-none
- (143) Obvious barriers present? \_\_\_\_\_ y-yes, n-no
- Barriers to:
- Insects \_\_\_\_\_ y-yes, n-no
- Fish \_\_\_\_\_ y-yes, n-no
- Reptiles \_\_\_\_\_ y-yes, n-no
- Amphibians \_\_\_\_\_ y-yes, n-no
- Birds \_\_\_\_\_ y-yes, n-no
- Mammals \_\_\_\_\_ y-yes, n-no
- Describe barriers \_\_\_\_\_
- 
- (144) Fish habitat variable (Fishman will provide)
- (145) Fish habitat variable (Fishman will provide)
- Evidence of human use?
- (146) Informal trails \_\_\_\_\_ y/n
- (147) Formal trails \_\_\_\_\_ y/n
- (148) Debris/trash \_\_\_\_\_ 2-lots, 1-some, 0-none
- (149) Camps \_\_\_\_\_ y/n
- Other indications/comments \_\_\_\_\_
- 
- (150) Special/Unique Features \_\_\_\_\_ y-yes, n-no
- Describe these features \_\_\_\_\_
- 
- (151) Natural Heritage Database Information - whether species of concern are listed by the database: y-yes, n-no.
- list species (use codes as described above) and year of last observation
- 
-

Blue Currant  
*Ribes brachycarpum*  
 Red Currant  
*Ribes sanguineum*  
 Sticky Currant  
*Ribes viscosissimum*  
**HYDRANGEA (Hydrangeaceae)**  
 Mockorange  
*Philadelphus lewisii*  
**ROSE (Rosaceae)**  
 Western Serviceberry  
*Amelanchier alnifolia*  
 Goatsbeard  
*Auculus sylvestris*  
 Bick Hawthorn (wetland form)  
*C. douglasii* variety *douglasii*  
 Black Hawthorn (upland form)  
*C. douglasii* variety *subcordata*  
 Wood Strawberry  
*Fragaria vesca*  
 Broad-petal Strawberry  
*Fragaria virginiana*  
 Oregon Avens  
*Geum macrophyllum*  
 Ocean-spray  
*Holodiscus discolor*  
 Indian Plum  
*Osmorhiza cerasiiformis*  
 Pacific Ninebark  
*Physocarpus capitatus*  
 Sticky Cinqufoil  
*Potentilla glandulosa*  
 Norwegian Cinqufoil  
*Potentilla norvegica*  
 Marsh Cinqufoil  
*Potentilla palustris*  
 Common Chokecherry  
*Prunus virginiana*  
 Bitter Chokecherry  
*Prunus emarginata*  
 Cultivated Plum  
*Prunus domestica*  
 Cultivated Pear  
*Pyrus communis*  
 Cultivated Apple  
*Pyrus malus*  
 Western Crabapple  
*Pyrus fusca*  
 Bakship Rose  
*Rosa gymnocarpa*  
 Noddy Rose  
*Rosa nutkana*  
 Evergreen Blackberry  
*Rubus laciniatus*  
 Trailing Blackberry  
*Rubus ursinus*  
 Blackcap  
*Rubus leucodermis*  
 Thimbleberry  
*Rubus parviflorus*  
 Five-leaved Bramble  
*Rubus pedatus*  
 Salmonberry  
*Rubus spectabilis*  
 Himalayan Blackberry  
*Rubus discolor*  
 Annual Burned  
*Sanguisorba occidentalis*  
 Side Mountain-ash  
*Sorbus sitchensis*  
 Douglas's Spice  
*Spirea douglasii*  
**PEA (Leguminosae)**  
 Scotch Broom  
*Cytisus scoparius*  
 Everlasting Pea-vine  
*Lathyrus latifolius*  
 Hairy Vetchling  
*Lathyrus hirsutus*  
 Grass Pea-vine  
*Lathyrus sphaericus*  
 Small-flowered Deer-vetch  
*Lotus micranthus*  
 Meadow Lotus  
*Lotus densiculatus*  
 Field Lupine  
*Lupinus micranthus*  
 Two-color Lupine  
*Lupinus bicolor*  
 Spurred Lupine  
*Lupinus latifolius*  
 Sulfur Lupine  
*Lupinus albus*  
 Broad-leaved Lupine  
*Lupinus latifolius*  
 Large-leaved Lupine  
*Lupinus polyphyllus*  
 Alfalfa  
*Medicago sativa*  
 White Sweet-clover  
*Medicago alba*  
 Hare's Foot  
*Trifolium arvense*  
 Suckling Clover  
*Trifolium dubium*  
 Red Clover  
*Trifolium pratense*  
 Hop Clover

Tenegrass  
*Vicia cracca*  
 American Vetch  
*Vicia americana*  
 Hairy Vetch  
*Vicia hirsuta*  
 Winter Vetch  
*Vicia villosa*  
 Slender Vetch  
*Vicia tetrasperma*  
 Common Vetch  
*Vicia sativa*  
**GERANIUM (Geraniaceae)**  
 Stork's-bill  
*Erodium cicutarium*  
 Carolina Geranium  
*Geranium carolinianum*  
 Cut-leaf Geranium  
*Geranium dissectum*  
 Dove-foot Geranium  
*Geranium molle*  
 Small-flowered Crane's-bill  
*Geranium pusillum*  
**WOOD-SORREL (Oxalidaceae)**  
 Creeping Yellow Wood-sorrel  
*Oxalis corniculata*  
 Western Yellow Oxalis  
*Oxalis stricta*  
 Oregon Oxalis  
*Oxalis oregana*  
 Trillium-leaved Wood-sorrel  
*Oxalis trillifolia*  
**SPURGE (Euphorbiaceae)**  
 Penny Spurge  
*Euphorbia pepus*  
**WATER-STARWORT (Callitrichaceae)**  
 Oil-leaf Water-starwort  
*Callitriche heterophylla*  
**SUMAC (Anacardiaceae)**  
 Poison Oak  
*Rhus diversiloba*  
**STAFF-TREE (Celastraceae)**  
 Western Wahoo  
*Euonymus occidentalis*  
**MAPLE (Aceraceae)**  
 Vine Maple  
*Acer circinatum*  
 Big-leaf Maple  
*Acer macrophyllum*  
**BUCKTHORN (Rhamnaceae)**  
 Cascara  
*Rhamnus purshiana*  
 Oregon tea-tree  
*Ceanothus sanguineus*  
**MALLOW (Malvaceae)**  
 Dwarf Mallow  
*Malva nicaeola*  
 Meadow Sidalcea  
*Sidalcea campestris*  
**ST. JOHN'S-WORT (Hypericaceae)**  
 Common St. John's-wort  
*Hypericum perforatum*  
**WATERWORT (Elatinaceae)**  
 Bergia  
*Bergia texana*  
 Three-stamen waterwort  
*Elatine triandra*  
**VIOLET (Violaceae)**  
 Early Blue Violet  
*Viola adunca*  
 Pansy  
*Viola arvensis*  
 Marsh Violet  
*Viola palustris*  
 Stream Violet  
*Viola glabella*  
 Evergreen Violet  
*Viola sempervirens*  
**EVENING-PRIMROSE (Onagraceae)**  
 Enchanter's Nightshade  
*Circaea alpina*  
 Fireweed  
*Epilobium angustifolium*  
 Watson's Willow-weed  
*Epilobium watsonii*  
 Common Willow-weed  
*Epilobium glandulosum*  
 Red-veined Evening-primrose  
*Oenothera erythrosepala*  
**WATER-MILFOIL (Haloragaceae)**  
 Water-milfoil  
*Myriophyllum species*  
**HARE'S-TAIL (Hippuridaceae)**  
 Common Hare's-tail  
*Hippurus vulgaris*

**PARSLEY (Umbelliferae)**  
 Sharp-tooth Angelica  
*Angelica arguta*  
 Poison-hemlock  
*Conium maculatum*  
 Queen Ann's Lace  
*Oenanthe carota*  
 Cow-parsnip  
*Heracleum lanatum*  
 Parsley-leaved Lovage  
*Ligusticum apollonium*  
 Grey's Lovage  
*Ligusticum grayi*  
 Common Lomatium  
*Lomatium utriculatum*  
 Pacific Water-parsley  
*Oenanthe sarmentosa*  
 Mountain Sweet-root  
*Osmorhiza chilensis*  
 Pacific Sanicle  
*Sanicula crassicaulis*  
**DOGWOOD (Cornaceae)**  
 Western Flowering Dogwood  
*Comus nuttallii*  
 Red-osier Dogwood  
*Comus stolonifera*  
**HEATH (Ericaceae)**  
 Madrone  
*Arbutus menziesii*  
 Salal  
*Gaultheria shallon*  
 Indian-pipe  
*Monotropa uniflora*  
 Western Rhododendron  
*Rhododendron macrophyllum*  
 Western Azalea  
*Rhododendron occidentale*  
 Red Huckleberry  
*Vaccinium parviflorum*  
 Evergreen Huckleberry  
*Vaccinium ovatum*  
**PRIMROSE (Primulaceae)**  
 Pimpernel  
*Anagallis arvensis*  
 Fringed Loosestrife  
*Lysimachia ciliata*  
 Tufted Loosestrife  
*Lysimachia thyrsiflora*  
 Western Starflower  
*Trientalis latifolia*  
**ASH (Oleaceae)**  
 Oregon Ash  
*Fraxinus latifolia*  
**GENTIAN (Gentianaceae)**  
 Common Gentian  
*Gentiana umbellatum*  
 Staff Gentian  
*Gentiana sceptrum*  
 Northern Gentian  
*Gentiana amarella*  
**BUCK-BEAN (Monyanthaceae)**  
 Buckbean  
*Monyanthus trifoliate*  
**DOGBANE (Apocynaceae)**  
 Spreading Dogbane  
*Apocynum androsaemifolium*  
 Periwinkle  
*Vincetoxicum major*  
**MORNING-GLORY (Convolvulaceae)**  
 Field Morning-glory  
*Convolvulus arvensis*  
 Night-blooming Morning-glory  
*Convolvulus nycotegicus*  
 Lady's-nightcap  
*Convolvulus sepium*  
**DODDER (Cuscutaceae)**  
 Common Dodder  
*Cuscuta epithymum*  
**PHLOX (Polomonaceae)**  
 Varied-leaf Collomia  
*Collomia heterophylla*  
 Large-flowered Collomia  
*Collomia grandiflora*  
 Bicolor Linanthus  
*Linanthus bicolor*  
 Microstoria  
*Microstoria gracilis*  
 Stinkweed  
*Navarretia squarrosa*  
**WATERLEAF (Hydrophyllaceae)**  
 Pacific Waterleaf  
*Hydrophyllum tenuipes*  
 Small-flowered Nemophila  
*Nemophila parviflora*  
 Shade Phacelia  
*Phacelia nemoralis*  
**BORAGE (Boraginaceae)**  
 Borage  
*Borago officinalis*  
 Common Forget-me-not

Western Bluebells  
*Mertensia platyphylla*  
 Common Forget-me-not  
*Myosotis scorpiodes*  
 Blue Scorpion-grass  
*Myosotis micrantha*  
 Yellow @ Blue Forget-me-not  
*Myosotis discolor*  
 Fragrant Plagiobothrys  
*Plagiobothrys figuratus*  
 Common Comfrey  
*Symphytum officinale*  
 Rough Comfrey  
*Symphytum asperum*  
**VERBENA (Verbenaceae)**  
 Wild Hyssop  
*Verbena hastata*  
**MINT (Labiatae)**  
 Hemp Nettle  
*Galeopsis tetrahit*  
 Ground Ivy  
*Glechoma hederacea*  
 Red Henbit  
*Lamium purpureum*  
 Horshound  
*Marrubium vulgare*  
 Pennyroyal  
*Mentha pulegium*  
 Field Mint  
*Mentha arvensis*  
 Round-leaved Mint  
*Mentha rotundifolia*  
 Spearmint  
*Mentha spicata*  
 Peppermint  
*Mentha piperita*  
 American Bee-balm  
*Monarda didyma*  
 Savory  
*Satureia douglasii*  
 Marsh Skullcap  
*Scutellaria galericulata*  
 Great Hedge-nettle  
*Stachys cooleyae*  
 Mexican Hedge-nettle  
*Stachys mexicana*  
 Marsh Betony  
*Stachys palustris*  
 Wood Sage  
*Teucrium canadense*  
**NIGHTSHADE (Solanaceae)**  
 Blue Bindweed  
*Solanum dulcamara*  
 Hairy Nightshade  
*Solanum sarachoides*  
 Garden Nightshade  
*Solanum nigrum*  
**FIGWORT (Scrophulariaceae)**  
 Lesser's Snopdragon  
*Antirrhinum orontium*  
 Golden-Indian-paintbrush  
*Castilleja levisecta*  
 Sm.-flowered Blue-eyed Mary  
*Collinsia parviflora*  
 Lg.-flowered Blue-eyed Mary  
*Collinsia grandiflora*  
 Foxglove  
*Digitalis purpurea*  
 Mudwort  
*Umosella aequalis*  
 Butter And Eggs  
*Linaria vulgaris*  
 Yellow Morning-flower  
*Mimulus guttatus*  
 Musk-flower  
*Mimulus moschatellus*  
 Chickweed Monkey-flower  
*Mimulus alsinoides*  
 Hairy Owl-Clover  
*Orthocarpus hispidus*  
 Broad-leaved Penstemon  
*Penstemon oregonus*  
 California Figwort  
*Scrophularia californica*  
 Snow Queen  
*Synthlipsis rufiformis*  
 Small-flowered Tonella  
*Tonella tenella*  
 Common Mullein  
*Verbascum thapsus*  
 Moth Mullein  
*Verbascum blattaria*  
 American Brooklime  
*Veronica americana*  
 Common Speedwell  
*Veronica arvensis*  
 Paul's Betony  
*Veronica officinalis*  
 Persian Speedwell  
*Veronica perfoliata*  
**BLADDERWORT (Lentibulariaceae)**  
 Common Bladderwort  
*Utricularia vulgaris*  
**PLANTAIN (Plantaginaceae)**  
 English Plantain

**Compact Selaginella**  
*Selaginella densa*

**HORSETAIL (Equisetaceae)**  
Common Horsetail  
Equisetum hyemale  
Marsh Horsetail  
Equisetum palustre  
Giant Horsetail  
Equisetum telmateia

**COMMON FERN (Polypodiaceae)**  
Northern Maidenhair Fern  
Adiantum podatum  
Maidenhair Spichenwort  
Asplenium trichomanes  
Ladyfern  
Allyrium flexifolium  
Deerfern  
Blechnum spicant  
Brittle Bladder-fern  
Cystopteris fragilis  
Spreading Wood-fern  
Dryopteris austriaca  
Licorice-fern  
Polypodium glycyrrhiza  
Licorice-fern  
Polypodium hesperium  
Anderson's Swordfern  
Polystichum andersonii  
Swordfern  
Polystichum munum  
Bracken Fern  
Pteridium aquilinum  
Wood-fern  
Thelypteris nevadensis

**WATER-FERN (Salvinaceae)**  
Duckweed Fern  
Azolla filiculoides

**YEW (Taxaceae)**  
Yew  
Taxus brevifolia

**CEDAR (Cupressaceae)**  
Western Red Cedar  
Thuja plicata

**PINE (Pinaceae)**  
Grand Fir  
Abies grandis  
Lodgepole Pine  
Pinus contorta  
Ponderosa Pine  
Pinus ponderosa  
Douglas Fir  
Pseudotsuga menziesii  
Western Hemlock  
Tsuga heterophylla

**WATER-PLANTAIN (Alismaceae)**  
American Water-plantain  
Alisma plantago-aquaticae  
Wapato  
Sagittaria latifolia

**FROG'S-BIT (Hydrocharitaceae)**  
American Waterweed  
Elodea densa

**RUSH (Juncaceae)**  
Short-leaved Rush  
Juncus brachyphyllus  
Field Woodrush  
Luzula campestris  
Smallflowered Woodrush  
Luzula parviflora  
Belted Rush  
Juncus bellicus  
Toad Rush  
Juncus bulbosus  
Common Rush  
Juncus effusus  
Dagger Leaf Rush  
Juncus ensifolius

**SEDGE (Cyper)**  
Slenderbeaked Sedge  
Carex stricta  
Columbia Sedge  
Carex acuta  
Dewey's Sedge  
Carex doreyana  
Henderson's Wood Sedge  
Carex hendersonii  
Pale Sedge  
Carex flida  
Slough Sedge  
Carex obnupta  
Meadow Sedge  
Carex prae-coele  
Sawbeak Sedge  
Carex stipata  
Inland Sedge  
Carex vesicaria  
Creeping Spikesedge  
Eleocharis palustris  
Small-leaved Bulrush  
Scirpus microcarpus

**GRASS (Gramineae)**  
Silver Hairgrass  
Aira canadensis

**Water-Food**  
Alopecurus geniculatus  
Foodail  
Alopecurus pratensis  
Sweet Vernalgrass  
Anthoxanthum odoratum  
Tall Oatgrass  
Arrhenatherum elatius  
Common Oat  
Avena sativa  
Ripgut Brome  
Bromus rigidus  
Alaska Brome  
Bromus sachsenis  
Chualgrass  
Bromus tectorum  
Orchard-grass  
Dactylis glomerata  
Hairy Crabgrass  
Digitaria sanguinalis  
Large Barnyard-grass  
Echinochloa crusgalli  
Ala Fescue  
Festuca arundinacea  
Oniongrass  
Melica bulbosa  
Old-witch Grass  
Panicle capillare  
Reed Canarygrass  
Phalaris arundinacea  
Common Timothy  
Phleum pratense  
Annual Bluegrass  
Poa annua  
Bulbous Bluegrass  
Poa bulbosa  
Kentucky Bluegrass  
Poa pratensis

**CATTAIL (Typhace)**  
Common Cattail  
Typha latifolia

**CALLA-LILY (Araceae)**  
Stunk Cabbage  
Lysichiton americanum

**DUCKWEED (Lemnaceae)**  
Water Lentil  
Lemna minor

**LILY (Liliaceae)**  
Wild Onion  
Allium species  
Slim-leaved Onion  
Allium amplexans  
Howell's Brodiaea  
Brodiaea howellii  
Leichlin's Camas  
Camassia leichlinii  
Common Camas  
Camassia quamash  
Hooker Fairy-bell  
Disporum hookeri  
Large-flowered Fairy-bell  
Disporum smithii  
Giant Fawn-lily  
Erythronium oregonum  
Mission Bells  
Fritillaria lanceolata  
Columbia Lily  
Lilium columbianum  
Red Lily  
Lilium philadelphicum  
Deerberry  
Maianthemum dilatatum  
Western False Solomon's Seal  
Smilacina racemosa  
Starry False Solomon's Seal  
Smilacina stellata  
Oregon Fetid Adder's-tongue  
Scelopopus hallii  
Clasping-rod Twisted-stalk  
Streptopus amplexifolius  
Western Trillium  
Trillium ovatum  
Giant Trillium  
Trillium chloropetalum  
False Hellebore  
Veratrum californicum

**IRIS (Iridaceae)**  
Oregon Iris  
Iris tenax  
Yellow Flag  
Iris pseudocorus  
Blue-eyed grass  
Sisyrinchium angustifolium

**ORCHID (Orchidaceae)**  
Fairy Slipper  
Calypto bulbosa  
Pacific Coral-root  
Corallorhiza maculata  
Hooded Coral-root  
Corallorhiza striata  
Snow-orchid  
Eubrythion arizonicum  
Giant Rattlesnake-plantain  
Goodyera oblongifolia  
Heart-leaved Listera  
Listera cordata

**Cottonwood**  
Populus trichocarpa  
Columbia River Willow  
Salix fluviatilis  
Pacific Willow  
Salix lasiandra  
Piper's Willow  
Salix piperi  
Scoutler Willow  
Salix scouleriana  
Soft-leaved Willow  
Salix sessilifolia

**BIRCH (Betulaceae)**  
Red Alder  
Alnus rubra  
Hazelnut  
Corylus cornuta

**BEECH (Fagaceae)**  
Garry Oak  
Quercus garryana

**NETTLE (Urticaceae)**  
Stinging Nettle  
Urtica dioica

**MISTLETOE (Loranthaceae)**  
Western Dwarf Mistletoe  
Arceuthobium campylopodium  
American Mistletoe  
Phoradendron flavescens

**SANDALWOOD (Santalaceae)**  
Bastard Toad-flax  
Comandra umbellata

**BIRTHWORT (Aristolochiaceae)**  
Wild Ginger  
Asarum canadense

**BUCKWHEAT (Polygonaceae)**  
Doonweed  
Polygonum aviculare  
Water Smartweed  
Polygonum coccineum  
Common Waterpepper  
Polygonum hydropiperoides  
Climbing Bindweed  
Polygonum convolvulus  
Red Sorrel  
Rumex acetosella  
Curly Dock  
Rumex crispus  
Western Dock  
Rumex occidentalis

**GOOSEFOOT (Chenopodiaceae)**  
Lambquarters  
Chenopodium album

**AMARANTH (Amaranthaceae)**  
Green Amaranth  
Amaranthus retrofractus

**PURSLANE (Portulacaceae)**  
Branching-Monica  
Monarda diffusa  
Narrow-leaved Monica  
Monarda linearis  
Streambank Springbeauty  
Monarda pavlovii  
Siberian Monica  
Monarda sibirica  
Common Purslane  
Portulaca oleracea

**PINK (Caryophyllaceae)**  
Bigleaf Sandwort  
Arenaria macrophylla  
Common Chickweed  
Cerastium vulgatum  
Grass Pink  
Dianthus armeria  
Western Pearlwort  
Sagina occidentalis  
Starwort  
Spergula arvensis  
Crisped Starwort  
Stellaria crispata  
Chickweed  
Stellaria media

**WATER-LILY (Nymphaeaceae)**  
Water-chilid  
Brasenia schreberi  
Yellow Water-lily  
Nuphar polysepakum  
American Water-lily  
Nymphaea odorata

**HORNWORT (Ceratophyllaceae)**  
Ceratophyllum demersum

**BUTTERCUP (Ranunculaceae)**  
Baneberry  
Actaea rubra  
Western White Anemone  
Anemone deltoidea  
Lyle's Anemone  
Anemone lyallii  
Oregon Anemone

**Red Columbine**  
Aquilegia formosa  
Western Clematis  
Clematis ligusticifolia  
Cutleaf Goldthread  
Coptis laciniata  
Pale Larkspur  
Delphinium leucophaeum  
Monzie's Larkspur  
Delphinium monziesii  
Nuttall's Larkspur  
Delphinium nuttallii  
Macoun's Buttercup  
R. macounii variety oregonus  
Western Buttercup  
Ranunculus occidentalis  
Creeping Buttercup  
Ranunculus repens  
Little Buttercup  
Ranunculus uncinatus  
Western Meadowrue  
Thalictrum occidentale  
Buttercup  
Ranunculus scardous

**BARBERRY (Berberidaceae)**  
Vanilla  
Achlys triphylla  
Tall Oregongrape  
Berberis aquifolium  
Dull Oregongrape  
Berberis nervosa  
White Inside-out Flower  
Vancouveria hexandra

**POPPY (Papaveraceae)**  
Gold Poppy  
Eschscholzia californica

**FUMITORY (Fumariaceae)**  
Pacific Bleedingheart  
Dicentra formosa

**MUSTARD (Cruciferae)**  
Pale Alyssum  
Alyssum alyssoides  
Yellow Wintercress  
Barbarea vulgaris  
Common Mustard  
Brassica campestris  
Wild Mustard  
Brassica kaber  
Shepherd's-purse  
Capsella bursa-pastoris  
Angled Buttercress  
Cardamine angustata  
Little Western Buttercress  
Cardamine oligosperma  
Pennsylvania Buttercress  
Cardamine pennsylvanica  
Slender Toothwort  
Cardamine pulcherrima  
Spring Whitlow-grass  
Draba verna  
Prairie Rocket  
Erysimum asperum  
Honesty  
Lunaria annua  
Wild Radish  
Raphanus sativus  
Water-cress  
Rorippa nasturtium-aquaticum  
Columbia Cress  
Rorippa columbiac

**STONECROP (Crassulaceae)**  
Lanceleaved Stonecrop  
Sedum lanceolatum  
Spittle-leaf Stonecrop  
Sedum spathulifolium

**SAXIFRAGE (Saxifragaceae)**  
Bolandra  
Bolandra oregana  
Greater Boykinia  
Boykinia major  
Pacific Water-carpel  
Chrysosplenium glechomaeifolium  
Smallflowered Alumroot  
Heuchera micrantha  
Smooth Alumroot  
Heuchera glabra  
Leafy Mallow  
Mullein caulescens  
Five-stamened Mallow  
Mullein portlandia  
Rusty Saxifrage  
Saxifraga ferruginea  
Swamp Saxifrage  
Saxifraga integrifolia  
Western Saxifrage  
Saxifraga occidentalis  
Sutcliffe's  
Sutcliffe's oregana  
Fringecup  
Telmata grandiflorum  
Jaccflower  
Tiarella trifoliata  
Thousand Mothers  
Tolmiea menziesii

**CURRENT (Grossulariaceae)**  
Western Black Currant

Sweet Woodruff <i>Asperula odorata</i>	White-flowered Hawkweed <i>Hieracium albidum</i>	Flax <i>Linum catharticum</i>	Long-billed Dowitcher <i>Limnodromus scolopaceus</i>
Cleavers <i>Galium aparine</i>	Common Hawkweed <i>Hieracium vulgatum</i>	Cockburn constrictor <i>Ringneck Snake</i>	Common Snipe <i>Gallinago gallinago</i>
Rough Bedstraw <i>Galium asperum</i>	Spotted Cat's-ear <i>Hypochaeris radicata</i>	Diadophis punctatus <i>Common Garter Snake</i>	Lesser Yellowlegs <i>Tringa flavipes</i>
Sweet-scented Bedstraw <i>Galium triflorum</i>	Smooth Cat's-ear <i>Hypochaeris glabra</i>	Thamnophis sirtalis <i>Northwestern Garter Snake</i>	Dunlin <i>Calidris alpina</i>
Small Bedstraw <i>Galium tridum</i>	Prickly Lettuce <i>Lactuca scariola</i>	Thamnophis ordinoides <i>Pacific Gopher Snake</i>	Western Sandpiper <i>Calidris mauri</i>
Blue Field-madder <i>Sherardia arvensis</i>	Nippewort <i>Lapsana communis</i>	Pituophis melanoleucus <i>Garter Snake</i>	Least Sandpiper <i>Calidris minutilla</i>
<b>HONEYSUCKLE (Caprifoliaceae)</b>	Fall Dandelion <i>Leontodon autumnalis</i>	Thamnophis	<b>JAEGER-GULLS-TERNS (Laridae)</b>
Twinnflower <i>Linnaea borealis</i>	Cluster Tarweed <i>Madia glomerata</i>	<b>LOONS (Gaviidae)</b>	Bonaparte's Gull <i>Larus philadelphia</i>
Trumpet Vine <i>Lonicera ciliosa</i>	Chile Tarweed <i>Madia sativa</i>	Common Loon <i>Gavia immer</i>	Ring-billed Gull <i>Larus delawarensis</i>
Black Twinnberry <i>Lonicera involucrata</i>	Pineapple Weed <i>Sweet Coltsfoot</i>	<b>GREBES (Podicipedidae)</b>	Larus delawarensis <i>Herring Gull</i>
Blue Elderberry <i>Sambucus canadensis</i>	Petasites frigidus <i>Tansy Ragwort</i>	Homed Grebe <i>Podiceps auritus</i>	Larus argentatus <i>California Gull</i>
Red Elderberry <i>Sambucus racemosa</i>	Senecio jacobaea <i>Common Groundsel</i>	Pied-billed Grebe <i>Podilymbus podiceps</i>	Larus californicus <i>Glaucous Gull</i>
Common Snowberry <i>Symphoricarpos albus</i>	Senecio vulgaris <i>Canada Goldenrod</i>	Western Grebe <i>Aechmophorus occidentalis</i>	Larus hyperboreus <i>Western Gull</i>
<b>VALERIAN (Valerianaceae)</b>	Solidago canadensis <i>Prickly Sow-thistle</i>	Eared Grebe <i>Podiceps nigricollis</i>	Larus occidentalis <i>Forster's Tern</i>
Lamb's Lettuce <i>Valeriana locusta</i>	Sonchus asper <i>Common Sow-thistle</i>	<b>CORMORANTS (Phalacrocoracidae)</b>	Sterna forsteri <i>Caspian Tern</i>
<b>TEASEL (Dipsacaceae)</b>	Sonchus oleraceus <i>Common Tansy</i>	Double-crested Cormorant <i>Phalacrocorax auritus</i>	Sterna caspia
Teasel <i>Dipsacus sylvestris</i>	Tanacetum vulgare <i>Common Dandelion</i>	<b>HERONS (Ardeidae)</b>	<b>AMERICAN VULTURE (Cathartidae)</b>
<b>CUCUMBER (Cucurbitaceae)</b>	Taraxacum officinale <i>Meadow Salsify</i>	American Bittern <i>Botaurus lentiginosus</i>	Turkey Vulture <i>Cathartes aura</i>
Marwort <i>Marsh oregonus</i>	Tragopogon pratensis <i>Oyster Salsify</i>	Black-crowned Night Heron <i>Nycticorax nycticorax</i>	<b>HAWKS-EAGLES (Accipitridae)</b>
<b>HAREBELL (Campanulaceae)</b>	Tragopogon portifolius <i>Cocklebur</i>	Green-backed Heron <i>Bulorides striatus</i>	Bald Eagle <i>Haliaeetus leucocephalus</i>
Scouter's Bellflower <i>Campanula scouleri</i>	Xanthium strumarium	Great Blue Heron <i>Ardea herodias</i>	Northern Harrier <i>Circus cyaneus</i>
Campanula medium <i>Howellia</i>	<b>SALAMANDERS (Amphystomata)</b>	Great Egret <i>Casmerodius albus</i>	Sharp-shinned Hawk <i>Accipiter striatus</i>
Howellia aquatilis	Northwestern Salamander <i>Amphystoma gracile</i>	Sandhill Crane <i>Grus canadensis</i>	Cooper's Hawk <i>Accipiter cooperii</i>
<b>ASTER (Compositae)</b>	Long-toed Salamander <i>Amphystoma macrodactylum</i>	<b>SWANS-GESE-DUCKS (Anatidae)</b>	Northern Goshawk <i>Accipiter gentilis</i>
Yarrow <i>Achillea millefolium</i>	Pacific Giant Salamander <i>Dicamptodon ensatus</i>	Great White-fronted Goose <i>Anser albifrons</i>	Red-tailed Hawk <i>Buteo jamaicensis</i>
Pathfinder <i>Adenocaulon bicolor</i>	Olympic Salamander <i>Hyalobatrachium olympicum</i>	Snow Goose <i>Chen caerulescens</i>	Buteo swainsoni <i>Rough-legged Hawk</i>
Large-flowered Agoseris <i>Agoseris grandiflora</i>	<b>INGLS SALMONS (Plethodontidae)</b>	Canada Goose <i>Branta canadensis</i>	Buteo lagopus <i>Osprey</i>
Pearly-everlasting <i>Anaphalis margaritacea</i>	Clouded Salamander <i>Aneides ferrous</i>	Mallard <i>Anas platyrhynchos</i>	Pandion haliaetus <i>Buteo</i>
Mayweed Chamomile <i>Anthemis cotula</i>	Oregon Slender Salamander <i>Batrachoseps wrighti</i>	Gadwall <i>Anas strepera</i>	Accipiter
Common Burdock <i>Arcium minus</i>	Dunn's Salamander <i>Plethodon dunnii</i>	Green-winged Teal <i>Anas crecca</i>	<b>FALCONS (Falconidae)</b>
Douglas's Sagewort <i>Artemisia douglasiana</i>	Westm Red-backed Salamander <i>Plethodon vehiculum</i>	American Wigeon <i>Anas americana</i>	American Kestrel <i>Falco sparverius</i>
Columbia River Mugwort <i>Artemisia lindleyana</i>	Ensatina <i>Ensatina eschscholtzi</i>	Eurasian Wigeon <i>Anas penelope</i>	Falco columbarius <i>Peregrine Falcon</i>
Common California Aster <i>Aster chilensis</i>	<b>NEWTs (Salamandridae)</b>	Northern Pintail <i>Anas acuta</i>	Falco peregrinus
White-topped Aster <i>Aster ciliatus</i>	Rough-stemmed Newt <i>Taricha granulosa</i>	Northern Shoveler <i>Anas clypeata</i>	<b>GROUSE-PTARMIGAN (Phasianidae)</b>
Douglas's Aster <i>Aster subspicatus</i>	<b>TOADS (Bufonidae)</b>	Blue-winged Teal <i>Anas discors</i>	Ruffed Grouse <i>Bonasa umbellus</i>
English Daisy <i>Bellis perennis</i>	Western Toad <i>Bufo boreas</i>	Cinnamon Teal <i>Anas cyanoptera</i>	Bonasa umbellus <i>California Quail</i>
Water Marigold <i>Bidens beckii</i>	<b>TREEFROGS (Hylidae)</b>	Fuddy Duck <i>Oxyura jamaicensis</i>	Callipepla californica <i>Ring-necked Pheasant</i>
Nodding Beggars-lick <i>Bidens cernua</i>	Pacific Treefrog <i>Hyla regilla</i>	Wood Duck <i>Aix sponsa</i>	Phasianus colchicus
Three-lobed Beggars-lick <i>Bidens tripartita</i>	<b>TRUE FROGS (Ranidae)</b>	Canvasback <i>Aythya valisineria</i>	<b>PIGEONS-DOVES (Columbidae)</b>
Leafy Beggars-lick <i>Bidens frondosa</i>	Red-legged Frog <i>Rana aurora</i>	Ring-necked Duck <i>Aythya collaris</i>	Band-tailed Pigeon <i>Columba fasciata</i>
Western Beggars-lick <i>Bidens vulgata</i>	Spotted Frog <i>Rana probosa</i>	Lesser Scaup <i>Aythya affinis</i>	Rock Dove <i>Columba livia</i>
Bachelor's Button <i>Centaurea cyanus</i>	Bullfrog <i>Rana catesbeiana</i>	Barrow's Goldeneye <i>Bucephala islandica</i>	Mourning Dove <i>Zenaidura macroura</i>
Brown Knapweed <i>Centaurea jacea</i>	<b>TURTLES (Chelydridae)</b>	Common Goldeneye <i>Bucephala clangula</i>	<b>PARROTS (Psittacidae)</b>
Marguerite <i>Chrysanthemum leucanthemum</i>	Western Pond Turtle <i>Chelydra macrochelys</i>	Bullhead <i>Bucephala albeola</i>	Monk Parakeet <i>Myiopsitta monachus</i>
Juicy <i>Cichorium intybus</i>	Painted Turtle <i>Chrysemys picta</i>	Common Merganser <i>Mergus merganser</i>	<b>OWLS (Tytonidae)</b>
Canada Thistle <i>Cirsium arvense</i>	Pond Slider <i>Pseudemys scripta</i>	Red-breasted Merganser <i>Mergus serrator</i>	Barn Owl <i>Tyto alba</i>
Common Thistle <i>Cirsium vulgare</i>	<b>IGUANIDS (Iguanidae)</b>	Hooded Merganser <i>Lophodytes cucullatus</i>	<b>OWLS (Strigidae)</b>
Foreweed <i>Coryza canadensis</i>	Western Fence Lizard <i>Sceloporus occidentalis</i>	<b>RAILS-COOTs (Rallidae)</b>	Short-eared owl <i>Asio flammeus</i>
Tough Hawkbeard <i>Crepis solonch</i>	<b>ALLIGATOR LIZARDS (Anguillidae)</b>	Virginia Rail <i>Rallus limicola</i>	Long-eared Owl <i>Asio otus</i>
Smooth Hawkbeard <i>Crepis capillaris</i>	Northern Alligator Lizard <i>Gerrhonotus coarctatus</i>	Sora Rail <i>Columbicope noveboracensis</i>	Great Horned Owl <i>Bubo virginianus</i>
Unusual Fleabane <i>Eriogon annuus</i>	Southern Alligator Lizard <i>Gerrhonotus multicarinatus</i>	American Coot <i>Fulica americana</i>	Western Screech Owl <i>Otus kennicottii</i>
Eden's Daisy <i>E. decumbens</i>	<b>SKINKS (Scinidae)</b>	Somipalmated Plover <i>Charadrius semipalmatus</i>	Burrowing Owl <i>Athene cunicularia</i>
Madrophia Fleabane <i>Eriogon philadelphicus</i>	Western Skink <i>Eumeces skiltonianus</i>	Killdeer <i>Charadrius vociferus</i>	Northern Pygmy Owl <i>Glaucidium gnoma</i>
Goldenrod <i>Galinzoga ciliata</i>	<b>BOAS (Boidae)</b>	<b>SANDPIPERS (Scolopacidae)</b>	Northern Saw-whet Owl <i>Aegolius acadicus</i>
Lark Cudweed <i>Gnaphalium palustre</i>		Greater Yellowlegs <i>Tringa melanoleuca</i>	<b>NIGHTJARS (Caprimulgidae)</b>
Neckweed <i>Helenium autumnale</i>		Solitary Sandpiper <i>Tringa solitaria</i>	Common Nighthawk <i>Chordeiles minor</i>
		Spotted Sandpiper <i>Actitis macularia</i>	<b>HUMMINGBIRDS (Trochilidae)</b>
			Anna's Hummingbird <i>Calypte anna</i>

SWIFTS Vaux's Swift Chordeiles vauoi	Larus migratorius Herring Gull Catharus guttatus	Didolphis virginiana	Canis latrans Red Fox Vulpes vulpes Gray Fox Urocyon cinereoargenteus
WOODPECKERS (Picidae) Northern Flicker Colaptes auratus Lewis' Woodpecker Melanerpes formicivorus Red-breasted Sapsucker Sphyrapicus ruber Downy Woodpecker Picoides pubescens Hairy Woodpecker Picoides villosus Pileated Woodpecker Dryocopus pileatus Acorn Woodpecker Melanerpes formicivorus	SHRIKES (Laniidae) Northern Shrike Lanius excubitor	SHREW (Soricidae) Vagrant Shrew Sorex vagrans Dusky Shrew Sorex monticolus Marsh Shrew Sorex bendirii Townbridge Shrew Sorex townbridgii	BEARS (Ursidae) Black Bear Ursus americanus
FLYCATCHERS (Tyrannidae) Western Kingbird Tyrannus verticalis Olive-sided Flycatcher Contopus borealis Western Wood-Pee-wee Contopus sordidulus Say's Phoebe Sayornis saya Dusky Flycatcher Empidonax oberholseri Hammond's Flycatcher Empidonax hammondi Willow Flycatcher Empidonax traillii Western Flycatcher Empidonax difficilis	PIPITS-WAGTAILS (Cinclidae) Water Pipit Anthus spinoletta	MOLES (Talpidae) American Shrew Mole Neurotrichus gibbsii Townsend's Mole Scapanus townsendii Coast Mole Scapanus orarius	CATS (Felidae) Bobcat Felis rufus
LARKS (Alaudidae) Horned Lark Eremophila alpestris	DIPPERS (Cinclidae) American Dipper Cinclus mexicanus	COMMON BATS (Vesperilionidae) Yuma Bat Myotis yumanensis Little Brown Bat Myotis lucifugus Caldwellia Bat Myotis californicus Long Eared Bat Myotis evotis Fringed Bat Myotis thysanodes Pacific Pallid Bat Antrozous pallidus Silver Haired Bat Lesionyeotis noctivagans Big Brown Bat Eptesicus fuscus Hoary Bat Lasiurus cinereus Western Big Eared Bat P. townsendii vity townsendii	RACCOONS (Procyonidae) Raccoon Procyon lotor
SWALLOWS (Hirundinidae) Tree Swallow Tachycineta bicolor Violet-green Swallow Tachycineta thalassina Purple Martin Progne subis Bank Swallow Piparia riparia Nashua Rough-winged Swallow Stelgidopteryx serripennis Old Swallow Hirundo pyrrhonota Barn Swallow Hirundo rustica	WAXWINGS (Bombycillidae) Cedar Waxwing Bombycilla cedrorum	RETS-HARES-PIKAS (Leporidae) Brush Rabbit Sylvilagus bachmani Eastern Cottontail Sylvilagus floridanus	MUSTELIDS (Mustelidae) Marten Martes americana Short Tailed Weasel Mustela erminea Long Tailed Weasel Mustela frenata Mink Mustela vison Spotted Skunk Spilogale putorius Striped Skunk Mephitis mephitis River Otter Lutra canadensis
JAYS-CROWS (Corvidae) Scrub Jay Aphelocoma coerulescens Stellar's Jay Cyanocitta stelleri American Crow Corvus brachyrhynchos Common Raven Corvus corax	STARLINGS (Sturnidae) European Starling Sturnus vulgaris	MNTN BEAVERS (Aplodontidae) Mountain Beaver Aplodontia rufa	DEER (Cervidae) Mule Deer Odocoileus hemionus
ITRICE-CHICKADEES (Paridae) Black-capped Chickadee Parus atricapillus Thicket-backed Chickadee Parus rufescens	WARBLERS AND SPARROWS (Emberizidae) Orange-crowned Warbler Vermivora celata Yellow-rumped Warbler Dendroica coronata Black-Throat Gray Warbler Dendroica virens Townsend's Warbler Dendroica townsendii Yellow Warbler Dendroica petechia MacGillivray's Warbler Oporornis tolmiei Wilson's Warbler Wilsonia pusilla Nashville Warbler Vermivora ruficapilla Common Yellowthroat Geothlypis trichas Yellow-breasted Chat Icteria virens Black-headed Grosbeak Pheucticus melanocephalus Lazuli Bunting Passerina amoena Rufous-sided Towhee Pipilo erythrophthalmus Savannah Sparrow Passerculus sandwichensis Song Sparrow Melospiza melodia Chipping Sparrow Spizella passerina Dark-eyed Junco Junco hyemalis White-crowned Sparrow Zonotrichia leucophrys Golden-crowned Sparrow Zonotrichia atricapilla Fox Sparrow Passerella iliaca Western Meadowlark Sturnella neglecta Yellow-headed Blackbird Xanthocephalus xanthocephalus Red-winged Blackbird Agelaius phoeniceus Tricolored Blackbird Agelaius tricolor Brewer's Blackbird Euphagus carolinus Brown-headed Cowbird Molothrus ater Northern Oriole Icterus galbula Western Tanager Piranga ludoviciana House Sparrow Passer domesticus	BEAVERS (Castoridae) Beaver Castor canadensis	
RUSHES (Muscicapidae) Idea-crowned Kinglet Regulus satrapa Myiophobus solitarius Myiophobus townsendii Myiophobus calandula Palm Bluebird Myiophobus mexicanus Wilson's Thrush Myiophobus estatus Myiophobus mexicanus	FINCHES (Fringillidae) Pine Siskin Carduelis pinus American Goldfinch Carduelis tristis Pine Grosbeak Pinicola enucleator Russet Finch Leucosticte arctica Purple Finch Carpodacus purpureus Cassin's Finch Carpodacus cassinii House Finch Carpodacus mexicanus Evening Grosbeak Coccothraustes vespertina Lesser Goldfinch Carduelis psaltria	POCKET GOPHERS (Geomysidae) Mazama Pocket Gopher Thomomys mazama Cameas Pocket Gopher Thomomys talpiformis	
		RATS-MICE (Cricetidae) Deer Mouse Peromyscus maniculatus Dusky Footed Wood Rat Neotoma fuscipes Bushy Tailed Wood Rat Neotoma cinerea California Redbacked Vole Clethrionomys californicus Pacific Phenacomys Phenacomys albipes Red-Tree Vole Phenacomys canescens Townsend's Vole Microtus townsendii Long Tailed Vole Microtus longicaudus Creeping Vole Microtus oregoni Vole Microtus Muskrat Onychomys leucogaster Black Rat Rattus rattus Norway Rat Rattus norvegicus House Mouse Mus musculus Pacific Jumping Mouse Zapus trinotatus	
		NUTRIA (Capromyidae) Nutria Myocastor coypus	

Site # \_\_\_\_\_  
Observer \_\_\_\_\_  
Date \_\_\_\_\_

## HISTORICAL DATA

## **Historic Distribution of Natural Resources in Multnomah County, Oregon**

**Prepared by:**  
**Maurita Smyth, Environmental Consultant**

**September 1991**

This report summarizes initial research findings on the historic distribution of natural resources within Multnomah County. The underlying purpose behind this research was to gather basic information on the county's natural resource diversity beginning in the mid 19th century. Locations and extent of natural resource losses would thus be identified, and when compared to current conditions, the information obtained would allow identification of sites for field survey and for possible inclusion in the list of properties to be purchased under the Natural Areas Acquisition Fund.

**Methodology:** A literature search was conducted of historic documents -- maps, reports, magazine articles, etc. -- from various sources including the Oregon Historical Society (OHS), Bureau of Land Management (BLM), Multnomah County Planning Department, the Oregon Department of Fish and Wildlife (ODFW), and the Natural Heritage Data Base (NHDB). Historic information was not easily retrievable or available for certain time periods specified in the contract. Contract time limitations precluded more in depth research.

As it was gathered historic information was provided to Esther Lev, Environmental Consulting, to compare with current data and to identify sites for field inventory. Copies of significant photos, maps, and a report on the historic distribution of fish species within the county are appended to this report. In addition, other documentation of historic interest to the county was identified for possible future acquisition into county archives.

**Findings:** In the mid-1800s prior to intensive settlement of the Oregon territory promoted by the Land Donation Claims Act, Multnomah County was extensively timbered by cedar, fir, hemlock, and maple. On the more southerly slopes and along the banks of the Willamette River oak savannahs could be found. Numerous creeks fed the Willamette on the east and west banks. Creeks cut steep ravines through the "high mountainous country " (1868 survey map) meandering their way to the Willamette in the downtown area and sometimes emptying into small lakes. Three fairly large lakes lay at the base of the westhills -- Guilds, Kittredge, and Doanes. The east side of the Willamette lay flatter than the west forming extensive bottomlands perennially wet or inundated during the months of heavy rain. With the exception of the naturally high

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ground of the downtown core area and the steep cliff above Mocks Bottom (now Swan Island), the shorelines of the Willamette were dominated by vast stretches of marshes, sloughs, and creek mouths.

Between the Columbia River and the Columbia Slough, there were numerous lakes and sloughs, creeks and springs that drained to the west from the general area where Portland International Airport and surrounding commercial development are now located. Smith and Bybee lakes are mere remnants of the extensive water bodies and wetlands that dominated this section of the county. Mark Wilson, a consulting horticulturist, has done extensive research into various vegetative habitats in Oregon and especially in the Willamette Valley. His research indicates that Deschampsia wetlands were present in the Columbia bottomlands. This research has not been documented, however, and verification would be necessary prior to any proposed restoration project involving this habitat type.

At its eastern end, the county was described by the early surveyors as "high mountain land. Unfit for cultivation and unsurveyed." The soil was considered 3rd rate. The land was well timbered with fir, cedar, and hemlock with an understory of hazel, vine maple, and briars. This area, now the Mt. Hood National Forest, is partially located within the newly created Columbia Gorge National Scenic Area. The Bull Run watershed was generally described as possessing a quality above "common" with the bottomland along the North Sandy River rich and well adapted to cultivation. It too was well timbered with fir and cedar.

The Sandy River and especially its upper reaches showed many oxbows timbered to the waterline. Undergrowth was thick with vine maple and hazel. Surveyors described the Sandy drainage as follows:

" This fractional Township contains a large amount of fine farming lands and some excellent FIR (sic) and CEDAR (sic) timber. .. It has an abundant supply of fine water power and will support a large settlement."

Today the Sandy River area possesses one of the most natural suburban parks existing in the state -- Oxbow County Park. In addition to the mainstem, there were numerous smaller feeder streams scattered throughout this end of the county emptying into the Sandy and Columbia rivers.

Central county east of the Willamette was also dotted with small lakes and streams. One major drainage likely originating from Rocky Butte was called Sullivan's Gulch. We now refer to this ravine as the I-84 corridor. Further south the major drainage was formed by Johnson Creek which, in addition to Crystal Springs, is one of the last surface flowing streams within the city of Portland draining into the Willamette River. Streams and attendant wetlands

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that dominated most of the county's low elevation areas have been either filled or placed into culverts.

The west hills were logged during the intense settlement era between 1850 and 1900. Forest Park provides protection of the same vegetative species as before development -- dense stands of fir, cedar, hemlock, and maple. Creeks such as Doane and Saltzman, among others, still flow to the Willamette slough but either no longer support native fish populations or have severely reduced fish populations because of poor upstream passage through the large culverts under Highway 30 and the railroad tracks. In 1990 a few coho salmon were discovered above Highway 30 in Miller Creek which flows into the Willamette slough west of Linnton. Balch Creek still retains a small population of native cutthroat trout and flows for most of its length before disappearing down a huge pipe at Lower MacCleay Park. Creeks that ran south of Balch through downtown Portland -- Tanner, Johnson, Enois, and Markham -- were placed in pipes and filled over by the turn of the century.

Wildlife abounded in the county when white settlers came to work the land in exchange for free title. Bear, elk, deer, muskrat, beaver, otter, mink, cougar, bobcat, and gray wolf existed throughout the land. Fish species both anadromous and resident included salmon, steelhead, cutthroat trout, and lamprey. The extensive wetlands supported rich and varied invertebrate populations, including spotted frog, red-legged frog, pond turtle and painted turtle. These species provided food for fish and wildlife. Native amphibians and reptiles have been in decline for many decades. Birds, especially waterfowl, nested or migrated through this area by the millions. The Lewis and Clark journals state that the din produced by waterfowl was so loud people could not sleep. Yellow-billed cuckoos, which inhabited the Columbia River bottomlands, were observed sporadically after 1925. The last individual was seen on July 27, 1940. By 1905, the gray wolf was no longer extant in Multnomah County although it must have been here prior to that time. Records show that the gray wolf inhabited Clark County across the Columbia and all the counties south of Multnomah on the west side of the Cascades. An article from the Oregon Sportsman magazine of 1905 stated that the wolf would probably always be in the upper Clackamas drainage due to the remoteness of the land. Currently the gray wolf is federally and state listed as endangered and considered extirpated within Oregon.

#### **Summary**

When white settlement began in earnest in the late 1840s with the passage of the Land Donations Claims Act, Multnomah County was a land of timber, creeks, rivers, and marshes. West of the Willamette River the land was dominated by "high mountains" of fir, cedar, hemlock, and maple with a few stands of Oregon ash. East of the Willamette River, the terrain was generally flatter with rolling hills and buttes heavily timbered in fir, cedar, hemlock,

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and maple. The eastside eventually melds into the Cascade Range foothills with high steep mountainous terrain filled with creeks and rivers and heavily vegetated by the same conifers and deciduous trees as the rest of the county.

Along the Willamette and Columbia rivers, the land areas were dominated by extensive bottomlands and marshes. Creeks abounded along the Willamette and between the Columbia River and its slough, an extensive series of lakes and drainages covered the land. This system supported salmon in the early 1900s. In a few isolated places along the Willamette, near Dunsmuir on the west and Oaks Bottom on the east, stands of Oregon white oak could be found.

Survey maps from 1850, 1905-1913, and the 1930s clearly show the loss of natural diversity. Timber was cut to clear the land for farming and shipping. East of the Willamette creeks and marshes avoided by the early white settlers because they lacked the technology to drain them still were plentiful until the late teens. On the west side in the vicinity of downtown Portland, the creeks and their attendant steep ravines were culverted and covered with up to 100' of fill before late 19th century. The only remaining stretches of wetlands are located at Oaks Bottom along the mainstem Willamette River and at Burlington Bottoms along the Willamette Slough. It is estimated that we have lost more than 95% of the wetlands along the Willamette River in Multnomah County. In the Columbia region, the large number of lakes no longer exists and the many spring fed creeks were put underground as development progressed. Likely 80-85% of the wet areas along the Columbia have been lost. Of the estimated thirty or more large and small creek systems and their attendant marshes identified by the early surveyors, less than a dozen remain in a free flowing or partially free flowing state. These include Johnson Creek, Crystal Springs, the Sandy River and its tributaries, Fanno Creek, Tryon Creek, Balch Creek, and other smaller creeks that flow through city neighborhoods. While a hundred or so years ago these streams supported fish and amphibian populations, many today suffer from channelization and pollution. Still others only flow underground.

Upland habitats have also been lost. Few old growth stands remain. One 20 acre site was "discovered" in the westhills recently. The Sandy River drainage and Oxbow Park provide the most extensive county owned stands of old growth forest. Oak savannah habitat was likely not common along the Willamette. The surveyors did not make note of such stands on their maps, but a few residualized stands remain. It is not possible to determine the extent of loss of this habitat type. Prairies also were likely not common due to the predominantly wet nature of the county. However, two prairies are still noted on county maps, both lying within the boundaries of the Mt. Hood National Forest.

## REPORT ON HISTORIC AND CURRENT FISH POPULATIONS OF STREAMS WITHIN THE GREATER PORTLAND METROPOLITAN AREA

This report provides a list of all known fish species, both native and exotic, that inhabit streams within the outer boundaries of what is referred to as the greater Portland metropolitan area. The information contained in this report was gathered mostly through personal communication with various individuals both private and professional including staff biologists from the Oregon Department of Fish and Wildlife (ODFW). There is little or no formal documentation of non-game and non-commercial fish species. The information contained herein is as complete as possible given this situation.

There are currently 100 species of fish within the state of Oregon. Of these, only 32 species are native. Although it is likely that all watercourses in Oregon now contain exotic fish species, urban streams are especially vulnerable to the invasion or introduction of exotics. The sources of these introductions include deliberate planting by the former Fish Commission of Oregon and now by ODFW and the accidental or purposeful release by private parties. In addition, some exotic species have migrated through the Columbia River system from Washington state.

The material in this report is organized by drainage and by geographic location, west or east of the Willamette River which transects the city of Portland. Known and likely historic and current populations are listed for each drainage. In addition, where possible, comments are provided on the current condition of the habitat, noteworthy items on population changes, and the potential for restoration in areas of habitat depletion.

### WESTSIDE DRAINAGES

#### Fanno Creek Drainage

Historic populations: cutthroat trout - Willamette race  
(*Oncorhynchus clarki*)  
sculpin species - Cottidae spp. likely  
includes reticulate sculpin (*Cottus*  
*perplexus*) and others  
redside shiner (*Richardsonius balteatus*)  
largescale sucker (*Catostomus*  
*macrocheilus*)  
western Brook lamprey (*L. richardsoni*)  
northern squawfish  
(*Ptychocheilus oregonensis*) - in  
lower reaches

## Fanno Creek contd.

Current populations: Add to the above the following species:

brown bullhead (*Ictalurus nebulosus*)  
carp (*Cyprinus carpio*)  
crappie (*Pomoxis* sp.),  
bluegill (*Lepomus macrochirus*)  
largemouth bass (*Micropterus salmoides*)  
smallmouth bass (*Micropterus*  
dolomieu) - possible species  
mosquito fish (*Gambusia affinis*)

Last year, 1989, a dead steelhead trout was discovered in the upper reaches of Fanno Creek. There are no official historic or current records that verify a population of steelhead trout in this creek system.

Fanno Creek is fed by many small tributaries that are spring fed. Summer flows are low due to a lack of sustained snow melt. The habitat is severely impacted in places primarily due to siltation from urban residential development. Other areas, mostly in the steeper canyons, are in relatively good shape. Electroshocking to determine current populations and their locations has been limited. ODFW plans to continue to assess fish populations of Fanno Creek.

## Rock Creek

Historic populations:

cutthroat trout - Willamette race  
resident cutthroat (*Oncorhynchus clarki*)  
sculpin species - Cottidae spp. likely  
includes reticulate sculpin (*Cottus*  
perplexus) and others  
redside shiner (*Richardsonius balteatus*)  
largescale sucker (*Catostomus*  
macrocheilus)  
western brook lamprey (*L. richardsoni*)  
northern squawfish  
(*Ptychocheilus oregonensis*)

Current populations: add to the above list the following species;

brown bullhead (*Ictalurus nebulosus*)  
mosquito fish (*Gambusia affinis*)  
carp (*Cyprinus carpio*)  
bluegill (*Lepomus macrochirus*)  
largemouth bass (*Micropterus salmoides*)  
rainbow trout (*Oncorhynchus mykiss*)

**Dairy Creek mainstem:** Data incomplete. Upper watershed (outside the urban boundary) maintains good habitat and is known to support the following species:

cutthroat trout - Willamette race  
(*Oncorhynchus clarki*)  
sculpin - Cottidae spp.  
western brook lamprey (*Lampetra richardsoni*)  
possible rainbow trout (*Oncorhynchus mykiss*)

In the lower end of the creek below Highway 26 it is likely that the following species occur:

northern squawfish (*Ptychocheilus oregonensis*)  
largescale sucker (*Catostomus macrocheilus*)  
redside shiner (*Richardsonius balteatus*)

All these species are native and were likely in this creek system historically. These species have been recently verified by ODFW staff.

#### **Tualatin River Drainage**

Historic populations would be the same as for Dairy Creek with the addition of the following for current populations:

brown bullhead (*Ictalurus nebulosus*)  
carp (*Cyprinus carpio*)  
crappie (*Pomoxis* sp.)  
largemouth bass (*Micropterus salmoides*)  
smallmouth bass (*Micropterus dolomieu*)  
channel catfish (*Ictalurus punctatus*)  
steelhead (*Oncorhynchus mykiss*)  
bluegill (*Lepomis macrochirus*)  
yellow perch (*Perca flavescens*)

**Saltzman Creek:** No historic data available. Currently no fish species have been located in the lower reaches. The upper watershed was not inventoried by ODFW when they sampled the lower end of the creek during the summer of 1990.

#### **Miller Creek**

Historic populations: Information not documented. Likely historic species would include:

**Miller Creek contd.**

coho salmon (*Oncorhynchus kisutch*)  
steelhead (*Oncorhynchus mykiss*)  
sculpin - Cottidae spp.

**Current populations:** Recent electroshocking by ODFW staff located the following species downstream of the railroad tracks approximately several hundred yards from the Willamette River.

coho salmon (*Oncorhynchus kisutch*)  
steelhead (*Oncorhynchus mykiss*)

Although the creek above Route 30 (south of Rte.30) is in good shape and has an invertebrate population that could sustain various fish species, there are two barriers (culverts) at the railroad overpass and Route 30 which preclude anadromous fish movement upstream to potentially usable habitat. In addition, the flow from Miller Creek is intermittent which would also limit habitat availability.

**Balch Creek**

**Historic populations:** No documented data. Likely species would include:

cutthroat trout (*Oncorhynchus clarki*) - both resident and searun  
coho salmon (*Oncorhynchus kisutch*)  
winter steelhead (*Oncorhynchus mykiss*)

**Current populations:** resident cutthroat only due to the fact that much of the creek has been placed into sewers from the mouth at the Willamette River and upstream. In addition there is a barrier to fish movement just below MacCleay Park.

**Tryon Creek**

**Historic populations:** resident cutthroat (*Oncorhynchus clarki*)  
searun cutthroat "  
coho salmon (*Oncorhynchus kisutch*)  
winter steelhead (*Oncorhynchus mykiss*)  
sculpin - Cottidae spp.

**Possible species:** largescale sucker (*Catostomus macrocheilus*)  
redside shiner (*Richardsonius balteatus*)

**Current populations:** Data are limited, however, it is possible

that coho salmon still exist in this watershed along with a few steelhead. ODFW personnel report that they have been unable to locate juvenile steelhead in the stream.

Water quality in Tryon Creek is poor due to leaky sewers that run next to and through the creek at various points. In addition there may be coliform pollution from horse pastures in the upper reaches.

### EASTSIDE DRAINAGES

#### Johnson Creek Drainage

Historic Populations: coho salmon (Oncorhynchus kisutch)  
steelhead (Oncorhynchus mykiss)  
cutthroat trout - both searun and resident  
(Oncorhynchus clarki)  
sculpin species - Cottidae spp. likely  
includes reticulate sculpin (Cottus  
perplexus) and others  
dace  
redside shiner (Richardsonius balteatus)  
largescale sucker  
(Catostomus macrocheilus)  
pacific lamprey (Lampetra tridentata)  
western Brook lamprey (L. richardsoni)  
n. squawfish (Ptychocheilus oregonensis)  
chinook salmon (Oncorhynchus tshawytscha)  
an occasional fall chinook would be found  
spawning in lower reaches of the creek.

Current populations: add to the above list the following species;

brown bullhead (Ictalurus nebulosus)  
mosquito fish (Gambusia affinis)  
rainbow trout, other than steelhead,  
(Oncorhynchus mykiss)  
carp (Cyprinus carpio)

There are possibly other warm water species within this drainage such as crappie (Pomoxis sp.), bluegill (Lepomis macrochirus), largemouth bass (Micropterus salmoides and smallmouth bass (Micropterus dolomieu).)

The Johnson Creek drainage is very much disturbed through channelization and silt impaction from agriculture areas in the upper reaches. Flows in summer are low. The habitat continues to degrade and the impact on fish populations of the currently proposed flood control plan is unknown.

Note: No data available on Kelley and Mitchell creeks, upper

tributaries to Johnson.

Fairview Creek      No data.      Likely this creek supported populations of searun cutthroats (*Oncorhynchus clarki*) and Cottidae species.

#### Sandy River Drainage

Historic populations:      chinook salmon (*Oncorhynchus tshawytscha*)  
coho salmon      (*Oncorhynchus kisutch*)  
steelhead trout (*Oncorhynchus mykiss*)  
winter and summer \*  
searun cutthroat (*Oncorhynchus clarki*)  
resident      "      "      "  
smelt      (*Thaleichthys pacificus*)  
northern squawfish      (*Ptychocheilus oregonensis*)  
chiselmouth chub (*Acrocheilus alutaceus*)  
largescale sucker      (*Catostomus macrocheilus*)  
sculpin - Cottidae spp.  
pacific lamprey      (*Lampetra tridentata*)  
western brook lamprey (*L. richardsoni*)

Current populations:      Add the following to the above list.

summer steelhead      (*Oncorhynchus mykiss*)  
resident rainbow      "      "

Note: resident rainbow may have been present historically, but there is no documentation to substantiate that fact.

mosquito fish (*Gambusia affinis*) likely in agricultural ponds in upper watershed.

\* Local residents of several generations claim there was an historic small run of summer steelhead into the Clear Fork. Some ODFW personnel claim there was not but they do not have data to disprove what was observed by residents over a forty year time span. There is no question as to the historic and current presence of a winter steelhead run.

The Sandy River drainage is the least disturbed of all the urban stream drainages covered by this report.

#### Kellogg Creek (including Mt. Scott Creek)

Historic populations:      coho salmon      (*Oncorhynchus kisutch*)  
not found above falls in Mt. Scott Creek

steelhead (Oncorhynchus mykiss)

**Kellogg Creek contd.**

cutthroat trout - both searun and resident (Oncorhynchus clarki)  
sculpin species - Cottidae spp.  
redside shiner (Richardsonius balteatus)  
largescale suckers (Catostomus macrocheilus)  
western brook lamprey (L. richardsoni)  
northern squawfish (Ptychocheilus oregonensis)

Current populations: add to the above list the following species;

mosquito fish (Gambusia affinis)  
carp (Cyprinus carpio)  
Possible additional species would include: bluegill (Lepomis macrochirus)  
brown bullhead (Ictalurus nebulosus.)

**Clackamas River Drainage**

Historic populations: coho salmon (Oncorhynchus kisutch)  
chinook salmon (Oncorhynchus tshawytscha)  
spring and fall runs  
steelhead (Oncorhynchus mykiss)  
cutthroat trout - both searun and resident (Oncorhynchus clarki)  
sculpin species - Cottidae spp. likely includes reticulate sculpin (Cottus perplexus) and others  
redside shiner (Richardsonius balteatus)  
largescale suckers (Catostomus macrocheilus)  
pacific lamprey (Lampetra tridentata)  
western brook lamprey (L. richardsoni)  
northern squawfish (Ptychocheilus oregonensis)  
bull trout (Salvelinus malma)  
chiselmouth sucker (Acrocheilus alutaceus)

Current populations: add the following to the above list:

shad (Alosa sapidissima)  
carp (Cyprinus carpio)

Clackamas River contd.

walleye (*Stizostedion vitreum*) \*  
smallmouth bass (*Micropterus dolomieu*) \*

white sturgeon (*Acipenser transmontanus*)  
- this species is occasionally found  
near the Clackamas River mouth.

summer steelhead (*Oncorhynchus mykiss*)  
mosquito fish (*Gambusia affinis*) -likely  
somewhere in system in agricultural  
areas.

\* These two species are possibly located near the Clackamas River mouth in the vicinity of Clackamet Park.

While stretches of the Clackamas River are pristine, the river also suffers under impacts from poor dam passage, logging and hydroelectric development in the mainstem and Oak Grove fork and from agricultural practices along the tributaries. Private logging in lower elevations increase sediment production and causes impaction of river substrate. Diversion of water to irrigate row crops depletes water availability causing low flows during critical times of the year.

**Summary:** The major changes from the historic to the present are the addition of exotic warm water species. With few exceptions, all drainages within the greater metro area have been negatively impacted by urban and rural development. Elevated water temperatures, sediment impaction of the substrate, and reduced flows all contribute to generalized habitat depletion and reduction of fish populations. While fish species have maintained a presence in the urban environment, their populations are greatly reduced from historic numbers. Restoration is possible in some streams but only with improved land management practices and rigorous enforcement of water quality standards.

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## **PLAN METHODOLOGY**

**(Not included, this section will detail how the plan evolved and what base information was used.)**

## 1991 NATURAL AREA NOMINATIONS

<u>Location*</u>	<u>Natural Area System</u>
1. SE 159th Dr. & Jenne Rd. (SE of Powell Butte)	Johnson Creek
2. SE 45th & Springwater Line	Johnson Creek
3. SE Foster Road (East of Foster Drive-in)	Johnson Creek
4. Beaver Creek Canyon, et al	Sandy River and Tributaries
5. Westside of the Multnomah Channel	Multnomah Channel/Sauvie Island
6. Wetlands & Uplands Adjacent to Blue Lake Park	Columbia Slough/Fairview Lake Creek
7. McGuire Island	Columbia Slough/Fairview Lake Creek
8. Undeveloped land adjacent to Fairview Creek and Lake	Columbia Slough/Fairview Lake Creek
9. Company Lake	Sandy River
10. Teleford Rd and 252nd	Johnson Creek
11. Terwilliger Blvd.	Forest Park/West Hills Corridor
12. Undeveloped lots on Rocky Butte	
13. Undeveloped strip under the St. John's Bridge	Willamette River
14. Parcel between County Boat Ramp and Virginia Lake	Sauvie Island/Multnomah Channel
15. Undeveloped portion of Ross Island	Willamette River
16. Buck Creek Drainage	Sandy River
17. Gordon Creek Drainage	Sandy River
18. Property adjacent to Beggar's Tick Marsh	Johnson Creek
19. Wetland westside Hayden Island	Columbia River
20. Hampton property	Forest Park/West Hills Corridor

\* More specific information on locations is available.

## DEFINITIONS

**Bank** - The rising ground surrounding a lake, river, or other water body.

**Channel** - The bed where a stream of water runs.

**Corridor** - A narrow strip of land that differs from the matrix on either side.

**Cover** - Vegetation that serves to protect animals from excessive sunlight, drying, or predators.

**Cultivated landscape** - A landscape dominated by plowed land for crops, but usually with patches of natural and managed land present.

**Dominant** - The species controlling the environment.

**Enhance** - To raise to a higher degree; improve quality or available capacity; intensify; magnify.

**Habitat** - Place where a plant or animal species naturally lives and grows; its immediate surroundings.

**Interspersion** - The proximity and interaction of one natural area to other adjacent areas.

**Land potential** - The possible uses and values of a land area.

**Landscape ecology** - A study of the structure, function and change in heterogeneous land area composed of interacting ecosystems.

**Landscape** - A heterogeneous land area composed of a cluster of interacting ecosystems that are repeated in similar form throughout. Landscapes vary in size, down to few kilometers in diameter.

**Managed landscape** - A landscape, such as rangeland or forest, where native species are harvested.

**Multi-aged stand** - A naturally developed stand usually with trees of many ages.

**Natural areas** - Includes land and water that has substantially retained its natural character, which is an important habitat for plant, animal, or marine life. Such areas are not necessarily completely natural or undisturbed, but can be significant for the study of natural, historical, scientific, or paleontological features, or for the appreciation of natural features.

**Natural landscape-** An area where human effects, if present are not ecologically significant to the landscape as a whole.

**Natural resource** - Air, land and water and the elements thereof which are valued for their existing and potential usefulness to man.

**Preserve** - To save from change or loss and reserve for a special purpose.

**Protect** - Save or shield from loss, destruction or injury.

**Riparian** - Relating to, living, or located on the bank of a natural water course (stream, river, etc.).

**Seral Stage** - A characteristic association of plants and animals during succession and before climax.

**Structural** - Different habitat types within a Natural Area (i.e., Diversity; grasslands, forest, open water, etc.).

**Wetlands** - Lands transitional between terrestrial and aquatic where the water table is usually at or near the surface or the land is covered by shallow water. Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.