

ADOPTED

**Natural Resources Protection Plan  
for the  
Columbia South Shore**



PORTLAND BUREAU OF PLANNING

June 2000

(Plan adopted November 1993)

Adopted

# Natural Resources Protection Plan for the Columbia South Shore

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1990

Original Plan Adopted by the Portland City Council  
November 7, 1990  
Ordinance Number 163609

Adopted by the Portland City Council  
November 17, 1993  
Ordinance Number 167127

(Note: Code amendments and map corrections have occurred since this plan was adopted by the Portland City Council. The maps, information, and recommendations in this plan present the material as it was adopted in November, 1993 by City Council. For up-to-date information about zoning and map boundaries, please consult current versions of the Portland Zoning Code and Zoning Atlas.)

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# Introduction



## Chapter 1

## **INTRODUCTION**

The Columbia South Shore represents a portion of the historic floodplain of the Columbia River extending 20 miles eastward from the Willamette River to the Sandy River. Its history has been determined primarily by flooding and subsequent human response. The Columbia River has changed almost beyond recognition since Portland was incorporated in 1851. In its natural state the floodplain was unstable, changing yearly with new silt deposits, carved basins, and channels created by the river. A network of lakes, waterways, and wetlands spread over the entire area. It was thickly forested along shores and low-lying areas, but was also made up of expanses of wetland prairie and oak Savannah bordered by riparian gallery forest. It supported populations of waterfowl, elk, deer, river otter, and smaller mammals. All but elk continue to be regularly found in the area.

After 1850, the Donation Land Claim Act drew increasing numbers of settlers from the east, and the area changed radically as settlers adapted it to their purposes. Most natural resources were highly modified to accommodate agricultural activity and, more recently, urban development. Today there are a few remnants left of the once-common vegetation pattern, but they are now under pressure for development to more intense land uses. However, these natural resources still provide important functions such as ponding areas and drainageways for stormwater runoff, recharge areas for groundwater, filtering systems to trap pollutants, sediment trapping, aesthetics, recreation, and natural habitat.

The *Columbia South Shore Natural Resources Protection Plan* (also referred to as the Natural Resources Protection Plan or Plan) provides an area-wide approach for conservation of significant natural resources and preservation of resource values in the Columbia South Shore, a 2,800-acre portion of the historic flood plain of the Columbia River in northeast Portland. It identifies, evaluates, and protects significant fish and wildlife habitats, ecologically and scientifically significant natural areas, open spaces, water bodies, wetlands, and the functions and values of the Columbia South Shore as a whole, and provides resource protection, mitigation, and enhancement regulations and guidelines to retain and restore natural habitat areas and values. It addresses protection of ecosystems related to the Columbia Slough, allowing coordination with other local, state, and federal agencies to provide a comprehensive approach in protecting significant natural resources. Plan regulations and standards implement Portland's Comprehensive Plan by balancing the various urban land use needs ranging from economic development to resource protection in a manner which complies with statewide planning goals.

Expected adverse impacts to protected natural resources have been evaluated and, where possible, clear and objective development standards to ensure long-term resource protection are provided while at the same time accommodating other urban development. For development or activity which requires mitigation, appropriate locations and types of mitigation are identified or recommended.

## PURPOSE AND ORGANIZATION

The Natural Resources Protection Plan provides information on resource protection requirements to property owners and developers for purposes of complying with natural resource protection requirements of the City. The Plan is organized into chapters that summarize resource inventory information, analyze resource values and economic, social, environmental and energy consequences of resource protection, and describe a plan to protect significant natural resources and resource values. Detailed information on specific items, including Zoning Map and Code amendments are contained in the Appendix.

Following is a brief summary of material contained in the various chapters of this document:

**Resources Inventory (Chapter 2)** This chapter identifies each resource area and summarizes the location, quantity, and quality of each. Inventoried resources include sloughs and drainageways, wetlands, riparian areas, and upland areas containing important wildlife habitat values.

**Analysis of Economic, Social, Environmental, and Energy Consequences (Chapter 3)** This chapter identifies uses which may conflict with resources, discusses what economic, social, environmental, and energy consequences may result from both protecting resources and allowing identified conflicting uses, and resolves identified conflicts between resources and conflicting uses by protecting the resource fully, allowing the conflicting use fully, or allowing conflicting uses in a limited manner so as to protect the resource to some desired level.

**Resources Protection Plan (Chapter 4)** This chapter describes the program used to protect significant resources at the level chosen through the analysis contained in Chapter 3. It describes what resources are protected, how they are protected, what resources can be altered, mitigation requirements for alteration, and the process for environmental review.

**Appendices** These are lists, descriptions, or examples of various elements of the Plan, to provide greater detail of selected items. It includes proposed amendments to City Code Title 33, Zoning and Planning, and to the Portland Zoning Maps.

Background information on issues, public policies, legislative requirements, and history of the Columbia South Shore area and its natural resources are not part of this document. That is contained in the staff reports to the Planning Commission and City Council, and the full hearing record before them, including testimony, correspondence, and background information on this document, the 1989 adoption of the Environmental Zoning for the Columbia Corridor, and the *Natural Resources Management Plan for the Columbia South Shore*, adopted by the City on November 7, 1990, and Adjustments, Chapter 33.805. It also clarifies the definition of Resource Enhancement in Definitions, Chapter 33.910.

## **IMPLEMENTATION**

There are three categories of Plan elements: land use regulations, guidelines, and non-regulatory public programs. Land use regulations must be met whenever any development or land use action is proposed in the Columbia South Shore. The Plan modifies existing Environmental Zone review procedures through amendments to the Columbia South Shore Plan District regulations, City Code Chapter 33.515.

Any guidelines in this document are non mandatory recommendations for mitigation of natural resources not protected by the City, but regulated by the state or federal government. Guidelines suggest ways in which mitigation can be accomplished which are complementary and supportive of the Plan.

Non regulatory public programs may be carried out by local governments or others to aid in mitigation and ensure that area-wide resource values will continue to function.

## **MAJOR PROVISIONS OF THE PLAN**

There are a number of provisions in the Plan which provide overall protection of natural resources while allowing development to continue throughout the Columbia South Shore. Generally, they fall into the following categories:

### **RESOURCE PROTECTION**

There are three types of inventoried resources, depending upon local values. Each category is treated in a different manner:

- 1. Significant Resources Protected at the Highest Level** These resources are of very high public value when compared to conflicting uses. Resources and their resource protection area are zoned with an EP, Environmental Protection, zone. Mitigation for alteration of resources identified in the second category, or for alteration of other sites in Portland protected by the City's environmental zone, will also be zoned EP as a part of environmental review.

A Transition Area is established around protected resources and mitigation areas. It is 50 feet in depth, with three exceptions where a reduced Transition Area can provide adequate resource protection for resource areas while responding to adjacent development needs. The Transition Area is the area necessary to protect the resource or mitigation area, providing



protection with both distance from conflicting uses and landscaping to control access and block visual and audio intrusion.

Conflicting uses are limited primarily to identified access and service provision to surrounding property, resource maintenance (including drainage district activities), resource enhancement including mitigation for alteration of other resources, and passive recreation.

- 2. Significant Resources Which Can Be Altered** These resources are of very high public value when compared to identified conflicting uses, but full protection in their present form could also result in major adverse impacts to other urban development. These resources and their resource protection area are zoned with an EC, Environmental Conservation, zone. In addition to the same uses allowed in the EP zone, the resource can be permanently altered and resource values destroyed if mitigation to replace lost resource values occurs. Mitigation standards, including location, amount, and type are identified in this Plan. As resources protected with the EC zone are altered and mitigation occurs to compensate for lost resource values, the zone will be removed on the altered resource, and the mitigation area protected with an EP zone.

A Transition Area is established around protected resources. It is 50 feet in depth. The Transition Area is the area necessary to protect the resource until it is altered, providing protection with both distance from conflicting uses and landscaping to control access and block visual and audio intrusion. As resources are altered and mitigation occurs to compensate for lost resource values, the Transition Area and its EC zone will also be removed.

- 3. Other Resources Which Can Be Altered** These resources are of low value when compared to identified conflicting uses. Alteration can occur without further City environmental review although, for purposes of intergovernmental coordination, it must continue to be shown that state and federal regulations are met. If mitigation for lost resource values is required by state or federal agencies, non mandatory guidelines for the location and type of mitigation are contained in the plan.

## **NONCONFORMING USES**

Conformance to the Plan for nonconforming outdoor land uses and activities such as vehicle parking and maneuvering, storage, or assembly areas, is accelerated compared to other parts of the City. Over time, a landscaped resource protection area can be reestablished around protected resources and stormwater discharges controlled.

## **DRAINAGE DISTRICT ACTIVITIES**

Drainage district activities which minimize adverse impacts to protected natural resources are allowed outright or with standards (without further review).

Reviews for other activities are as specific as possible with regard to approval criteria, in recognition of the public interest of drainage district activities.

An in-water maintenance system which reduces impacts to upland protected natural resources is being implemented. A funding agreement and memorandum of understanding between the Portland Development Commission and Multnomah County Drainage District No. 1 to help finance the transition is part of the Plan.

### **SLOUGH TRAIL**

Trail location and design standards developed as part of a separate study are included in the Plan so that only limited review is necessary for construction. Mitigation for adverse impacts of trail construction consists of revegetation of the Transition Area the trail passes through. Revegetation is deferred until development of the remainder of the site.

### **DEVELOPMENT REVIEW**

Wherever possible, clear and objective standards are used for resource protection and mitigation. The intent is to reduce or eliminate review time necessary for a building or development permit, while continuing to protect the resource.

A Mitigation Advisory Committee is created to advise the Bureau of Planning on resource mitigation activities under the Plan. It is made up of seven members representing major environmental, land use, and development interests in the Columbia South Shore.

# Summary of the Natural Resource Inventory



Chapter 2

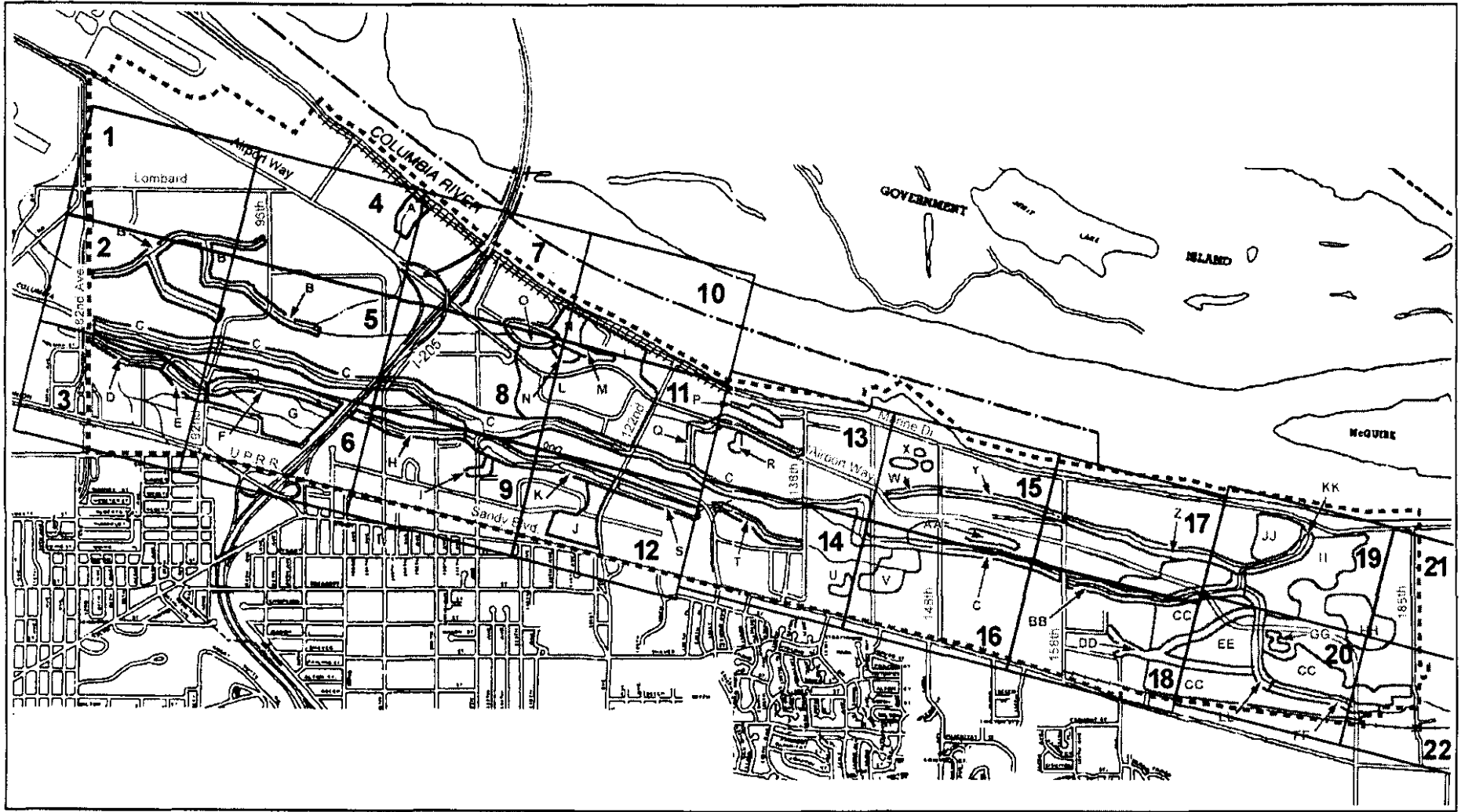
## **SUMMARY OF THE NATURAL RESOURCE INVENTORY**

This chapter summarizes the location, quantity, and quality of inventoried natural resources on the Columbia South Shore. These resources were inventoried at two different times: 1) for the application of Environmental Zones in 1990, and 2) for the *Natural Resources Management Plan for the Columbia South Shore*, adopted in 1991. Information gathered at these times was updated by field work as part of this Plan. Field sheets, analysis, and public records including additional information on the quantity, quality, and location of the resources have been introduced into the public record, and are part of the ESEE analysis. It must be remembered that resource quality, or relative value, may be based in part on its location or its relative quantity. Therefore, while these subsections summarize location, quantity, and quality, there will be additional references to these subjects throughout the Plan.

### **RESOURCE LOCATION**

Thirty-three natural resource sites were inventoried during adoption of the Environmental Zones for the Columbia Corridor in 1989. Due to varying characteristics and values, they were placed in two categories: 1) water features and 2) wetlands, riparian areas, and uplands. In some cases, such as Johnson Lake and the Four Corners area, there was an overlap in resource location. General locations are shown on Figure 1, Location of Inventoried Natural Resources. More specific information on location is contained in the inventory field sheets, *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor* and the full record on environmental mapping for the Columbia Corridor.

The *Natural Resources Management Plan for the Columbia South Shore* as adopted in 1991 was intended to serve as a management plan to address both Goal 5 natural resources and wetlands under the jurisdiction of state and federal governments. In preparation of that plan, wetlands which fall under state and federal jurisdiction were identified. Six of these were not originally identified and inventoried under the 1989 City document, but are included in this Plan. Locations of all inventoried sites are shown in Figure 2-1 on the following page.

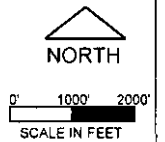


**Figure 2-1**

**General Location of Inventoried Natural Resources**

NOTE: More specific information on location can be found in Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Corridor and the Natural Resource Management Plan for the Columbia South Shore.

**Natural Resources Protection Plan for the Columbia South Shore**



**Figure 2-2  
Size of Resource Sites Inventoried**

<b>SITE</b>	<b>PREVIOUS SITE DESIGNATION *</b>	<b>APPROXIMATE SIZE** (acres)</b>	<b>SITE</b>	<b>PREVIOUS SITE DESIGNATION *</b>	<b>APPROXIMATE SIZE** (acres)</b>
<b>A</b>	E-32	10	<b>T</b>	W-3A3	1
<b>B</b>	E-33	8	<b>U</b>	W-3B1	1
<b>C</b>	F-7	54	<b>V</b>	E-27	25
<b>D</b>	F-21	4	<b>W</b>	F-17	3
<b>E</b>	F-20	3	<b>X</b>	W-3E3	1
<b>F</b>	E-34, F-19	8	<b>Y</b>	F-6	5
<b>G</b>	E-34, F-18	3	<b>Z</b>	F-5 (part)	12
<b>H</b>	F-15	4	<b>AA</b>	W-3D1	7
<b>I</b>	W-2E	1	<b>BB</b>	F-5 (part)	10
<b>J</b>	E-30	15	<b>CC</b>	E-26	120
<b>K</b>	F-14	16	<b>DD</b>	F-2	6
<b>L</b>	E-28, F-9	97	<b>EE</b>	E-25	36
<b>M</b>	F-10	1	<b>FF</b>	F-1	4
<b>N</b>	E-29	12	<b>GG</b>	W-4B7	1
<b>O</b>	F-11	9	<b>HH</b>	E-31	35
<b>P</b>	W-3A5	3	<b>II</b>	E-23	61
<b>Q</b>	F-8, W-3A4 (part)	4	<b>JJ</b>	E-24	17
<b>R</b>	W-3A4 (part)	1	<b>KK</b>	F-4	5
<b>S</b>	F-13	5	<b>LL</b>	F-3	5
				<b>TOTAL</b>	<b>613 acres</b>

For purposes of this document, identified resource sites are natural resource sites and water features inventoried in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor* and wetlands inventoried in the *Natural Resources Management Plan for the Columbia South Shore*. These sites are identified in Figure 2-2 in the following way:

**E-#** These are natural resource sites inventoried in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor*. The number following the "E" corresponds to the site number used in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor*. Where a wetland was identified during preparation of the *Natural Resources Management Plan for the Columbia South Shore* at the same site, the larger of the two sizes is shown.

**F-#** These are water features inventoried in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor*. The number following the "F" corresponds to the site number used in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor*.

**W-#** These are wetlands inventoried only in the *Natural Resources Management Plan for the Columbia South Shore*. The number/letter combination following the "W" corresponds to the site number used in the *1991 Natural Resources Management Plan for the Columbia South Shore*.

**\*\*** Approximate size was determined in the following manner:

- Wetlands inventoried in the *Natural Resources Management Plan for the Columbia South Shore* and identified with a "W" in Figure 2 are based on the size given in that document. Size is based on the definition of a wetland, not the amount of the wetland which may be regulated by state or federal agencies.
- Natural resource sites inventoried in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor* and identified with a "E" in Figure 2 are based on the size listed on page 22 of that document. Size is based on the site inventoried, and not on the size protected with the Environmental Zone or proposed through the Plan.
- Water features inventoried in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor* and identified with a "E" in Figure 2 are based on measurements taken from a 1"=200' aerial photograph and rounded to the nearest acre.

## **RESOURCE QUANTITY**

Size of the natural resource sites inventoried is based on estimates contained in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor* and the 1991 *Natural Resources Management Plan for the Columbia South Shore*. For wetlands which are outside of an Environmental Zone, it is the area which meets the state and federal definitions of wetlands. It is important to note that, even though a wetland may meet this definition and is therefore under state or federal jurisdiction, it may not be regulated or only portions of it may be regulated because of certain circumstances such as prior conversion to cropland. The City recognizes wetlands as delineated for the 1991 Plan, and has addressed the issue of regulation in the ESEE portion of this document and in the 1992 amended *Natural Resources Management Plan for the Columbia South Shore*. Figure 2-2, *Size of Resource Sites Inventoried*, is a summary of inventoried natural resource sites, including wetlands, and their approximate size. This figure also introduces a resource site identification code which will be used throughout this document.

A total of about 613 acres has been inventoried as wetlands, water bodies, and wildlife habitats for purposes of Statewide Planning Goal 5, the Comprehensive Plan, and the natural resources management plan. This represents about 22 percent of the approximately 2,800 acres within the Columbia South Shore. Since the original inventories, new development has occurred in some inventoried sites, destroying or changing resources and values. These actions are noted in Chapter 3, *Analysis of Economic, Social, Environmental, and Energy Consequences*.

## **RESOURCE QUALITY (VALUES)**

The Columbia South Shore is part of the historic flood plain of the Columbia River. Prior to settlement of non-native peoples and farming in the 1800's, and construction of flood control and drainage structures in the early 1900's, it was largely a complex system of sloughs and wetlands providing high-quality wildlife habitat, as well as a transportation system and area of seasonal settlement for Native Americans. Although highly modified, many of the natural resource values remain.

Natural Resources in the Columbia South Shore provide important values which are detailed in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor*, the *Natural Resources Management Plan for the Columbia South Shore*, and information in the record and testimony received in public hearings on prior drafts of this Plan (the October 26, 1992 Proposed Draft of the *Natural Resources Management Plan for the Columbia South Shore*.) and summarized in this section. Natural

resource values can be broken into three functional categories: wildlife habitat, natural hazards, and urban design. Within each category, components or values can be identified which singly or collectively contribute to the urban environment. The Columbia South Shore is a complex system of natural resource components which, when combined, form a comparatively rich and valuable urban design element and ecosystem, considering its history of urbanization.

Resource value is in the form of location, as well as the simple physical presence of individual elements. This chapter summarizes the components as they relate geographically, their interrelationships with one another, what is present, and what could be done to protect, enhance, or expand each. Discussion of each functional category (wildlife habitat, natural hazards, and urban design) will first be general, identifying values or components which are common to all inventory sites. Later subsections identify and describe in greater detail individual or site-specific values and their overall value in the urban environment. Subsequent chapters compare these values to those of competing or conflicting uses, impacts of resource protection, and recommendations for protection.

## **WILDLIFE HABITAT VALUES COMMON TO ALL INVENTORY SITES**

**Wildlife Corridor** The Portland metropolitan area is located at the confluence of the Columbia and Willamette Rivers. As such, it affects fish and wildlife passage along these river corridors. The Columbia Slough and related natural resources form an east-west bird and animal connection between the Columbia Gorge and Columbia River islands on the east, and Sauvie Island and Forest Park on the west. It is the only near-continuous corridor of water and vegetation close to the Columbia River. Important elements of this component include a continuous or near-continuous corridor of water and native vegetation to provide food, water, cover, perching, nesting, and resting for native birds and animals. Occasional large areas along the corridor are also desirable to provide habitat diversity and rest areas necessary for a variety of species.

**Dispersion** The Columbia Slough system which extends through the Columbia South Shore acts as a wildlife corridor for the introduction, recharge, and passage of bird and animal species not normally observed in large cities. As wildlife moves along the Columbia Slough corridor, it is able to disperse into adjacent urban areas for food, cover, or nesting. Dispersion of native vegetation through seed distribution can also occur, although to a lesser degree than wildlife. Important elements of this value include nearby vegetation ranging from landscaped yards to parks, to allow food and cover within neighborhoods for wildlife to use as they venture away from the natural resource area.

**Migratory and Wintering Habitat** The Columbia South Shore has historically served as a wintering and rest area for migrating waterfowl and songbirds. Canada geese, widgeons, and other common users of wetlands have been observed in flocks during winter. Waterfowl usually gather in open areas or water bodies, primarily because of security or food. Other flocking birds (most notably redwing blackbirds and starlings) use trees for perching and fields or



forests for food. Important elements include large spaces to provide food, cover, or security for flocks of birds. Open fields, emergent wetlands, and forested areas are all important.

**Fish Habitat** Because of water temperature, isolation from nearby water bodies through diking and culverting, pollutants, size, and configuration of water bodies, fish habitat throughout the Columbia South Shore is limited to that of warm-water species. Important elements for this value include connection of habitat areas, shade and food from forested riparian areas, adequate water, and appropriate spawning areas.

**Water Quality** Open spaces and drainageways allow sediment trapping, protecting water quality and fish habitat. Upland, riparian, and wetland vegetation also traps sediment, and can absorb heavy metals and other potential water pollutants. Important elements for this value include fairly level topography to promote slow runoff or sheet flow, and slough or water body design which promotes sediment accumulation in selected areas which can be maintained with minimal resource impact.

#### **NATURAL HAZARD VALUES COMMON TO ALL INVENTORY SITES**

**Flood Control and Stormwater Drainage** The Columbia Slough complex serves as the major drainage system for the Columbia Corridor and uplands to the south. Stormwater drains to the slough over the surface, through storm sewers, or as groundwater. The slough in turn drains either west to the Willamette River (via a pump station at NE Gertz Road at about NE 13th Avenue) or north to the Columbia River (via a pump station in the Four Corners area at NE Marine Drive at about NE 181st Avenue). Low-lying areas, including wetlands and uplands, serve as ponding areas for stormwater. The 100-year flood plain is presently calculated to be at 14 feet mean sea level (msl), using USGS datum. Important elements for this value include relatively unobstructed drainage to allow free water flow, and retention or detention facilities at proper locations to reduce peak water levels.

#### **URBAN DESIGN VALUES COMMON TO ALL INVENTORY SITES**

**Recreation** Natural resources in the Columbia South Shore provide two major types of recreation: 1) a path or connection along the slough to allow passage of pedestrians, boaters, and, in some places, bicyclists, and 2) a destination for picnicking, animal and bird viewing, and fishing. Important elements include connectivity and access, and viewing or activity areas that do not disturb wildlife.

**Metropolitan Greenspaces** The Plan is integrated with the Metropolitan Greenspaces Program conducted by the Metropolitan Service District (Metro). This is a project to identify and protect greenspaces within the four-county metropolitan region. A recently-adopted *Metropolitan Greenspaces Master Plan* identifies the Columbia Slough and adjacent resources as important natural areas, and the Columbia Slough Trail as a proposed trail of regional

significance. The Columbia Slough is also identified as a potential river trail, for canoes, kayaks, and other boats.

**Urban Design** Basic urban design elements can generally be classified into five categories: paths, edges, districts, nodes, and landmarks. Good urban form takes advantage of these elements in defining and shaping districts, providing identity, character, and a “sense of place.” Use of these elements can also be a unifying force, tying districts together into a coherent sector of the City.

Paths are channels along which a person moves. They include streets, walkways, or railroads. In the Columbia South Shore, paths influenced by the natural landscape run in an east-west direction, and include NE Marine Drive, NE Sandy Boulevard, and the Columbia Slough Trail. Other paths of note which pierce or cross the natural resources include NE Airport Way, the I-205 freeway, and NE 122nd, 138th, 148th, and 158th Avenues. A future path may be use of the Columbia Slough itself for non motorized boat recreation.

Edges are boundaries (but not paths), and can vary in ability to be penetrated. They can either be a barrier and set regions apart, or can be a “seam” to join or relate regions to each other. The Columbia Slough (ironically, a wildlife “path”) is an example of an edge. Along its length it acts as a barrier for transportation, being crossed at few points, and as a seam, drawing industrial and commercial areas to the north and south together with a common unifying design element. Levees, I-205, and the Columbia River also act as edges, becoming visual as well as physical barriers.

Districts are medium-to-large areas of a city which are recognizable as having a common identifying community character. The Columbia South Shore, with its unifying natural resource elements of the Columbia Slough and other Columbia River flood plain remnants, is considered such a district. Along with paths, districts often act as a dominant element in urban form.

Nodes are crossing points or concentrations of activity. They are something a person can enter into. Traditionally, commercial activities are examples of nodes, although natural resources such as parks also provide this function. In the Columbia South Shore, nodes are commercial in nature, located in Parkrose, at NE Airport Way and I-205, and , in the future, east of the Four Corners area along NE Airport Way.

Landmarks are another type of reference point that provide immediate identification, like a tower or hill. Landmarks give a sense of place or direction. The forested area at Four Corners is an example of a landmark,

In summary, natural resources within the Columbia South Shore play a dominant role as urban design elements or, in the case of paths, exert a strong historic influence on their form. Conservation of the Columbia Slough and related natural resources provide opportunities for accommodating these elements into the urban landscape as design elements, tying together not just the Columbia South Shore but also the entire Columbia Corridor and residential areas to the south.

**Heritage Value** In Portland, the Columbia Slough and nearby natural resources are the remnants of what was once a vast and complex series of waterways and wildlife habitat areas of the Columbia River floodplain used extensively by Native Americans prior to settlement of non-native peoples. Significant archaeological resources remain.

**NATURAL RESOURCE VALUES APPLICABLE TO SPECIFIC INVENTORIED SITES**

In addition to values common to all sites, individual natural resource sites contain localized, or site-specific, values. Figure 3 of this section summarizes those values by site. Values are described in greater detail in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor*, the *Natural Resources Management Plan for the Columbia South Shore*, and information in the record and testimony received in public hearings on this Plan and prior drafts (the October 26, 1992 Proposed Draft of the *Natural Resources Management Plan for the Columbia South Shore*).

**Significant Natural Resource Values for Individual Sites**

SITE	APPROX. SIZE* (acres)	CLASSIFICATION** (in addition, uplands may be present)	DESCRIPTION / SIGNIFICANT VALUES**
A	10	Palustrine, Emergent, Persistent/Nonpersistent, Permanently and Seasonally Flooded	<p>40-50 year-old cottonwood, ash are dominant trees; blackberries dominant shrub, with willow and dogwood common. Trees topped for airplanes. A few snags present, but more commonly large cavities in senile cottonwood, ash. Stagnant slough remnant present on western edge. Structural diversity high. Slough next to forest provides multiple wildlife functions. Lack of human access, proximity to river, islands, and Site N makes good habitat.</p> <p>Since the original inventory, a large parking lot serving the airport has been built immediately west, and stormwater discharges into the resource through an outfall.</p> <p><b>VALUES: groundwater recharge/discharge, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat. visual amenity, proximity to river.</b></p>

SITE	APPROX. SIZE* (acres)	CLASSIFICATION** (in addition, uplands may be present)	DESCRIPTION / SIGNIFICANT VALUES**
B	8	Palustrine, Forested	<p>Dominated by cottonwood, willow. Understory, emergent vegetation absent because of drainage control work. Snags present, large nest-quality cavities in cottonwoods common. Open water provides feeding, resting for waterfowl.</p> <p>Since the original inventory, development has taken place to the north and a crossing has been constructed on the western end of the site.</p> <p><b>VALUES: Groundwater recharge, discharge, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat.</b></p>
C	54	Flushed Slough, Scrub-shrub	<p>Main slough channel. Banks disturbed for the most part, with blackberries predominating. Occasional forested riparian area of cottonwood, willow.</p> <p>Since the original inventory, several industrial developments, stormwater/hazardous waste ponds, and segments of the slough trail have been constructed.</p> <p><b>VALUES: groundwater recharge, discharge, drainage, flood storage, erosion control/sediment trapping, pollution/nutrient retention/removal, fish and wildlife habitat (esp. corridor, dispersion), potential recreation, visual amenity.</b></p>
D	4	Flushed Slough, Scrub-shrub	<p>Banks dominated by shrubs, esp. blackberry, willow. Occasional cottonwood. Water clear with some overhanging shrubs. Steep bank. Fish seen.</p> <p><b>VALUES: groundwater recharge, discharge, drainage, flood storage, erosion control/sediment trapping, pollution/nutrient retention/removal, fish and wildlife habitat (esp. corridor).</b></p>
E	3	Flushed Slough, Scrub-shrub	<p>Channelized slough highly impacted by nearby roadway, industrial development. Banks steep, eroded. Blackberry and occasional willow on north, reed canarygrass and occasional trees on south. Limited wildlife habitat.</p> <p><b>VALUES: groundwater recharge, discharge, drainage, flood storage, pollution/nutrient retention/removal, fish habitat.</b></p>

SITE	APPROX. SIZE* (acres)	CLASSIFICATION** (in addition, uplands may be present)	DESCRIPTION / SIGNIFICANT VALUES**
F	3	Continually flushed slough, Forested, Scrub-shrub Riparian	<p>Slough north of Johnson Lake. Gallery-lined channel along the western portion dominated by 20-70 year-old cottonwoods with willow, elderberry, blackberry. Snags common. Duckweed common. Site diversity provides high-quality wildlife habitat. Important winter resting for waterfowl. Good fish habitat. Bank on eastern portion has been cleared, south side reestablished with 20' cottonwood. Open area between the lake and slough overgrown with blackberries. Much lower habitat value than western portion.</p> <p><b>VALUES: Groundwater recharge/dischage, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution retention/ removal, fish and wildlife habitat, wildlife corridor, dispersion, potential recreation.</b></p>
G	8	Lacustrine, Palustrine, Forested	<p>Includes Johnson Lake. Forest dominated by 20-70 year-old cottonwoods with willow, elderberry, blackberry at lake's littoral. Cottonwood stand gallery in nature. Snags common. About 5% emergent vegetation at Johnson Lake. Site diversity provide high-quality wildlife habitat. Important winter resting for waterfowl. Good fish habitat. Overhanging vegetation good for reptile, amphibian, invertebrate species. Floating logs good turtle "haul-out." Combination of cottonwood forests, water important for summertime warbler, flycatcher habitat. Snags, cavities adjacent to water. Little human use. Lake receives stormwater runoff from I-205.</p> <p><b>VALUES: groundwater recharge/dischage, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, fish and wildlife habitat, wildlife corridor, node/refuge, dispersion, potential recreation, visual amenity, uniqueness.</b></p>
H	4	Continually Flushed Slough, Forested, Scrub-shrub Riparian	<p>Gallery-lined slough channel dominated by cottonwood, willow, ash. Shrub canopy dominated by blackberry with red osier dogwood, bald-hip rose. Emergent vegetation absent. Open water habitat for waterfowl. Some snags. Residential development impacts habitat (esp. domestic animals).</p> <p><b>VALUES: groundwater recharge/dischage, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, fish and wildlife habitat, wildlife corridor, node/refuge, , dispersion, potential recreation.</b></p>

SITE	APPROX. SIZE* (acres)	CLASSIFICATION** (in addition, uplands may be present)	DESCRIPTION / SIGNIFICANT VALUES**
I	1	Palustrine, Forested, Scrub-shrub	<p>Small drainageway south of Prison Pond with wooded riparian area. Surrounded by residential, industrial uses which greatly limit habitat.</p> <p><b>VALUES: groundwater recharge/discharge, drainage, erosion control, sediment trapping, pollution/nutrient retention/detention.</b></p>
J	15	Upland, Forested, Deciduous	<p>Significant stand of mature Garry Oaks (200+ years old). Primary habitat are cavities in trees. Since inventory, development has removed a portion of this site and the ground cover cleared.</p> <p><b>VALUES: erosion control/sediment trapping, pollution/nutrient retention/removal, uniqueness.</b></p>
K	16	Continually Flushed Slough with lake-like qualities, Forested, Scrub-shrub Riparian	<p>Significant floating, anchored algae. Water source includes springs. Cottonwood, willow gallery on south bank, blackberry common. Functions as lowland Willamette Valley lake. High value wildlife habitat. Variety of waterfowl observed at times.</p> <p><b>VALUES: groundwater recharge/discharge, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, fish, wildlife habitat (esp. nesting, roosting, winter waterfowl), wildlife corridor, node/refuge, dispersion, visual amenity.</b></p>
L	97	Palustrine, Emergent, Seasonally Flooded	<p>Predominantly cultivated grass, savannah-like with occasional cottonwood, ash, oak, especially along the slough remnant. No snags but cavities in oaks. Recently, development has removed a significant portion of this site and land divisions have occurred.</p> <p><b>VALUES: groundwater recharge/discharge, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat (esp. nesting, roosting, winter waterfowl), wildlife corridor, dispersion, visual amenity.</b></p>
M	1	Slough, Emergent Riparian	<p>Riparian dominated by reed canarygrass, blackberry. Limited habitat due to monoculture, disturbance.</p> <p>Since the original inventory, development has occurred south of the resource. Subdivision approval has also been given which will allow an access road through the resource.</p> <p><b>VALUES: groundwater recharge/discharge, drainage, erosion control/sediment trapping, pollution/nutrient retention/removal.</b></p>

SITE	APPROX. SIZE* (acres)	CLASSIFICATION** (in addition, uplands may be present)	DESCRIPTION / SIGNIFICANT VALUES**
N	12	Palustrine, Forested, Broad-leaf Deciduous, Seasonally Flooded	<p>Forest canopy dominated by 50-60 year-old cottonwood, ash with hawthorn, alder. Understory snowberry, blackberry. High quality cover, food, water for songbirds, amphibians, mammals. Proximity to river important. Since inventory, site has been cleared, but has regenerated, providing some continued resource values. Since the original inventory, subdivision approval has been given which allows an access road through the resource.</p> <p><b>VALUES: groundwater recharge/dischage, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat , visual amenity.</b></p>
O	9	Lacustrine, Forested, Scrub-shrub Riparian	<p>Mays Lake isolated from slough, but close to river. High quality emergent wetland, forested at west end, but little emergent area around the rest of the lake. Lake banks variable with cottonwood, blackberry, willow, ash, hawthorn common. Lake probably important foraging for bats. Human use appears fairly high. Important waterfowl area. Since the original inventory, subdivision approval has been given which allows an access road through the resource on the south side.</p> <p><b>VALUES: groundwater recharge/dischage, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat , visual amenity.</b></p>
P	3	Palustrine, Emergent, Seasonally Flooded	<p>Rush/sedge meadow with portions being farmed. Connected to Site Q only by a narrow drainageway.</p> <p><b>VALUES: sediment trapping, long term nutrient retention.</b></p>
Q	4	Slough, Scrub-shrub Riparian	<p>Eastern portion a severely disturbed drainageway, somewhat isolated. Riparian dominated by blackberry. Since inventory, west end has been filled and a mitigation pond created (Site R).</p> <p><b>VALUES: sediment trapping, flood storage, long term nutrient retention, wildlife (in mitigation area).</b></p>
R	1	Palustrine, Emergent Palustrine, Scrub-shrub	<p>Pond for mitigation of filling a portion of Site Q.</p> <p><b>VALUES: sediment trapping, flood storage, long term nutrient retention.</b></p>

SITE	APPROX. SIZE* (acres)	CLASSIFICATION** (in addition, uplands may be present)	DESCRIPTION / SIGNIFICANT VALUES**
<b>S</b>	5	Continually Flushed Slough, Forested, Scrub-shrub Riparian	<p>Gallery of cottonwood on south bank, hawthorn and willow common. Reed canarygrass dominant in channel and on banks. Blackberry present throughout. Since inventory, development on south bank has resulted in partial site enhancement. Soft-surface pedestrian path along part of south bank.</p> <p>Since the original inventory, industrial development has occurred on the south and northeast borders of the resource.</p> <p><b>VALUES: groundwater recharge/dischage, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat, recreation, visual amenity.</b></p>
<b>T</b>	1	Palustrine, Emergent Palustrine, Scrub-shrub	<p>Isolated drainageway, riparian dominated by blackberry, willow. Only the eastern portion of this site exists.</p> <p><b>VALUES: sediment trapping, flood storage, long-term nutrient retention.</b></p>
<b>U</b>	1	Palustrine, Scrub-shrub	<p>Isolated, degraded slough remnant.</p> <p><b>VALUES: sediment trapping, flood storage, long term nutrient retention.</b></p>
<b>V</b>	25	Palustrine, Emergent, Seasonally Flooded Palustrine, Scrub-shrub, Broad-leaf Deciduous, Seasonally Flooded	<p>Generally a flat floodplain with shallow ponds, depressions, some fill, and ditches. Southern part cleared recently with willow regrowth. Salamander, frogs present. Forested, isolated area bordering slough. An "island" of habitat, valuable largely because of location. Pond, rush/sedge and willow/cottonwood significant.</p> <p><b>VALUES: groundwater recharge/dischage, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat, node/refuge.</b></p>
<b>W</b>	3	Slough, Scrub-shrub, Forested Riparian	<p>Thin cottonwood/ash gallery forest, shrubs dense in places, dominated by blackberry, willow. Since inventory, Airport Way constructed adjacent to west end of site.</p> <p><b>VALUES: groundwater recharge, discharge, drainage, flood storage, erosion control/sediment trapping, pollution/nutrient retention/removal.</b></p>
<b>X</b>	1	Palustrine, Seasonally Flooded	<p>Open plowed field. Isolated from other resources.</p> <p><b>VALUES: Sediment trapping, long term nutrient retention.</b></p>



SITE	APPROX. SIZE* (acres)	CLASSIFICATION** (in addition, uplands may be present)	DESCRIPTION / SIGNIFICANT VALUES**
Y	5	Slough, Scrub-shrub Riparian	<p>Bank dominated by blackberry. Agriculture on both sides. Wildlife habitat limited.</p> <p><b>VALUES: groundwater recharge, discharge, drainage, flood storage, erosion control/sediment trapping, pollution/nutrient retention/removal.</b></p>
Z	12	Slough, Forested, Scrub-shrub Riparian	<p>Vegetation dominated by gallery forest of cottonwood, willow, ash on the south bank. Shrub layer dominated by blackberry with willow, red osier dogwood. Herb layer reed canarygrass with rush, cattail at littoral. Some snags. Vegetation overhanging water. Good overall habitat for birds, animals. Since inventory, north bank has been disturbed in places from Airport Way construction material stockpiling.</p> <p><b>VALUES: groundwater recharge, discharge, drainage, flood storage, erosion control/sediment trapping, pollution/nutrient retention/removal, fish, wildlife habitat potential recreation, visual amenity.</b></p>
AA	7	Palustrine, Emergent, Seasonally Flooded	<p>Open field dominated by reed canarygrass, shallow depressions. Winter waterfowl have been seen here.</p> <p><b>VALUES: Sediment trapping, long term nutrient retention, wildlife (winter waterfowl).</b></p>
BB	10	Continually Flushed Slough, Forested, Scrub-shrub Riparian	<p>Vegetation dominated by gallery forest of cottonwood, willow, ash. Shrub layer dominated by blackberry with willow, red osier dogwood. Herb layer reed canarygrass with rush, cattail at littoral. Some snags. Vegetation overhanging water. Good overall habitat for birds, animals. Periodic dredging disturbs bank. Since inventory, Airport Way has been constructed through this site and a stormwater/hazardous spill containment pond has been constructed along the north border.</p> <p><b>VALUES: groundwater recharge, discharge, drainage, flood storage, erosion control/sediment trapping, pollution/nutrient retention/removal, fish, wildlife habitat (esp. corridor, dispersion), potential recreation, visual amenity.</b></p>

SITE	APPROX. SIZE* (acres)	CLASSIFICATION** (in addition, uplands may be present)	DESCRIPTION / SIGNIFICANT VALUES**
CC	120	Palustrine, Forested, Broad-leaf Deciduous-Coniferous, Seasonally Flooded	<p>Forest largely a 60 year-old stand of cottonwood, ash with blackberry understory. An abandoned nursery with overgrown evergreen trees is located in the northern portion. North of the railroad track (southern portion of the site) historically a cedar bottom. Springs along south slope. Large wetland forest provides food, roosting, perching, nesting. Some large cavities in oaks. Human use limited by blackberries, fences. Important because of size. Since inventory portions of the site were cleared, but parts are rapidly being reestablished. Since inventory, Airport Way has been constructed through portions of the site.</p> <p><b>VALUES: groundwater recharge/dischage, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat, node/refuge, potential recreation, visual amenity, uniqueness, potential scientific/educational.</b></p>
DD	6	Continually Flushed Slough, Emergent, Scrub-shrub Riparian	<p>Floating, much emergent vegetation. Young cottonwood, ash, alder, present, but not dominant. Bank dominated by blackberry with willow, reed canarygrass. North bank scrub-tree gallery in nature. Overhanging vegetation along bank significant. Good habitat for aquatic mammals, reptiles, amphibians. Slough helps separate site EE from human, domestic animal impacts.</p> <p><b>VALUES: groundwater recharge, discharge, drainage, flood storage, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat.</b></p>
EE	36	Palustrine, Emergent, Seasonally Flooded	<p>Large open grassland with adjacent forest, scrub-shrub, limited human access. Very high natural quality. Dominated by reed canary grass, shallow ditch bisects in an east-west direction. Considerable number of runways, burrows, probably for small mammals. Northern harrier nesting observed for two pair. Since inventory and placement of the existing environmental zone, Airport Way has been constructed through the site and farming has been attempted on portions. A resource enhancement project on the eastern half is presently being reviewed by the City.</p> <p><b>VALUES: groundwater recharge/dischage, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat, corridor, node/ refuge, visual amenity, uniqueness, potential scientific/educational.</b></p>

SITE	APPROX. SIZE* (acres)	CLASSIFICATION** (in addition, uplands may be present)	DESCRIPTION / SIGNIFICANT VALUES**
FF	4	Continually Flushed Slough, Forested, Scrub-shrub Riparian	<p>South bank dominated by cottonwood/willow forest with ash, reed canarygrass common. North bank blackberry, reed canarygrass. Slough maintenance road along bank top, willow forest behind. Habitat largely aquatic. Forest/water edge important to kingfisher, waterfowl, shorebirds. Forest/open grass important to raptors. High quality habitat overall. Human activity limited. Since inventory, Airport Way has been constructed over the site, making it highly visible, and resource enhancement activities, including benching and wetland creation have been approved.</p> <p><b>VALUES: groundwater recharge/discharge, drainage, flood storage/ erosion control/sediment trapping, pollution/nutrient retention/removal, fish, wildlife habitat (esp. corridor, dispersion), potential recreation, visual amenity.</b></p>
GG	1	Palustrine, Emergent, Seasonally Flooded	<p>Grass swale with soft rush, spike rush. Remnant slough. Since inventory, water quality protection facility has been placed in most of the wetland.</p> <p><b>VALUES: flood storage, sediment trapping, nutrient retention, habitat diversity, marsh wren.</b></p>
HH	35	Palustrine, Emergent, Seasonally Flooded	<p>Irrigation ditches along edges with agriculture surrounding it. Winter waterfowl observed. Since inventory, Airport Way has been constructed across the site and the northern portion filled for development.</p> <p><b>VALUES: groundwater recharge/discharge, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat.</b></p>
II	61	Palustrine, Forested, Broad-leaf deciduous, all water regimes Permanently through Intermittently Flooded	<p>Unique remnant community of once-common Columbia Slough vegetation. Mid-seral stage with cottonwoods dominant, ash, willow, hawthorn common. High structural diversity with main slough, blind slough, adjacent grasslands and shrub lands. Forest provides food, cover, perch, and roosting. Yellow-breasted Chats observed. Limited human access. Since inventory, the blind slough and adjacent area has been cleared as part of an Airport Way mitigation project.</p> <p><b>VALUES: groundwater recharge/discharge, drainage, flood storage/desynchronization, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat, node/refuge, potential recreation, visual amenity, uniqueness, potential scientific/educational.</b></p>

SITE	APPROX. SIZE* (acres)	CLASSIFICATION** (in addition, uplands may be present)	DESCRIPTION / SIGNIFICANT VALUES**
JJ	17	Scrub-shrub, Broad-leaf deciduous,	<p>Almost entirely blackberries. Filled a number of years ago to a level well above the 100-year flood level.</p> <p><b>VALUES: groundwater recharge/dischage, erosion control/sediment trapping, pollution/nutrient retention/removal, wildlife habitat.</b></p>
KK	5	Continually Flushed Slough, Scrub-shrub	<p>Human activity moderate from drainage district pump house, bank fishing, garbage dumping, etc. Highly visible from Marine Drive. Floating, emergent vegetation including duckweed, cattail, sedge, rush, bur-reed, elodia. Bank dominated by blackberry with reed canarygrass, young cottonwood and willow. Rush, sedge common at littoral. Littoral great importance to insects, birds, animals. Direct connection between slough and river.</p> <p><b>VALUES: groundwater recharge, discharge, drainage, flood storage, erosion control/sediment trapping, pollution/nutrient retention/removal, fish, wildlife habitat (esp. corridor, dispersion), potential recreation, visual amenity.</b></p>
LL	5	Continually Flushed Slough, Scrub-shrub	<p>Only emergent is reed canarygrass at littoral. Blackberry dominant riparian vegetation. Good interspersion with forest. High quality wintering waterfowl habitat. Since inventory, Airport Way constructed across northern portion.</p> <p><b>VALUES: groundwater recharge, discharge, drainage, flood storage, erosion control/sediment trapping, pollution/nutrient retention/removal, fish, wildlife habitat (esp. corridor, dispersion), potential recreation, visual amenity.</b></p>

#### INVENTORY NOTES

- \* Approximate size was determined in the following manner:
  - Wetlands inventoried in the *Natural Resources Management Plan for the Columbia South Shore*, and identified with a "W" in Figure 2 are based on the size given in that document. Size is based on the definition of a wetland, not the amount of the wetland which may be regulated by state or federal agencies.
  - Natural resource sites inventoried in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor* and identified with a "E" in Figure 2 are based on the size listed on page 22 of that document. Size is based on the site inventoried, and not on the size protected with the Environmental Zone or proposed through the Plan.
  - Water features inventoried in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor* and identified with a "E" in Figure 2 are based on measurements taken from a 1"=200' aerial photograph and rounded to the nearest acre.
- \*\* Values are described in greater detail in *Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor*, the *Natural Resources Management Plan for the Columbia South Shore*, and information in the record and testimony received in public hearings on previous drafts of this Plan (the October 26, 1992 Proposed Draft of the *Natural Resources Management Plan for the Columbia South Shore*). They are **in addition to** values common to all sites identified earlier in this chapter.

**Analysis of Economic,  
Social, Environmental,  
and Energy Consequences  
of Resource Protection**



**Chapter 3**

## **ANALYSIS OF ECONOMIC, SOCIAL, ENVIRONMENTAL, AND ENERGY CONSEQUENCES OF RESOURCE PROTECTION**

Within urban areas it is almost inevitable that conflicts between natural resources and other land uses and activities exist. Both the resources and conflicting uses may be of value to the urban environment. It is a balancing of these values in an innovative manner that allows multiple use of lands that will benefit the City in the greatest manner. Contained in this chapter is the identification of land uses which may conflict with the resource, the determination of economic, social, environmental, and energy consequences of permitting, limiting, or prohibiting conflicting uses, and a resolution of conflicts and decision on the appropriate level of resource protection. The analysis and decisions summarized in this chapter serve as the primary basis for the protection plan contained in Chapter 4 of this document.

### **COMPATIBLE AND CONFLICTING USES**

#### **COMPATIBLE USES**

Compatible uses are those that can be conducted in a manner which will not result in resource degradation. The following uses allowed by present zoning are compatible in the Columbia South Shore:

- Aesthetic enjoyment of natural features from existing roads and trails, including existing portions of the Columbia Slough Trail;
- Educational use of areas by individuals and groups; and
- Development identified in Figure 4-2 if applicable standards and approval criteria are met.

#### **CONFLICTING USES**

Conflicting uses are those which are incompatible with resource protection but are allowed by present City of Portland zoning. If these uses actually occurred at the intensities and during the times allowed by existing City land use regulations, they would diminish or destroy the identified values of one or more resource areas in the Columbia South Shore.

Uncontrolled residential, commercial, industrial, recreational, or agricultural uses, including supporting infrastructure, can result in the removal, destruction, or degradation of the natural habitat.

**Residential Uses** None of the Plan area is zoned residential. However, a number of residential structures are scattered throughout, particularly between I-205 and NE 122nd Avenue, in the original Parkrose Subdivision. Activities associated with residential development which are generally detrimental to resource values include:

- Reducing vegetation;
- Filling, excavating, or otherwise altering topography;
- Replacing native plants and structural diversity with lawns and/or ornamentals;
- Replacing vegetation with impervious surfaces (buildings, driveways, parking lots, etc.);
- Isolating vegetation;
- Removing dead vegetation in all strata (creek corridor, ground, and tree canopy);
- Increasing bank erosion and deterioration;
- Compacting soil;
- Riprapping water body channels and banks;
- Littering and dumping in resource areas;
- Increasing the uncontrolled presence of cats, dogs, and human activity (trails, fishing);
- Increasing human population density and noise; and
- Leaching of pollutants, including herbicides, pesticides, and fertilizers from agricultural fields, lawns, and gardens.

**Commercial Uses** Commercial development and activity is allowed throughout the Columbia South Shore to some degree. Its greatest concentrations, however, will be around the intersection of I-205 and NE Airport Way, the Port of Portland property west of I-205, and at the eastern end of the Columbia South Shore where NE Airport Way curves southward to intersect with I-84, where there is general employment (GE) zoning. Activities associated with commercial development which are detrimental to the resource are generally the same as for residential development. Impacts may be greater than those of residential development due to generally greater site modification. When sites are filled and leveled, large areas are paved or covered with buildings, and existing landscaping is reduced. Impacts include reduced flood storage capacity, soil compaction, accelerated storm runoff and peak flooding,



and loss of permeable soil for vegetative growth to protect and provide food to the creek. Protecting resources from these impacts is particularly important along the creek.

**Industrial Uses** The majority of the Columbia South Shore is zoned for general industrial use (IG2). The remainder is zoned for general employment, which also allows light industrial activity. Industrial uses allowed in the Columbia South Shore include manufacturing and production, warehouse and freight movement, wholesale sales, industrial services and railroad yards. Waste-related uses are limited or conditional uses. Unregulated industrial development can have the same negative impacts as discussed previously under Commercial Uses. Additional impacts may be caused by outdoor storage, spills of hazardous materials, assembly, and other activities.

**Agricultural Uses** Agricultural uses are allowed throughout the Columbia South Shore in all base zones. Adverse impacts on natural resources can occur from agricultural operations. Pollutants can enter the creek as runoff from agricultural lands, decreasing water quality and increasing turbidity, which effects fisheries values. Removal of vegetation for agricultural practices decreases wildlife, food, and cover. Animal fecal contamination can also occur as a result of pasture use.

Agriculture often draws water from wells or surface sources such as the slough. This in turn can eliminate a water source for natural resources.

**Recreational Uses** Recreational facilities can remove vegetation and modify or destroy natural resources in much the same way as other conflicting urban development. Large open areas such as golf courses and ball fields, although providing resting or feeding areas for some birds and animals, also can contribute to water pollution through runoff containing sediment, pesticides, herbicides, and fertilizers.

Pedestrian trails remove vegetation and introduce human activity along natural resources, adversely impacting wildlife values. Water access for fishing and boating can create similar impacts.

**Basic Utilities** Basic utilities are infrastructure services that need to be located in or near the area where the service is provided. Although operation of existing facilities which are underground (sewer and water lines, gas lines, etc.) or disturb small amounts of surface (monitoring wells, pump stations, etc.) has few adverse environmental effects, construction and maintenance practices do adversely impact natural resources. These activities often create cleared corridors which increase wind and light penetration into forested areas, providing opportunities for establishment of invasive, non-native plant species. Construction can fragment wildlife habitat, degrade wetlands and drainages, increase stormwater runoff and erosion, and reduce forest cover. Underground hydrology can be modified by underground utilities, by either blocking subsurface flow or guiding it along the utility corridor by use of gravel or similar fill.

Certain types of surface utilities such as stormwater detention areas, retention areas, sediment traps and constructed wetland pollution treatment facilities have beneficial environmental effects if located without disruption to existing resources. Replacement of existing natural resources with these facilities normally has detrimental effects, including blocking fish and wildlife passage, reduction of vegetation, modification or destruction of habitat, increase in of human intrusion for construction, operations, and maintenance, and reduction of aesthetics.

The Columbia Slough does not meet state water quality standards for various pollutants, and has been classified as a "water quality limited" stream. Achieving acceptable limits is a high priority for the City. The Bureau of Environmental Services is beginning development of a plan for improving water quality in the slough. Some elements may have to be located within natural resources, and would adversely impact them.

As the plan for water quality improvement is developed, amendments to the Plan may be necessary to accommodate necessary structures and activities.

**Drainage District Activities** Activities to maintain water conveyance capacity and flood storage of the slough system can have major adverse impact on natural resources. Traditional top-of-bank slough maintenance with drag line requires tree removal and ground clearing. Dredge spoils are sometimes stored on the bank top, smothering remaining vegetation. Access by work crews and equipment also disturbs wildlife. In-water activities disrupt fish and other aquatic habitat.

**Other Institutional Uses** Community service, essential service provider, school and college, medical, religious, and day care uses are allowed in the EG zone, and community service and daycare are allowed as a conditional use in the IG zone. These uses generally involve activity similar to commercial uses, and impacts to natural resources would be the same.

**Detention Facilities** Detention facilities are allowed throughout the Columbia South Shore as conditional uses. Their effects on resources are the same as commercial uses.

**Mining** Mining is a conditional use in the IG2 zone. It is prohibited within the EG2 zone. Mining has the most severe adverse environmental impacts of any use as it completely removes natural resources during mineral extraction.

**Overhead Utility Lines and Radio and Broadcast Facilities** Most low-powered transmitters such as cordless telephones and citizen band radios are allowed in all zones. Other radio and television broadcast facilities are allowed outright throughout the Columbia South Shore. Their effects are the same as basic utilities, but with greater adverse visual effects.

**Rail Lines and Utility Corridors** Rail lines and utility corridors are allowed outright throughout the Columbia South Shore. Their effects are the same as basic utilities, except that construction of rail lines often requires substantial

excavation and fill to meet rail grade standards. Generally, additional grading results in a greater area of resource disturbance and greater degradation of soil, vegetation, and habitat resources.

**Aviation and Surface Passenger Terminals** These uses can completely destroy natural resources or limit their values for reasons of safety (restrict birds to reduce bird strikes by airplanes). Aviation and surface passenger terminals are conditional uses throughout the Columbia South Shore, although from a practical standpoint these impacts are primarily on the western portion.

**Nonconforming Uses** Some existing uses will not meet requirements of the Plan, and will become nonconforming. Uses which are located close to a resource adversely impact it from noise, light, and human activity. Additionally, unpaved areas allow uncontrolled stormwater runoff which may carry sediment and other pollutants into the resource.

## **CONSEQUENCES OF PERMITTING, LIMITING, OR PROHIBITING CONFLICTING USES**

After resources have been inventoried and conflicting uses identified, a jurisdiction is required through Statewide Planning Goal 5 and its administrative rule (OAR) to analyze economic, social, environmental, and energy consequences of resource protection. If there are no conflicting uses for an identified resource, OAR requires the jurisdiction to adopt policies and regulations ensuring preservation of the resource. Where conflicting uses are identified, the economic, social, environmental, and energy consequences must be determined. Impacts on both the resource and conflicting use must be considered. Other applicable Statewide Planning Goals are also considered in the discussion of impacts. The ESEE analysis is adequate for purposes of meeting OAR standards if it provides a jurisdiction with reasons why decisions are made regarding the protection of specific resources. In the Columbia South Shore, all inventoried resources have conflicting uses, and are subject to ESEE analysis.

Oregon Administrative Rules lay out the steps to be followed in complying with Goal 5, but provides little direction in determining what factors should be considered as having potential economic, social, environmental or energy consequences. This lack of guidance is because relevant ESEE factors vary greatly, depending on the type of resource that is being evaluated and potential conflicting uses that are allowed.

### **ECONOMIC, SOCIAL, ENVIRONMENTAL, AND ENERGY CONSEQUENCES COMMON TO ALL INVENTORIED SITES**

The following section is a description of land uses and activities permitted by existing zoning. Included is a discussion of consequences common to all

inventoried sites to both the resource and existing or potential land uses throughout the Columbia South Shore which may result from resource protection. Additional site-specific consequences are discussed in the next section, which summarizes individual resource sites and their values. It is the combination of these general and individual site consequences which is used to arrive at the conclusions in this protection plan regarding the level of resource protection for resource sites, and the Columbia South Shore as a whole.

## **ECONOMIC CONSEQUENCES**

**Property Values and Development Potential** Property values are largely determined by demand. Market demand, in turn, is a product of many factors, including development potential and aesthetics, character, and desirability of a property and surrounding neighborhood. Testimony has indicated that Property values in the Columbia South Shore are up to \$3.00 per square foot.

In simplistic terms development potential can be looked at as how much development can be placed on a property. Protecting natural resources may reduce development potential if the development could not be redistributed elsewhere on site through such mechanisms as clustering or planned unit development. All zones except for IG1, IG2, and IH (General and Heavy Industrial) have floor area ratios or unit density limits which allow transfers or redistribution to take place on site. Development potential on General and Heavy Industrial properties is related to land area, so reduction in area directly available for development represents a loss in development potential.

Industrial needs for the City of Portland and Portland metropolitan area have been described in detail in the *Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor*, adopted by the City of Portland in April 1989 (pages 127-134). It concludes that the need for industrial land in the metropolitan area by the year 2005 is about 5,192 acres. About 19,070 acres of vacant, suitable land exist within the metropolitan urban growth boundary, 10,483 of these are vacant and uncommitted and have no development constraints. This provides a market ratio of over 2:1 for the estimated need for presently-unconstrained land, and a ratio of almost 4:1 for all vacant industrial land. In addition, there are about 9,700 acres of vacant industrial land within Multnomah County and, according to the 1989 publication by the Bureau of Planning *1987 Vacant Land Report*, 5,731 acres of vacant industrial land within the City of Portland (page 30).

Industries which are highly location-dependent, such as deep-draft shipping or air freight facilities may face shortages. This may increase demand for land in the Columbia South Shore, as access to Portland International Airport is good.

Aesthetics, character, and amenity value are more intrinsic values, and are difficult to quantify. They represent amenity values that increase demand, and therefore land prices, in a particular area. Protection of these amenities can result in increased property values over areas having no natural resource amenities. Even in industrial areas such as the Koll Business Center in

Washington County, natural resource amenities have been integrated into the development in such a way as to increase its desirability, and therefore its value.

**Employment** As mentioned in the previous section, all zones except industrial allow intensity or size of uses based on total land area, and not just that outside of a protected natural resource. A reduction in area available for development on a parcel should not affect overall employment potential on that property except on industrial land. For transportation planning purposes, the City estimates employment densities for new industrial development at 15 employees per acre. About 456 of the estimated 613 acres inventoried for natural resources in the Columbia South Shore is within an industrial zone. If these lands and water bodies are fully excluded from industrial use, the potential for up to about 6,840 employees could be eliminated. This figure, however, is somewhat misleading because much of the resource area is water or bank, generally unavailable for development.

Of greater importance, however, is the impact of land used for a transition area, as this is usually otherwise suitable for development. Every mile of 50 foot-deep transition area is equal to about six acres. Perimeter distance of resources protected in this plan in an industrial zone equal roughly 15 miles. Assuming a 50 foot-deep transition area, this equates to about 90 acres. Assuming a job density of 15 employees per acre, the potential for locating up to 1,350 additional jobs in the Columbia South Shore is lost.

**Tax Base** Tax base to local jurisdictions is, as a result of Measure 5, directly related to market value of land. As property values fluctuate, property taxes (and therefore income to the taxing jurisdiction) will vary in direct proportion. Property value consequences are discussed in the previous section, and are directly applicable to the subject of property taxes.

**Tourism and Convention-Related Impacts** The Columbia South Shore is not a resource which tourists visit Portland for, nor is it a major reason for conventions. However, it is an element in the overall network of open spaces and natural areas in the City which determines its character as one of integration of natural elements into the urban form. Protection of natural resources in a way which makes them easily accessible to visitors provides additional unique destinations within the city limits for sightseeing or simply relaxing.

Conferences related to Environmental issues are often held in Portland because of easily-accessed natural resources within the city limits. The Country in the City Symposiums held in Portland for several years, attracting international participants, has regularly used the City's natural resources, including those in the Columbia South Shore, as field locations for sessions.

Dollar expenditures on tourism and convention-type activities are difficult to identify. However, in 1988 Defenders of Wildlife conducted a survey of Oregon households on non-game wildlife economic impact and concluded that an average household expenditure of about \$348 was attributed to travel and over

\$600 to photography and optical equipment directly related to wildlife enjoyment. Activities related to these expenditures could occur in the City within natural resource areas from tourist or convention-related activities.

In summary, natural resources within the City of Portland can provide a reason for locating a conference or convention, or provide a local destination for tourists. This increase in conference and tourism can bring significant money into the local economy.

**Infrastructure and Flood Control** Limiting development within areas of natural hazards, which are largely natural resource areas, will reduce the need for costly hazard protection infrastructure, such as additional flood control structures and pump facilities. Retention of open space, particularly sloughs and lakes, helps reduce or maintain flooding levels.

**Water Quality** The Columbia Slough does not meet state water quality standards for various pollutants, and has been classified as a "water quality limited" stream. Continuation of this classification may result in fines to the City and state-mandated cleanup measures which may emphasize time rather than cost. Both will result in adverse economic impacts to the City. Additionally, property owners may have site improvement requirements imposed which also emphasize costly but time-efficient technology, again imposing economic hardship.

The Bureau of Environmental Services is beginning development of a plan for improving water quality in the slough. By developing a plan which emphasizes natural and low technology pollution control measures, requires that it be incorporated into new development, provides for long-term inclusion of resource protection actions into existing land uses as redevelopment occurs, and encourages an educational, neighborhood-participatory program through the Bureau of Environmental Services' efforts, water quality levels exceeding state standards may be achieved in a manner which would not impose undue economic hardship on existing development.

**Recreation** According to a 1988 survey conducted for the Defenders of Wildlife, Oregon households spent an average of over \$8,600 on non-game wildlife recreation activities. Of these expenditures, over \$2,300 (photographic and optical equipment, bird seed, clothing, magazines and books, landscaping for wildlife, boats, etc.) could be used on wildlife-related activities in Portland, and \$1,100 (same as previously except for boat-related expenditures) within the Columbia South Shore.

**Summary** Protection of natural resources in the Columbia South Shore will have both positive and negative economic impacts. Positive impacts will result from increased amenities, resulting in higher property values, attraction for tourists and related activity, and more efficient use of public services and utilities, and increased recreation potential.

Negative impacts are greatest in industrial zones, where development potential is limited more by land area than floor-area ratios or number of units per given area. However, projected needs for industrial land in the City or even the

Portland Metropolitan area is far less than the amount of land presently zoned for industrial uses and located out of hazard areas.

## **SOCIAL CONSEQUENCES**

**Recreational and Educational Opportunities** There are no other natural resources of the size, type, and quality of the Columbia Slough in east Portland. It is a unique educational opportunity for schools in east Portland, having convenient access to a wide variety of native vegetation and wildlife that was once common in the Willamette Valley.

Recreational opportunities afforded by the Columbia Slough Trail, fishing, limited boating, wildlife viewing, and local hiking to selected resource locations are important. Disappearance of resource values would curtail all these activities.

**Historic, Heritage, and Cultural Values** Archaeological resources have been found throughout the Columbia South Shore, particularly along the edges of historic wetlands and water bodies. Industrial and commercial development results in regrading of the land, possibly exposing or destroying artifacts.

**Visual Variety and Impact** Much of the Columbia South Shore is flat, with little topographic relief. Natural resources such as the trees accentuate this form, as well as providing a natural foreground element when viewing the Cascade Mountains to the east. On a smaller scale, the riparian strip along Columbia Slough provides a strong sense of orientation, and an edge or seam between sub-areas and land uses.

Preservation and enhancement of natural resources will continue to integrate natural resources into the City and provide variety in landscape form, while their loss will result in greater monotony.

**Urban Design and Image of the City** As discussed previously, protection of natural resources in the Columbia South Shore will provide a sense of definition, location, and uniqueness to northeast Portland. It also serves to connect the district. Conservation and enhancement of natural resources contributes to the image of northeast Portland, while their destruction would result in the reduction of identity and, therefore, their uniqueness, character, and value.

**Screening and Buffering of Incompatible Uses** Natural resources act as an edge to different land uses, separating and buffering them from each other by both distance and visually. Protection of natural resources allows for incompatible land uses to locate more closely, with less potential for conflicts, while their removal would either require major changes in land uses to resolve issues of incompatibility, or the creation of artificial buffers, many of which simply duplicate elements found in natural resource buffers.

**Health, Safety, and Welfare** Protection of natural resources located in the flood plain will protect the general public from possible natural disasters. This protection reduces potential demand on disaster relief agencies and bureaus (and subsequent demands on tax dollars), as well as reducing individual expenses of replacing destroyed property and the costs of treatment for injuries.

**Summary** Protection of natural resources in the Columbia South Shore will result in generally positive benefits in terms of increased protection from natural disasters, decreased disaster relief costs, increased protection from incompatible land uses, increased sense of place, uniqueness, visual diversity and aesthetics, and greater education and recreation opportunities.

## **ENVIRONMENTAL CONSEQUENCES**

**Water Quality and Quantity** Natural resources, including upland vegetation, riparian fringes, wetlands, and sloughs and drainageways provide major contributions toward improving water quantity and quality. Soils allow water to filter downward to the groundwater reservoir, adding volume to surface waters during low flow periods. Groundwater recharge in turn reduces surface runoff, and accompanying erosive forces. Other areas allow groundwater discharge in the form of springs or seeps, providing water sources for surface water drainageways. Wetlands, water bodies, and other lowlands provide flood storage and desynchronization, reducing overall flood levels. Vegetation traps sediment from surface flow and provides soil anchoring, as well as absorption of certain hazardous chemicals and heavy metals, reducing water pollution. Additionally, erosive forces from water flow are dissipated by vegetation, allowing deposition of suspended solids and increasing bank stabilization, both of which increase water quality.

Development which removes the natural resources of the Columbia South Shore will result in higher water temperatures, destroying fish and water-related wildlife habitat. It reduces groundwater recharge and increases immediate stormwater runoff, exacerbating flood levels, contributing to more erosion, carrying pollutants directly to the slough, and reducing overall water quality.

Protection of natural resources will help stabilize flood flows by retaining open space and allowing groundwater recharge. This action will allow continued water supply for summer flow. A continued groundwater source will also help keep the water temperatures of the slough down, as will shading of the slough and lakes by bank vegetation. Riparian vegetation and wetlands adjacent to the slough traps sediment and other pollutants from sheetflow, aiding in overall water quality. Limiting stormwater outfalls and sheet runoff from developed lands through the use of on-site retention facilities reduces point and non-point sources of pollution. Prevention of direct runoff also provides for filtering of certain pollutants as water percolates through the soil, rather than flowing directly to the creek.

Although natural resources can absorb impacts of sediment and other water-born pollutants, excessive pollutants can destroy resource values. A transition



area may be necessary to provide shading of a water body, sediment trapping characteristics or other forms of pollution absorption prior to entering the resource area. Size of the resource protection will vary, depending on the resource to be protected, pollutants expected, and characteristics of the transition area. Information in the record indicates that a width of 25 to 100 feet will trap significant sediment, 25 to 150 feet will affect water temperature, and an undetermined amount is necessary for other pollution, due to varying characteristics. Generally, a minimum of fifty feet appears necessary for significant resource protection.

**Fish and Wildlife Habitat** The Columbia Slough is a mosaic of vegetative communities and human uses integrated with the water course ecosystem which provides food, shelter, breeding and rearing areas for aquatic and terrestrial animals and birds. Fish and wildlife need food, water, cover, and places to perch, rest, breed, and nest. Any changes in these requirements, whether man-induced (development, channelization, removal of vegetation) or natural (flooding, windstorms, drought or insect infestations), will affect fish and wildlife habitats. The changes may be beneficial to some wildlife species and detrimental to others. Changes and losses in the quality, quantity and availability of food, water, cover and living space have the greatest detrimental effects on wildlife.

The most important aspect of habitat and habitat protection within the Columbia Slough basin is water. Water exists in the form of sloughs, lakes, ponds, wetlands, or groundwater. A review of the impacts on water resources in the basin from conflicting uses provides justification for protecting the two other basic habitat components: food and cover. For example, the removal of vegetative cover affects water quality by increasing erosion and silting. Increased siltation affects the turbidity level of the water and the ability of fish to spawn. Removal of vegetation causes warming of the creek. High summer water temperatures is the major factor limiting fish diversity in the Columbia Slough. The removal of vegetation reduces nesting cavities and shelter for birds and insects. A reduction in insects causes a decrease in the bird and small mammal populations.

Throughout the Columbia South Shore there are wetlands. These are valued because of their rarity and great plant and animal diversity common to wetlands. Upland protection is warranted because of the rarity and species diversity, despite the fact that most of the wetlands have been modified and disturbed by fill and invasion of non-native species. Wetlands and undeveloped uplands provide permeable soils for groundwater recharge, flood storage, and traps to prevent sediment from entering the creeks. Maintaining areas for groundwater and flood storage help reduce peak flooding which in turn helps decrease the amount of habitat and personal damage destroyed annually by flooding.

Plants provide food and cover for fish and wildlife. Their roots, bark, foliage, nuts and fruits provide food for a variety of wildlife species. Twigs, leaves, and bark are used for nest building and insulation. Large trees, especially snags, are prime perch sites for hawks and owls which feed on small mammals on the ground below. Because plants are at the bottom of the food chain, they are a

crucial element of the entire system. Algae in waterways is eaten by tiny macro-invertebrates, which are in turn eaten by fish which may be eaten by herons, kingfishers or other birds. On land, crickets, beetles, small mammals, and rabbits feed on vegetation and, in turn, provide food for coyotes and raptors.

When vegetation begins to die and decay, it becomes home and food to mites, earthworms, fungi and millipedes which aid in the decomposition process. Hollow trees laying on the ground provide cover for rabbits and raccoons, salamanders and snakes. Tree trunks lying partially submerged in a slough or pond provide cover and shading for fish, attachment sites for aquatic insects, sunning areas for western pond turtles, snakes and other insects (dragonflies).

The vegetative cover and waterways provide travel corridors for the fish and animals. Safe access to and along the waterways is crucial. Even in the reaches (which may contain more than one resource site, or be only a portion of a resource site) where there is little vegetation and exposure to summer heat is high, the slough serves to connect habitats and as a passageway between habitats.

Water is the other component required by wildlife species. Safe access to a clean water source is crucial, such as a healthy riparian system providing connectivity between upland habitats and a water supply.

Urbanization and development have greatly impacted the state and health of the aquatic, riparian and upland habitats of the Columbia Slough. Some habitat has been destroyed and others created. As these changes occur, only the more aggressive and adaptive species survive, resulting in a loss of biodiversity.

In order to protect a natural resource, it is also necessary to limit or separate adjacent uses and activities, such as through use of a resource protection area. Size of a resource protection area will vary, depending on what resource values are identified for protection and the characteristics of the protected resource, resource protection area, and proposed conflicting development. Information on the record indicates resource protection areas of 25 to 150 feet for types of resources similar to the Columbia South Shore. A 50 foot-deep resource protection area appears to be the minimum necessary in most cases to provide significant protection.

The following general characteristics provide good overall fish and wildlife habitat:

- Native plant communities and landscapes;
- Convenient access to water, food, and cover for wildlife;
- Spawning and breeding areas for fish and wildlife;
- Presence of an adequate pool-to-riffle ratio for sufficient oxygenation of water;

- Insects, worms, and other small organisms which provide food for birds, fish, and small mammals;
- Connections between natural resources to provide for interspersions of plants and animals to provide recharge of populations and to enhance and increase wildlife diversity;
- Continuity of slough, riparian fringe, and adjacent uplands as a wildlife corridor; and
- Perching sites for raptors and other birds.

The following general land uses and activities degrade natural resources:

- Garbage and littering;
- High levels of human and domestic animal activity;
- Toxic deposition of sewage and industrial waste;
- Stormwater runoff carrying pollutants, or at high volumes or velocities;
- Excessive herbicides, pesticides, fertilizers from agricultural fields or domestic use;
- Fences, streets, and structures which limit wildlife access; and
- Noise, light at night, and other development impacts.

**Air Quality** Vegetation traps and collects particulates which are then deposited on the ground with rainfall. Leaves also absorb carbon dioxide during photosynthesis. Removal of vegetation would result in increased air pollutants.

**Protected Resources** All resources inventoried in this Plan were inventoried as part of the City's Goal 5 process, with some also identified as a wetland according to state and federal delineation criteria.

#### **GENERAL ENERGY CONSEQUENCES**

Decisions on resource protection will have impacts on city form. Development densities may have to be altered to take resource protection into account. Development form and location will, in turn, impact energy consumption in both construction and ongoing maintenance of human uses and activities. Following is a general discussion of energy consequences of resource protection:

**Heating and Cooling of Structures** Energy consumption (heating and cooling structures) as a result of resource protection is impacted in two ways: building

form and presence of vegetation. If resource sites are protected from development, that same development has to occur elsewhere. Needed development could be provided for through expanding urban boundaries and using the same building form, which would result in no change in energy consumption for heating or cooling. However, if it is desirable or necessary to locate the development on or near the same site as the resource, increased intensity would result. This could be accomplished through clustering of buildings, resulting in more common wall construction and reduced surface area for a given volume. Heat transfer between indoors and outdoors would be reduced, resulting in an energy savings.

Vegetation provides a moderating effect on climate, both on a macro and micro scale. Trees provide shade on nearby buildings in the summer, reducing energy demands for cooling. Plants also absorb sunlight and transpire during growing seasons, reducing ambient air temperatures. This moderating effect can reduce energy needs for cooling of nearby development.

Trees and shrubbery can also act as a wind break during winter. By slowing or diverting winter winds, heat loss in structures from infiltration and convection is reduced, resulting in lower energy needs.

In summary, energy needs for heating or cooling would generally be positively impacted as a result of resource protection. A positive impact would result from clustering, while a lesser, but still positive, impact would result from expanding urban boundaries, as development surrounding the resource would continue to benefit from resource vegetation. A positive impact would result from wind protection and summer shading on nearby development whether the urban area were expanded to allow for needed development, or increased densities were encouraged on nearby sites. The extent of energy saving is dependent on many factors beyond the scope of this report, including type of resource protected, proximity of resource to development, structure type, heating source, construction materials, design, activities, etc.

**Transportation** Energy expenditures for transportation relate primarily to travel distance from origin to destination, and mode of transportation used. Both variables can be affected by natural resource protection. If resource protection precluded future needed industrial development, and it were not able to locate nearby, people may have to use more energy for traveling between home and employment or shopping.

The availability of natural resources within the Columbia South Shore provides opportunities for wildlife observation, recreation, and education purposes to residents of nearby areas. Because resources are closer to users, less transportation energy is used in reaching them.

When the 40-Mile Loop, Columbia Slough Trail, and bicycle path along Airport Way and north-south connections are completed, a greater range of transportation modes, including bicycling and walking, can be used to reach and use the corridor. Separation of pedestrian and bicycle routes from roadways may increase safety, and therefore make alternative forms of

transportation more attractive. Proximity to natural resources along the slough may also make travel more pleasant.

In summary, the impact of resource protection on transportation energy costs depend upon where needed potential land uses displaced by protected resources will relocate. If increased land use densities are allowed nearby to offset protected areas, or if uses are located more closely to employment centers, a net positive benefit from protection should result. If urban boundaries were expanded to allow development far from employment, commercial, and recreation destinations to compensate for lost development opportunities, more energy would be required for commuting. Protection of natural resources will also encourage the use of energy-efficient travel, such as bicycling and walking, by enhancing routes for these modes.

**Infrastructure** Clustering development outside of natural resource areas in an efficient manner will result in less infrastructure needed to serve sewer, water, transportation, and other needs. If done away from flood hazard areas, need for additional construction considerations or hazard control structures would be unnecessary. The result would be less infrastructure materials and maintenance, of which a major component is energy.

**Summary** Considerable energy savings can be achieved through natural resource protection, particularly in terms of infrastructure provision and heating and cooling of structures. Transportation-related savings can also be substantial if needed residential development were located near destination points and alternative energy-efficient travel modes were integrated into the natural resource protection plan.

## **ECONOMIC, SOCIAL, ENVIRONMENTAL, AND ENERGY CONSEQUENCES APPLICABLE TO SPECIFIC INVENTORIED SITES**

The material contained in Figure 3-1 is a summary of specific economic, social, environmental, and energy consequences of permitting, limiting, or prohibiting conflicting uses on individual inventoried natural resource sites. It must be combined with consequences common to all sites previously described in order to resolve conflicts between resource protection and other urban development. Supporting information is contained in Volume 2, *Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor*, the 1990 *Natural Resources Management Plan for the Columbia South Shore*, and information in the record and testimony received in public hearings on previous drafts of this Plan (the October 26, 1992 Proposed Draft of the *Natural Resources Management Plan for the Columbia South Shore*).

**Figure 3-1  
Consequences Which Apply to Individual Sites**

<b>SITE</b>	<b>CONFLICTING USES</b>	<b>ECONOMIC, SOCIAL, ENVIRONMENTAL, ENERGY CONSEQUENCES UNIQUE TO THE SITE</b>
<b>A</b>	Commercial, Industrial, Agricultural, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors, Airports	<p><b>Economic:</b> Reduced potential for employment (up to about 120).* Stormwater retention for parking lots limited. Continual tree topping costs for airplane approach, limiting airport expansion.</p> <p><b>Social:</b> Decreased safety for airplane approach, aesthetics, heritage, character enhanced.</p> <p><b>Environmental:</b> Discontinuous connection to river, structural diversity, water quality.</p> <p><b>Energy:</b> none</p>
<b>B</b>	Commercial, Industrial, Agricultural, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors, Airports	<p><b>Economic:</b> Reduced potential for employment (up to about 120).* Restricted development, access</p> <p><b>Social:</b> Decreased safety for airplane approach (wintering waterfowl)</p> <p><b>Environmental:</b> Water quality, wildlife habitat</p> <p><b>Energy:</b> none</p>
<b>C</b>	Residential, Commercial, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors, Airports	<p><b>Economic:</b> Reduced potential for employment (up to 675)*, restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, fish habitat</p> <p><b>Energy:</b> Drainage district maintenance</p>
<b>D</b>	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 60)*, restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, fish habitat.</p> <p><b>Energy:</b> Drainage district maintenance</p>

SITE	CONFLICTING USES	ECONOMIC, SOCIAL, ENVIRONMENTAL, ENERGY CONSEQUENCES UNIQUE TO THE SITE
<b>E</b>	Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 45),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, fish habitat.</p> <p><b>Energy:</b> Drainage district maintenance</p>
<b>F</b>	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 45),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, fish habitat.</p> <p><b>Energy:</b> Drainage district maintenance</p>
<b>G</b>	Residential, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 120),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, recreation, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, fish habitat.</p> <p><b>Energy:</b> Drainage district maintenance</p>
<b>H</b>	Residential, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 60)*, restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, fish habitat</p> <p><b>Energy:</b> Drainage district maintenance</p>

SITE	CONFLICTING USES	ECONOMIC, SOCIAL, ENVIRONMENTAL, ENERGY CONSEQUENCES UNIQUE TO THE SITE
I	Residential, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 15),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Water quality, dispersion.</p> <p><b>Energy:</b> Drainage district maintenance</p>
J	Industrial, Agricultural, Recreational, Nonconforming, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 225),* restricted access for roads, utilities</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Wildlife habitat</p> <p><b>Energy:</b> none</p>
K	Commercial, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 250),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Water quality, corridor, dispersion, habitat, fish.</p> <p><b>Energy:</b> Drainage district maintenance</p>
L	Commercial, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to about 600).* Restricted development along Airport Way, restricted access for roads, utilities, flood control retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Water quality</p> <p><b>Energy:</b> none</p>



SITE	CONFLICTING USES	ECONOMIC, SOCIAL, ENVIRONMENTAL, ENERGY CONSEQUENCES UNIQUE TO THE SITE
<b>M</b>	Commercial, Industrial, Agricultural, Nonconforming, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 15)*, restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> none</p>
<b>N</b>	Residential, Commercial, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Restricted development, restricted access for roads, utilities,</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> none</p>
<b>O</b>	Residential, Commercial, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Water quality, corridor, dispersion, habitat, fish.</p> <p><b>Energy:</b> Drainage district maintenance</p>
<b>P</b>	Industrial, Agricultural, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 45)*, restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none.</p> <p><b>Energy:</b> none</p>

SITE	CONFLICTING USES	ECONOMIC, SOCIAL, ENVIRONMENTAL, ENERGY CONSEQUENCES UNIQUE TO THE SITE
Q	Industrial, Agricultural, Nonconforming, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 60),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none.</p> <p><b>Energy:</b> none</p>
R	Industrial, Agricultural, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for jobs (up to 15)*, restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> none</p>
S	Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 75),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Important sediment trapping area (protects Site K).</p> <p><b>Energy:</b> Drainage district maintenance</p>
T	Industrial, Agricultural, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 15),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> none</p>
U	Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 15),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> none</p>

SITE	CONFLICTING USES	ECONOMIC, SOCIAL, ENVIRONMENTAL, ENERGY CONSEQUENCES UNIQUE TO THE SITE
<b>V</b>	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 375),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, wildlife habitat.</p> <p><b>Energy:</b> Drainage district maintenance</p>
<b>W</b>	Residential, Industrial, Agricultural, Nonconforming, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 45),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> Drainage district maintenance</p>
<b>X</b>	Industrial, Agricultural, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 15),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> none</p>
<b>Y</b>	Industrial, Agricultural, Recreational, Nonconforming, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 75),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> Drainage district maintenance</p>

SITE	CONFLICTING USES	ECONOMIC, SOCIAL, ENVIRONMENTAL, ENERGY CONSEQUENCES UNIQUE TO THE SITE
<b>Z</b>	Residential, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 180),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> Drainage district maintenance</p>
<b>AA</b>	Industrial, Agricultural, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 105),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> none</p>
<b>BB</b>	Industrial, Agricultural, Recreational, Nonconforming, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 150),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, fish habitat</p> <p><b>Energy:</b> Drainage District maintenance</p>
<b>CC</b>	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 1425),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, fish and wildlife habitat.</p> <p><b>Energy:</b> Drainage district maintenance</p>

SITE	CONFLICTING USES	ECONOMIC, SOCIAL, ENVIRONMENTAL, ENERGY CONSEQUENCES UNIQUE TO THE SITE
<b>DD</b>	Industrial, Agricultural, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 90),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, fish and wildlife habitat.</p> <p><b>Energy:</b> Drainage district maintenance</p>
<b>EE</b>	Industrial, Agricultural, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 540),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, wildlife habitat.</p> <p><b>Energy:</b> none</p>
<b>FF</b>	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to 45),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, wildlife habitat.</p> <p><b>Energy:</b> Drainage district maintenance</p>
<b>GG</b>	Industrial, Agricultural, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> none</p>

SITE	CONFLICTING USES	ECONOMIC, SOCIAL, ENVIRONMENTAL, ENERGY CONSEQUENCES UNIQUE TO THE SITE
<b>HH</b>	Residential, Commercial, Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to about 255),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> Wintering waterfowl</p> <p><b>Energy:</b> none</p>
<b>II</b>	Commercial, Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced potential for employment (up to about 175),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, wildlife habitat.</p> <p><b>Energy:</b> Drainage district maintenance</p>
<b>JJ</b>	Industrial, Agricultural, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced employment potential (up to about 255),* restricted access for roads, utilities</p> <p><b>Social:</b> none</p> <p><b>Environmental:</b> none</p> <p><b>Energy:</b> none</p>
<b>KK</b>	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p><b>Economic:</b> Reduced employment potential (up to about 75),* restricted access for roads, utilities, flood control and stormwater drainage retained</p> <p><b>Social:</b> Aesthetics, heritage, character enhanced</p> <p><b>Environmental:</b> Corridor, dispersion values, fish and wildlife habitat.</p> <p><b>Energy:</b> Drainage district maintenance</p>

\* Reduced employment potential is based on the entire resource area in a General Industrial (IG) Zone, including water bodies and banks, which are generally unavailable for development. Employment loss may be overestimated, as the resource may include water bodies and banks which are unlikely to be substantially altered under any circumstances. See discussion in General Economic Consequences section of this chapter.

## **CONCLUSION AND CONFLICT RESOLUTION**

There are important natural resource values both area-wide (common to all sites or multiple sites are necessary) and site-specific (limited to individual sites). Protection of area-wide values would require more than one site to be protected. Examples of area-wide values are stormwater drainage, heritage, flood storage, wildlife corridor, and wildlife dispersion. Site-specific values are local in nature. Examples of site-specific values include groves of trees, single nesting sites, meadows, or other features which occur primarily on one site.

Protection of a resource value can apply to a single site or group of sites, depending on the type of value and balancing of conflicts between a resource site and conflicting uses through the analysis of economic, social, environmental, and energy consequences summarized in the previous section. This analysis provides the reasons to explain why decisions are made regarding natural resource protection for inventoried sites in the Columbia South Shore. Any of the following three decisions can be made for a resource site:

- 1. Allow the conflicting use fully** This action occurs in areas where conflicting uses, notwithstanding the impact on the resource, are sufficiently important to warrant being allowed fully and without natural resource-related restrictions.
- 2. Limit the conflicting uses in a manner which protects the resource** This action occurs in areas where both the resource and conflicting uses are important relative to each other, and restrictions are placed on conflicting uses which would protect identified resource values while at the same time allowing some or all conflicting uses.
- 3. Protect the resource fully** This action occurs in areas where the resource, relative to conflicting uses, is sufficiently important that the resource should be protected and all conflicting uses prohibited.

Figure 3-2 is a summary of the conclusions and decision on each inventoried site regarding natural resource protection. It serves as the basis for the resource protection plan contained in Chapter 4.

**Figure 3-2  
Conclusion and Conflict Resolution for Individual Sites**

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>A</b>	Commercial, Industrial, Agricultural, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors, Airports	<p>Generally a good quality resource site, but possible major conflicts with airport operations, particularly airplane landing/takeoff.</p> <p>Part of a discontinuous wildlife resource connection (along with Site B) between the Columbia River and the slough between NE 82nd Ave. and I-205.</p> <p><b>Both the natural resource and airport-related conflicting use values are significant. Prohibiting conflicting uses related to the airport may severely restrict airport operations, adversely impacting the economy of Portland. It appears that resource values can be moved or replaced through mitigation, whereas relocation or modification of airport operations would be more difficult.</b></p> <p><b>DECISION: Continue the existing Environmental Conservation (EC) zone. Allow conflicting use if resource values can be preserved through mitigation.* Until resource destruction, limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.).</b></p>
<b>B</b>	Commercial, Industrial, Agricultural, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors, Airports	<p>Possible major conflicts with airport operations.</p> <p>Part of a discontinuous wildlife resource connection (along with site A) between the Columbia River and the slough between NE 82nd Ave. and I-205, although of relatively low quality.</p> <p><b>Both the natural resource and airport-related conflicting use values are significant. Prohibiting conflicting uses related to the airport may severely restrict airport operations, adversely impacting the economy of Portland. It appears that resource values can be moved or replaced through mitigation, whereas relocation or modification of airport operations would be more difficult.</b></p> <p><b>DECISION: Continue the existing EC zone. Reduce the transition Area to 0, as resource values are largely drainage-related. Allow conflicting use if resource values can be preserved through mitigation. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.).</b></p>



SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
C	Residential, Commercial, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors, Airports	<p>Necessary for drainageway purposes. Critical for wildlife corridor. Future water quality projects by BES may require Plan amendment.</p> <p><b>Natural resource values (especially drainage, wildlife corridor) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>
D	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Necessary for drainageway purposes. Critical for wildlife corridor. Future water quality projects by BES may require Plan amendment.</p> <p><b>Natural resource values (especially drainage, wildlife corridor) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>E</b>	Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Necessary for drainageway purposes. Critical for wildlife corridor. Future water quality projects by BES may require Plan amendment.</p> <p><b>Natural resource values (especially drainage, wildlife corridor) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
F	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>West end of very high quality. East end degraded and functionally more separated from Johnson Lake and other resources.</p> <p><b>The northeast corner of the site, including the eastern portion of the slough (to the road crossing about 700 feet west of the west frontage road of I-205) and cleared area between it and the Johnson Lake riparian area is of lower, but still significant, resource value. Conflicting uses are of equal significance. It appears that resource values can be moved or replaced through mitigation.</b></p> <p><b>Natural resource values (especially drainage, wildlife corridor) are more significant than most conflicting uses on the remainder of the site. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Continue the existing EC zone on the northeast corner of the site containing the eastern 700 feet of the slough (to the culverted road crossing) and the cleared area immediately south. Allow conflicting uses if resource values can be preserved through mitigation.* Until resource destruction, limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.).</b></p> <p><b>Protect the remainder of the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values and connect this site to the main slough channel to the north for wildlife passage.</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>G</b>	Residential, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Lake and adjacent vegetation is a very important wildlife area. Major aesthetic value from I-205. Large flood storage capacity, but inlet restricted.</p> <p>Lands between the resource and the road and recreation areas along the south (varies between 10-50 feet) provide sufficient protection to the resource such that a full 50 feet is unnecessary here.</p> <p><b>Natural resource values (especially drainage, wildlife corridor, fish and wildlife habitat) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource on all but the south side (which is reduced to the edge of the road and recreation area) to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>
<b>H</b>	Residential, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Good quality habitat. Eastern end is part of "Little Four Corners."</p> <p><b>Natural resource values (especially drainage, wildlife corridor) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>I</b>	Residential, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Small wetland/drainageway which provides water quality values for Prison Pond. Part of "Little Four Corners."</p> <p><b>Although important for water quality and some wildlife values, full protection of the site could place severe limits on future access and development of adjacent properties. Both the natural resource and conflicting uses are significant. Prohibiting conflicting uses may restrict future development without adding significant resource values. It appears that resource values can be moved or replaced through mitigation.</b></p> <p><b>DECISION: Protect the resource with the Environmental Conservation (EC) zone. Allow conflicting use if resource values can be preserved through mitigation.* Until resource destruction, limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.).</b></p>
<b>J</b>	Industrial, Agricultural, Recreational, Nonconforming, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Unusual site because it contains a significant stand of older oak trees of good habitat value. Isolated from other resources. Significant portion already developed.</p> <p><b>Although a good habitat site, commitments have been made to allow conflicting industrial-related uses (subdivision, provision of services, etc.). Prohibiting conflicting uses would not result in protecting significant resource values, and would reduce employment potential by up to about 225.</b></p> <p><b>DECISION: Allow conflicting uses. Encourage the property owner to incorporate the remaining oak trees into any future development.</b></p>
<b>K</b>	Commercial, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>High value habitat area, source of springs. Part of "Little Four Corners."</p> <p><b>Natural resource values (especially drainage, wildlife corridor) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>L</b>	Commercial, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<b>Much of this area has already been developed. Remaining resources of fairly low quality, isolated. Subdivision already approved. Adjacent to Airport Way and the I-205 interchange, increasing value of the land for conflicting uses. Conflicting uses are of greater value than natural resources.</b>  <b>DECISION: Allow conflicting uses</b>
<b>M</b>	Commercial, Industrial, Agricultural, Nonconforming, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<b>Remaining resources of fairly low quality, isolated. Subdivision already approved. Conflicting uses are of greater value than natural resources.</b>  <b>DECISION: Allow conflicting uses</b>
<b>N</b>	Residential, Commercial, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	Site was cleared after inventory work, but vegetation is growing back. Protection would severely restrict development on adjacent land because of access limitations. Preliminary subdivision including right-of-way through the site has been approved, although not finalized.  <b>Near Airport Way and the I-205 interchange, increasing value of the land for conflicting uses. Relatively low resource value when compared to the conflicting use.</b>  <b>DECISION: Allow conflicting uses.</b>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>O</b>	Residential, Commercial, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Good quality habitat, close to river but isolated from slough. High visibility. Waterfowl habitat.</p> <p>Part of a discontinuous wildlife resource connection (along with site B) between the Columbia River and the slough between NE 82nd Ave. and I-205.</p> <p><b>Natural resource values (especially drainage, fish and wildlife habitat, aesthetics) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>
<b>P</b>	Industrial, Agricultural, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Isolated depression in a field.</p> <p><b>Very low resource value. Resource protection would create access and development problems. The conflicting use is of greater value than the natural resource.</b></p> <p><b>DECISION: Allow conflicting uses.</b></p>
<b>Q</b>	Industrial, Agricultural, Nonconforming, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Part of site filled, rest of the northern portion serves as a drainageway. Filled area was mitigated through creation of Site R. South of Airport Way has been converted to a stormwater/hazardous spill containment facility.</p> <p><b>Both the remaining natural resource and industrial-related conflicting use values are significant. Prohibiting conflicting uses may restrict industrial development without equivalent natural resource gains. It appears that any resource values can be moved or replaced through mitigation. Protection should be primarily for water quality and stormwater values, so a transition area is unnecessary.</b></p> <p><b>DECISION: Continue the existing Environmental Conservation (EC) zone. Allow conflicting use if resource values can be preserved through mitigation. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.).</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>R</b>	Industrial, Agricultural, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Successful mitigation area for alteration of western portion of Site Q. Required by DSL.</p> <p><b>Natural resource values (especially drainage, wildlife habitat, and aesthetics) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>
<b>S</b>	Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Site necessary for drainageway purposes. Important protection for downstream sites. Future water quality projects by BES may require Plan amendment.</p> <p><b>Natural resource values (especially drainage, fish and wildlife habitat, aesthetics) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>North side of site already developed at a level which, if forced to be removed beyond 25 feet from the resource through accelerated nonconforming use regulations would have major adverse economic consequences to business when compared to increased environmental protection.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource on the south and east sides and 25 feet on the north to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>
<b>T</b>	Industrial, Agricultural, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Isolated, degraded remnant.</p> <p><b>Very low resource value. Resource protection would create access and development problems while providing few benefits. The conflicting use is of greater value than the natural resource.</b></p> <p><b>DECISION: Allow conflicting uses.</b></p>



SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>U</b>	Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Isolated, degraded remnant.</p> <p><b>Very low resource value. Resource protection would create access and development problems while providing few benefits. The conflicting use is of greater value than the natural resource.</b></p> <p><b>DECISION: Allow conflicting uses.</b></p>
<b>V</b>	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Northern part, adjacent to slough, good quality habitat, southern portion somewhat less. Access to property west of resource must be moved from NE Sandy Blvd. (south) to NE 148th (west and across site) because of railroad crossing.</p> <p><b>Natural resource values (especially drainage, fish and wildlife habitat, aesthetics) on presently E-zoned portions of the site are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>Low resource value compared to conflicting uses on portions of the site not presently protected with the E zone Resource protection would create access and development problems.</b></p> <p><b>DECISION: Protect the northern portion of the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p> <p><b>Allow conflicting uses on the southern 200 feet of the resource now zoned EC if resource values can be preserved through mitigation.* Until resource destruction, limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.).</b></p> <p><b>Allow conflicting uses on portions of the site not presently zoned EC or EP.</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>W</b>	Residential, Industrial, Agricultural, Nonconforming, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Prohibits efficient access to property north, severely limiting future development potential. Relatively low quality overall, but with significant stormwater storage capacity value.</p> <p><b>Both the natural resource and conflicting use values are significant. Prohibiting conflicting uses may make access and development on land surrounding the site difficult. It appears that any resource values can be moved or replaced through mitigation</b></p> <p><b>DECISION: Continue the existing Environmental Conservation (EC) zone. Allow conflicting use if resource values can be preserved through mitigation.* Until resource destruction, limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.).</b></p>
<b>X</b>	Industrial, Agricultural, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Isolated, degraded remnant.</p> <p><b>Very low resource value. Resource protection would create access and development problems. The conflicting use is of greater value than the natural resource.</b></p> <p><b>DECISION: Allow conflicting uses.</b></p>
<b>Y</b>	Industrial, Agricultural, Recreational, Nonconforming, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Prohibits efficient access to property north, severely limiting future development potential. Relatively low quality overall, but with significant stormwater storage capacity value.</p> <p><b>Both the natural resource and conflicting use values are significant. Prohibiting conflicting uses may make access and development on land surrounding the site difficult. It appears that any resource values can be moved or replaced through mitigation</b></p> <p><b>DECISION: Continue the existing Environmental Conservation (EC) zone. Allow conflicting use if resource values can be preserved through mitigation.* Until resource destruction, limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.).</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>Z</b>	Residential, Industrial, Agricultural, Nonconforming, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Good quality habitat leading into the Four Corners area. Needed for flood storage. Opportunity for enhancement.</p> <p><b>Natural resource values (especially drainage, wildlife habitat) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>
<b>AA</b>	Industrial, Agricultural, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Isolated, degraded remnant.</p> <p><b>Very low resource value. Resource protection would create access and development problems. The conflicting use is of greater value than the natural resource.</b></p> <p><b>DECISION: Allow conflicting uses.</b></p>
<b>BB</b>	Industrial, Agricultural, Recreational, Nonconforming, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Critical for corridor, dispersion. Good habitat.</p> <p><b>Natural resource values (especially drainage, wildlife habitat, wildlife corridor) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
CC	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Part of Four Corners. Critical for corridor, dispersion. Good habitat. Northern portion fronts on NE Airport Way, and portions have been disturbed from road construction and other vegetation removal activities. Two stormwater/hazardous material protection ponds have been constructed within this site.</p> <p><b>Natural resource values (especially wildlife habitat, wildlife corridor) are more significant than most conflicting uses along the slough and the southern portion, south of Site EE. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. For areas near Airport Way, important considerations include good access and reduced service extension costs. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>Resource protection would create access and development problems on northern portions of the site between sloughs (between Z and BB, and between BB and DD). The conflicting use is of greater value than the natural resource.</b></p> <p><b>Both the natural resource and conflicting uses values are significant for the portion of the site south of the narrowest (western) part of Site EE which is zoned EC. If the western portion of Sites DD and EE are filled (see decisions on Site DD and EE following), it appears that any resource values can be moved or replaced through mitigation without adversely impacting other resource sites that are fully protected.</b></p> <p><b>DECISION: Protect at the highest level the resource along the slough (portions of Sites Z, BB, DD) and along the southern portion, except for the west 600 feet. Limit conflicting uses within 50 feet of the remaining protected resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values. Allow conflicting uses on the southwest portion north of the more narrow portion of Site EE which is not presently in the E zone and on remainder of the site.</b></p> <p><b>Continue the existing Environmental Conservation (EC) zone on the southwestern portion of the site north of the narrower portion of Site EE. Allow conflicting use when the western portion of Sites DD and EE are filled if resource values can be preserved through mitigation.* Until resource destruction, limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.).</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
DD	Industrial, Agricultural, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Part of Four Corners. Good quality habitat. Helps separate, protect Site EE. Western portion severely restricts access to south.</p> <p><b>Natural resource values (especially wildlife habitat, wildlife corridor) are more significant than most conflicting uses along the eastern portion, between Sites CC and EE. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. For areas near Airport Way, important considerations include good access and reduced service extension costs. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>Both the natural resource and conflicting uses values are significant for the E-zoned portion of the site east of Site EE . Prohibiting conflicting uses may make access and development on land surrounding the site difficult. If the western portion of Sites CC and EE are filled (see decisions on Sites CC and EE), it appears that any resource values can be moved or replaced through mitigation without adversely impacting other resource sites that are fully protected.</b></p> <p><b>DECISION: Protect the southeastern portion of the resource and the portion of the resource northeast of Airport Way at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance). Encourage enhancement and mitigation along site to increase resource values.</b></p> <p><b>Continue the existing Environmental Conservation (EC) zone. Expand the EC zone eastward to include the northern portion of the resource from its present EC zone boundary to Airport Way. Allow conflicting use when the western portion of Site EE and southwestern portion of Site CC are filled or altered if resource values can be preserved through mitigation.* Until resource destruction, limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.).</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>EE</b>	Industrial, Agricultural, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Part of Four Corners. Good quality habitat. Western portion restricts access to south.</p> <p><b>Natural resource values (especially water quality, flood storage, wildlife habitat, wildlife corridor, aesthetics) are more significant than most conflicting uses along the eastern portion. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. For areas near Airport Way, important considerations include good access and reduced service extension costs. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>Both the natural resource and conflicting uses values are significant for the western 400 feet of the site. Prohibiting conflicting uses may make access and development on land to the south difficult. If the western portion of Sites DD and EE are filled (see decisions on Sites DD and EE), it appears that any resource values can be moved or replaced through mitigation without adversely impacting other resource sites that are fully protected.</b></p> <p><b>DECISION: Protect the southeastern portion of the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance). Encourage enhancement and mitigation along site to increase resource values.</b></p> <p><b>Continue EC zoning on the western 400 feet of the site. Expand EC zone to include the wedge-shaped portion of the resource west of a line extending from the intersection of the existing EC zone boundary with the southern portion of site DD to the point where the northern portion of site DD intersects Airport Way. Allow conflicting use when the western portion of Site DD and southwestern portion of Site CC are filled or altered if resource values can be preserved through mitigation.* Until resource destruction, limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.).</b></p>

SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>FF</b>	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Part of Four Corners. Good quality habitat. With NE Airport Way, this is a critical corridor for wildlife passage along the slough.</p> <p><b>Natural resource values (especially drainage, wildlife corridor) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>
<b>GG</b>	Industrial, Agricultural, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Isolated, degraded remnant. Since inventory, much of the wetland has been filled or altered.</p> <p><b>Very low resource value. Resource protection would create access and development problems. The conflicting use is of greater value than the natural resource.</b></p> <p><b>DECISION: Allow conflicting uses.</b></p>
<b>HH</b>	Residential, Commercial, Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Isolated, degraded ponding area Since inventory, much of the wetland has been filled or altered by Airport Way construction and subsequent development.</p> <p><b>Low resource value, although used extensively in winter by wintering/migrating waterfowl. Resource protection would create access and development problems. The conflicting use is of greater value than the natural resource.</b></p> <p><b>DECISION: Allow conflicting uses.</b></p>

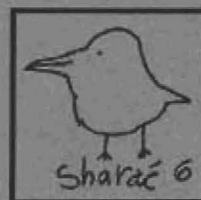
SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<p><b>II</b></p>	<p>Commercial, Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors</p>	<p>Part of Four Corners. Unique resource of high quality. Airport Way mitigation site within the forest. Subdivision approval already given with resource taken into consideration. Size, configuration, and type of resource (forest) is such that less land is needed to provide buffer-ing on the east and southeast sides, and requiring 50 foot resource protection area would have major adverse economic consequences to business when compared to increased environmental protection.</p> <p><b>Natural resource values (esp. drainage, wildlife habitat, aesthetics, flood storage, wildlife corridor) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level, especially the forested area. Limit conflicting uses within 50 feet of the resource on the north and south borders of the site to protect it from adverse impacts of NE Marine Drive and NE Airport Way. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p> <p><b>Allow conflicting uses along the eastern border of the sites (portions of Lots 1, 2, and 3 not presently zoned EP) with no resource protection area (area presently zoned EC on Lots 1, 2, and 3 would have the EC zone removed).</b></p>



SITE	CONFLICTING USES	CONCLUSION AND CONFLICT RESOLUTION
<b>JJ</b>	Industrial, Agricultural, Recreational, Basic Utilities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Relatively low quality habitat.</p> <p><b>Very low resource value. Resource protection would create access and development problems. The conflicting use is of greater value than the natural resource.</b></p> <p><b>DECISION: Allow conflicting uses.</b></p>
<b>KK</b>	Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Slough needed for drainage district pump station forebay. Part of Four Corners.</p> <p><b>Natural resource values (especially drainage, flood storage, aesthetics, fish and wildlife habitat, wildlife corridor) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>
<b>LL</b>	Commercial, Industrial, Agricultural, Recreational, Basic Utilities, Drainage District Activities, Institutional, Detention Facilities, Mining, Overhead Utilities/ Broadcast Facilities, Rail/Utility Corridors	<p>Part of Four Corners. Good quality habitat. Helps separate, protect Site EE. Since inventory, NE Airport Way constructed across northern portion.</p> <p><b>Natural resource values (especially drainage, wildlife corridor, aesthetics) are more significant than most conflicting uses. However, surrounding land uses may need utility and road access through the resource in order to function efficiently. Resource maintenance for certain values such as storm drainage is also important and necessary for support of surrounding land uses, in spite of adverse impacts on other resource values.</b></p> <p><b>DECISION: Protect the resource at the highest level. Limit conflicting uses within 50 feet of the resource to those which can occur without adverse long-term impacts. Reduce impacts of activities which must occur in the resource (drainage district maintenance, utility and road access to adjacent property, etc.). Encourage enhancement, mitigation along site to enhance resource values.</b></p>

\* See values listed in Figure 2-3

# Resource Protection Plan



Chapter 4

## **RESOURCE PROTECTION PLAN**

The final step in the Natural Resources Protection Plan is to develop new or identify existing land use regulations and other mechanisms to implement decisions made in Chapter 3 regarding resource protection. This Plan provides an area-wide and multi-faceted approach to natural resource protection in the Columbia South Shore. It utilizes a variety of implementation mechanisms in order to provide a high level of protection for the most critical resources, allow resource alteration where appropriate, and give guidance for resource enhancement and mitigation of resources not protected in the Plan. Wherever possible, regulations are as specific as possible, reducing the level of uncertainty and time necessary for any required reviews.

The purpose of the Resource Protection Plan is to provide an area-wide approach for conservation of significant natural resources and preservation of resource values for remnants of the ecosystem related to the Columbia Slough in the Columbia South Shore. There are several objectives which will direct elements of the Plan:

- Retain and enhance stormwater drainage and flood capacity of the slough system;
- Protect and enhance wildlife corridor values along the slough;
- Protect and enhance wildlife nodes or activity areas for the resting, nesting, feeding, and breeding needs of wildlife;
- Retain and promote diversity of habitat;
- Restore the historic river bottom ecosystem to the greatest extent practicable;
- Protect other significant resource values identified for individual sites and mitigation areas, including water quality;
- Integrate protected natural resources into surrounding development, to take advantage of resource values and amenities;
- Provide certainty to property owners about development in and near natural resources;
- Eliminate unnecessary land use review through the use of development standards wherever possible;
- Allow alteration of certain identified significant natural resources when the public need for the conflicting use is high and resource values can be mitigated;

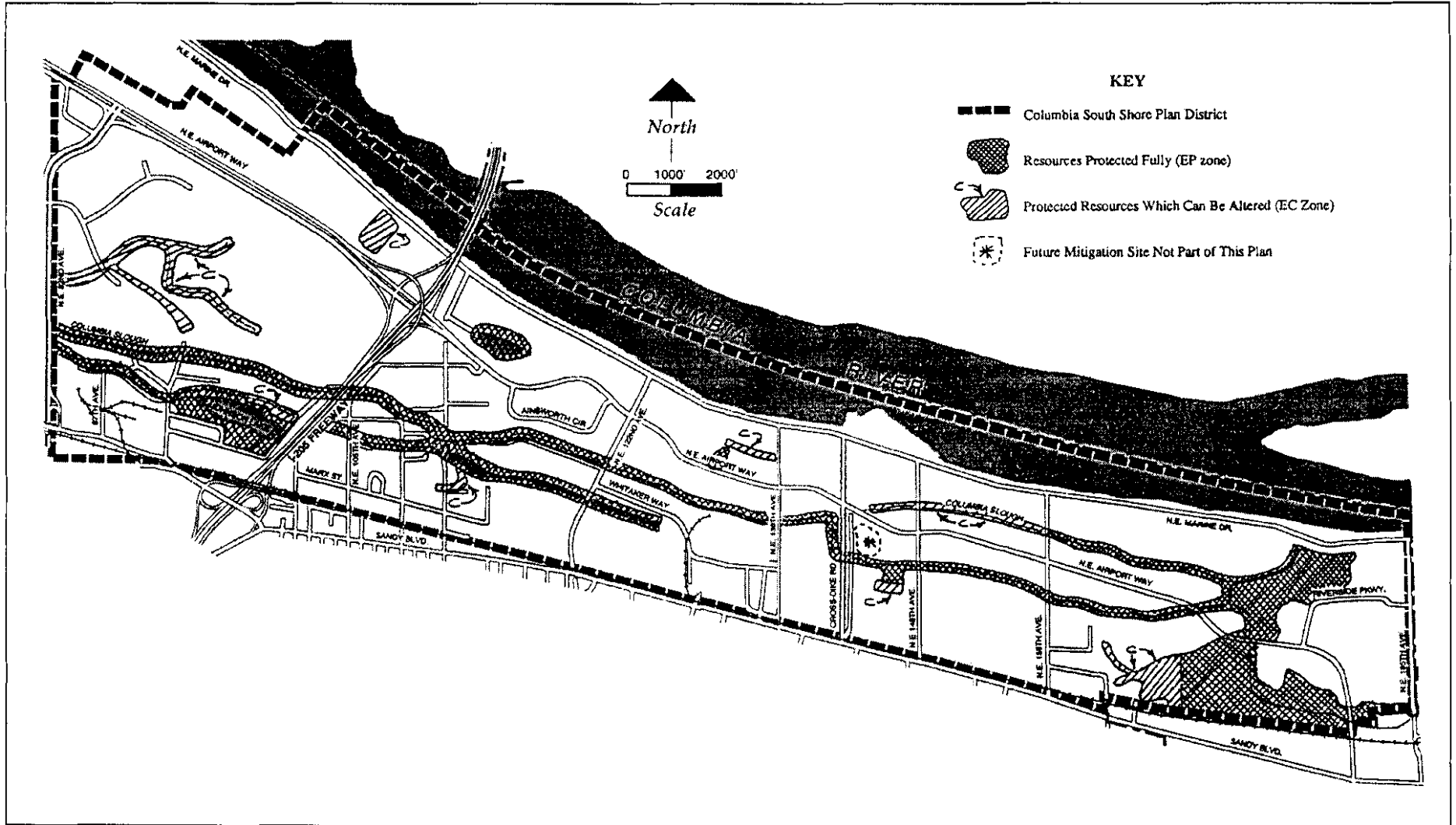
- Allow compatible uses, including the Columbia Slough Trail and drainage district maintenance activities, in and through protected resource areas when adverse impacts are mitigated; and
- Encourage resource enhancement, including mitigation for alteration of other resources, when existing resource values are protected through meeting mitigation guidelines.

The Plan proposes zoning map amendments and zoning code amendments to incorporate regulations into the Columbia South Shore Plan District. In addition to land use regulatory mechanisms, conversion to an in-stream maintenance system by the drainage district with financial support from the Portland Development Commission (PDC), guidelines for non mandatory resource-related activities, use of a mitigation advisory committee, and other activities are included to ensure full resource protection and mitigation for adverse impacts.

It has been estimated that up to 90 percent of the natural resources in the historic floodplain of the Portland area have been lost to agriculture and urbanization since the mid-1880's. The Natural Resources Protection Plan addresses cumulative impacts of urbanization on natural resources (including wetlands) in the Columbia South Shore in the following manner:

1. Chapter 2 inventories significant natural resources. It identifies resources and summarizes the location, quantity, and quality of each. Inventoried resources include sloughs and drainageways, wetlands, riparian areas, and upland areas containing important wildlife habitat.
2. Chapter 3 identifies uses which may conflict with inventoried resources or resource values. It discusses what economic, social, environmental, and energy consequences may result from both protecting resources and allowing conflicting uses. It resolves identified conflicts between resources and conflicting uses by protecting the resource fully, allowing the conflicting use fully, or allowing conflicting uses in a limited manner so as to protect the resource to some desired level.
3. Chapter 4 and the Appendix describes elements of the Plan which implement the decisions on resource protection made in Chapter 3. They include a variety of land use regulations, guidelines, advisory committee formation, and governmental programs.

This chapter contains a description of the Plan. Figure 4-1 provides a generalized view of resources to be protected, while the remainder of Chapter 4 describes the regulatory and non-regulatory measures intended to implement it. The appendix contains maps showing resource boundaries and zoning, amendments to Columbia South Shore Plan District regulations regarding natural resource protection, mitigation guidelines for activities not regulated through this Plan, and a more complete description of the mitigation advisory committee, drainage district/PDC agreement, and other resource protection mechanisms.

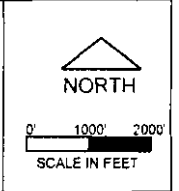


**Figure 2-1**

**General Location of Inventoried Natural Resources**

NOTE: More specific information on location can be found in Volume 2, Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Corridor and the Natural Resource Management Plan for the Columbia South Shore.

**Natural Resources Protection Plan for the Columbia South Shore**



## **ZONING MAP AMENDMENTS**

Resources protected at the highest level and the area necessary to protect the resource (transition area) are zoned EP, Environmental Protection. Resources whose values are significant but can be altered through mitigation and their transition area are zoned EC, Environmental Conservation. Resources which have been inventoried but not protected by the City are not zoned with an environmental zone, although they may be subject to state and federal regulations. Amended Official Zoning Maps are contained in Appendix A. Boundaries of protected resources are identified on the 1"=300' (approx.) aerial photograph in Appendix C.

The aerial photographs of Appendix C serve as the basis for zoning map amendments of Appendix A. The aerial photographs and supporting documentation of this Plan serve as determining clear legislative intent for where the zoning line should be located. If there is a discrepancy between the line shown in Appendix C and the Official Zoning Maps, correction of the zoning will be done under existing regulations of Section 33.855.070, Corrections to the Official Zoning Maps.

Through the Plan, zoning will change as development is proposed on land zoned EC. Mitigation for development on the EC-zoned land and its transition area will be zoned EP if it is outside an existing EP-zoned area, and the EC zone will be removed from the altered resource and its transition area. This will be done through the environmental review process.

## **PLAN DISTRICT AMENDMENTS**

Generally, development or land uses on land containing a protected resource will require planting in the transition area, and land uses or activities within areas zoned EC or EP and subject to environmental review must meet the other natural resource protection requirements of the Columbia South Shore Plan District. Natural resources zoned EC can be destroyed or altered if identified natural resource values are mitigated. Some nonconforming activities within a protected resource are subject to additional regulations to accelerate conformance. Since amendments to Chapter 33.430, Environmental Zone, will exempt environmentally-zoned land from the regulations of 33.430, the Plan District regulations are the major land use protection measure for significant natural resources in the Columbia South Shore.

For purposes of this Plan, areas protected with the Environmental Zone (either EC or EP) fall into two categories: the protected resource and the area necessary to protect the resource (transition area). A protected resource can be either an

area inventoried under this Plan or a mitigation site for alteration of another resource inside or outside of the Columbia South Shore.

A transition area is land necessary to protect a mitigation area or protected resource from impacts of other urban development. It is set at 50 feet in depth, based on scientific evidence in the record, with five exceptions. These exceptions are in Sites B, G, Q, S, and II as noted in the ESEE analysis of Chapter 3, where a reduced transition area can still provide adequate protection for larger forested resource areas and respond to adjacent development needs. Resource protection areas are included in the Environmental Zone.

EC-zoned resources contain significant resource values which must be protected, although the resource may at some time be altered to allow conflicting uses identified in the Plan. Until that time, however, it is necessary to protect their values through application of a resource protection area.

## **DEVELOPMENT REVIEW**

Development in the Environmental Zone is restricted. Certain land uses or activities can be allowed if standards are met. Others, either because of the uncertain nature of the impacts or potential incompatibility with the protected resource, must first undergo land use review.

Figure 4-2, Review Level, identifies the lowest level of review allowed for various land uses or activities within each location category. If more than one category applies to a proposed use or activity, the highest level of review noted in Figure 4-2 applies. A higher level of review may be necessary if the application is incomplete or the proposed land use or activity does not meet applicable standards and requirements of the Plan.

All allowed land uses and activities in Figure 4-2 must meet standards which are contained in a later section of this chapter. Land uses and activities noted in Figure 4-2 as requiring review will also have to meet applicable approval criteria. All approval criteria are contained in a section of this chapter following the Plan standards, and applicable ones are listed in Figure 4-2 in parenthesis following the note that review is required.

Information of Figure 4-2 is incorporated into the Columbia South Shore Plan District regulations of Title 33, but in a different format. See Appendix B.

**Figure 4-2  
Review Level**

USE OR ACTIVITY CATEGORY*	REVIEW LEVEL	
	Resource Area	BY LOCATION** Transition Area
<b>NATURAL RESOURCES</b>		
Fill or Destruction not otherwise noted in this table	Prohibited in EP zone Review in EC zone (1)	Prohibited in EP zone Review in EC zone (1)
Vegetation Removal	Review (2)	Review (2)
Planting Non-Native Vegetation	Review (3)	Review (3)
Planting Required Native Vegetation	Standards	Standards
Planting Other Native Vegetation	Review (2)	Standards
Other Resource Enhancement or Alteration	Review (1,4)	Review (1,4)
Resource Maintenance	Standards	Standards
<b>DEVELOPMENT</b>		
Stormwater Discharge	Standards	Standards
Sewer Connections to Individual Properties	Standards	Standards
Other Underground Utilities	Review (1,4)	Standards
Overhead Utilities	Review (1,4)	Standards
Water Quality Monitoring Facilities	Standards	Standards
Fencing	Review (5,6)	Review (5,6)
Land Division	Standards	Standards
Public Right-of-Way Dedications	Review (6)	Review (6)
Road Improvements in Public Rights-of-Way	Review (1,4)	Review (1,4)
<b>SLOUGH TRAIL AND RECREATION</b>		
Trail Construction	Standards	Standards
Other Identified Recreation or Trail Facilities	Review(1,4)	Standards
Unidentified Recreation or Trail Facilities	Review (1,4,7)	Review (1,4,7)
<b>DRAINAGE DISTRICT ACTIVITIES</b>		
Water-Based Maintenance, Including Construction of Off-Load Areas	Standards	Standards
Dredged Materials Long-Term Disposal	Prohibited	Prohibited
Water Level Maintenance in the Columbia Slough	Standards	Standards
Other Facilities or Activities, Including Flood Control Structures	Review (1,4,7)	Review (1,4,7)

**KEY: Prohibited** Not allowed, no exceptions.

**Review** Type II review required, Plan approval criteria and standards need to be met. Approval Criteria that correspond to the bracketed numbers are listed in this chapter after Plan Standards.

**Standards** No land use review required beyond any required building or development permits, only Plan Standards listed following this figure need to be met.

**NOTE: \*** Any development not specifically allowed is prohibited.

**\*\***

This is the lowest level of review for a proposed land use or activity. A higher level of review may be necessary if the proposed use or activity includes another that is reviewed at a higher level. For example, a subdivision with right-of-way dedication through a protected resource is a Type II review, while a subdivision which does not include a right-of-way dedication through a protected resource simply has to meet Plan standards.



## DEVELOPMENT STANDARDS

In this section are general standards for all land uses and activities affected by the Plan. Planting of the transition area must occur if any new development or activities occur on any site containing an E zone on any portion of it. Other regulations apply for development or activities within the E zone. Unless specifically prohibited, adjustments can be taken to standards by meeting adjustment approval criteria.

Following each standard is a comment on which plan objectives the standard is primarily intended to meet. It may also meet other Plan objectives.

1. Except for temporary uses, land uses and activities on lots or sites which contain an environmental zone on any portion of them require revegetation of the vegetated transition area as follows:
  - a. Species must be classified as native on the Portland Plant List, and not be classified as prohibited or nuisance plants;
  - b. Planting must cover 90 percent of the ground within one year or two growing seasons after planting;
  - c. At least 8 species of plants must be used. Fifty percent of any seed mix used must be grass and 50 percent flowers when measured by area covered; and
  - d. If cover requirements are not met within one year or two growing seasons from issuance of an occupancy permit, final inspection, or certificate of completion, replanting is required and the requirements of this section must be met within one year of replanting.
  - e. Plants used for revegetation may also count towards other landscaping requirements.

*Comment: This standard meets objectives of the Plan which include re-establishment of the historic ecosystem, enhancing wildlife functions, promoting habitat diversity, and improving water quality. This standard promotes re-establishment of the historic ecosystem, habitat diversity, and other wildlife functions by requiring a range of native plant species. Cover requirements will ensure minimum erosion from surface runoff as well as sediment trapping.*

*There is no minimum requirement for trees or shrubs in the resource protection area, to allow flexibility to integrate the landscape plan into development on the non-resource portions of the property.*

2. Revegetation in a protected resource must meet the following:
  - a. Species must be classified as native on the Portland Plant List, and not be classified as prohibited or nuisance plants;
  - b. Planting must cover 90 percent of the ground within one year or two growing seasons after planting;
  - c. Figure 2-3 of the Natural Resources Protection Plan for the Columbia South Shore lists all protected natural resources in the Plan District and identifies their resource values. If a site is a riparian area, subsection (1) must be met. If a site is not a riparian area, but is a meadow or open space without trees, subsection (2) must be met. All other sites must meet subsection (1).
    - (1) Planting requirements with trees:
      - (a) At least 8 species of plants must be used;
      - (b) At least 2 species must be shrubs and 2 must be trees;
      - (c) Fifty percent of any seed mix used must be grass and 50 percent flowers when measured by area covered;
      - (d) One tree and three shrubs are required for every 500 square feet of planting area, and
      - (e) Trees and shrubs must be planted in clusters of at least three.
    - (2) Planting requirements without trees:
      - (a) At least 8 species of ground cover plants must be used; and
      - (b) Fifty percent of any seed mix used must be grass and 50 percent flowers when measured by area covered.
  - d. If cover and species requirements are not met within one year from issuance of any occupancy permit, final inspection, or certificate of completion, replanting is required and the requirements of this section must be met within one year of replanting.
  - e. Plants used for revegetation may also count towards other landscaping requirements.

*Comment: This standard meets objectives which include re-establishment of the historic ecosystem, enhancing wildlife functions, promoting habitat diversity, and improving water quality. This standard promotes re-establishment of the historic ecosystem, habitat diversity, and other wildlife functions by requiring a range of native plant species. Cover requirements*

will ensure minimum erosion from surface runoff as well as sediment trapping.

*There is a minimum requirement for trees or shrubs in the resource protection area if the resource is identified as having that type of ecosystem. Conversely, if it is a meadow, only ground cover is allowed. The purpose of this is to protect and enhance existing resource values. Riparian areas require a tree/shrub canopy to protect water quality (temperature) and wildlife values (shade, food, perching), and restore the historic ecosystem. Clustering requirements for trees and shrubs are included to encourage groves, increasing greater wildlife potential, survival rate (wind protection), and visual diversity.*

3. Herbicides used for removal of vegetation must be listed by the U.S. Environmental Protection Agency as appropriate for application in aquatic areas and use must be in accordance with directions for application.

*Comment: This standard meets the objective of protecting water quality through requiring herbicides that are safe in aquatic situations.*

4. Areas cleared of vegetation must be re-seeded or replanted within one year of vegetation removal.

*Comment: This standard meets the objective of protecting water quality through minimizing bare ground, but also recognizes that some plant species can be planted only at certain times of the year, and seeds sometimes have to be ordered months in advance from seed gathering companies.*

5. All development or activities which disturb ground or remove vegetation must conform to Chapter 24.70, Clearing, Grading, and Erosion Control and to the Erosion Control Technical Guidance Handbook. In addition, the following standards must be met:
  - a. Wet weather. All development between November 1 and April 30 of any year, which disturbs more than 500 square feet of ground, requires wet weather measures described in the Erosion Control Technical Guidance Handbook. These measures must be met until issuance of any occupancy permit or final inspection;
  - b. Maintenance. Erosion control measures must be maintained until 90 percent of all disturbed ground is covered by vegetation;
  - c. Self inspection. Areas where the ground is disturbed must be inspected by or under the direction of the owner at least once every 7 calendar days, within 24 hours of any storm event greater than one-half inch of rain in any 24-hour period, or at any time when water runoff occurs. These measures must be met until issuance of any occupancy permit or final inspection; and
  - d. Record keeping. Records must be kept of all inspections. Instances of measurable erosion must be recorded with a brief explanation of

corrective measures taken. This record must be available to the City and retained until final inspection.

*Comment: This standard meets the objective of resource value protection through protection of water quality, and certainty to developers through the use of standards. This is essentially the erosion control standard which was passed by City Council with the Fanno Creek watershed plan, and replaces two and a half pages of regulations now in Title 33 which would require a Type II or Type III review.*

6. Stormwater discharge must pass through water quality facilities which conform to Chapter 17.38, Drainage and Water Quality.

*Comment: This standard meets the objective of improving resource values through protection of water quality.*

7. Stormwater discharge into a mitigation area is not allowed unless it is part of the mitigation plan.

*Comment: This standard meets the objective of protecting the significant resource values for which the mitigation area was created, as additional water may change the ecosystem characteristics.*

8. Except for stormwater discharges, industrial or sanitary discharges, including wastewater and overflow, into the slough system is not allowed.

*Comment: This standard meets the objective of improving resource values through protection of water quality with regard to chemical pollutants, sediment, and temperature. Existing systems are "grandfathered," and can continue to operate.*

9. Construction and ongoing maintenance for overhead or underground utilities, including sanitary sewer connections to individual properties and stormwater outfalls, cannot affect more than a 25-foot-wide corridor across the resource. These activities cannot result in the killing or removal of trees over 6 inches in diameter measured 4-1/2 feet above the ground.

*Comment: This standard meets objectives of allowing compatible uses (with mitigation), integrating protected resources into surrounding development, providing certainty to property owners about extension of services to development, and eliminating unnecessary review by setting standards.*

10. Road improvements across the slough must be by bridge unless a water control structure is a necessary part of the design.

*Comment: This standard meets the objective of retaining and enhancing the stormwater drainage and flood capacity of the slough system.*

11. Water quality monitoring facilities may be up to 100 square feet in area.

*Comment: This standard meets objectives of protecting natural resource values, particularly water quality through allowing water quality monitoring facilities where they are specifically needed, and protecting other resource values by limiting the size of the facility.*

12. In Employment and Industrial zones, new lots completely within the EP zone are exempt from minimum lot size and shape requirements of Section 33.140.200, Lot Size. All other new lots must meet the minimum size and shape requirements of Section 33.140.200, Lot Size, outside of land zoned EP.

*Comment: This standard meets the objectives of allowing certainty of development by requiring suitable development area outside protected resources. Rights-of-way and lots created for the purpose of natural resource protection should be exempt under 33.140.200.E.*

13. Location and design of any trail or recreation facilities must conform to standards of the Columbia South Shore Plan District. All new trail easements must be in the outer 25 feet of the environmental zone except as necessary to connect to existing easements or trails on adjacent sites.

*Comment: This standard meets the objective of allowing a compatible use, the Columbia Slough Trail, through the protected resource and resource protection area in specific locations. These locations were chosen in part to minimize adverse impacts to protected resources. Deviations from the adopted plan will be subject to a higher level review.*

14. Construction of the trail or recreation facilities cannot result in the removal of trees more than 6 inches in diameter, measured 4-1/2 feet above the ground, and are not required to be located within wetlands subject to state or federal regulation.

*Comment: This standard meets the objective of allowing a compatible use, the Columbia Slough Trail, through the protected resource and resource protection area when impacts to the resource can be mitigated through limiting tree removal. It also meets the objective of protecting resource values and restoring the historic ecosystem by limiting tree removal.*

15. Staging areas for slough and drainageway maintenance may have up to 5,000 square feet of gravel, paving, structures, or other ground-disturbing uses or activities exclusive of an access road. Access roads within an environmental zone may be up to 300 feet in length.

*Comment: This standard meets the objective of allowing a compatible use, the Columbia Slough Trail, through the protected resource and resource protection area when impacts to the resource can be mitigated through limiting the size and location of the activity. It also meets the objective of protecting water quality and other resource values by limiting the amount of impervious area and subsequent stormwater runoff, as well as development which displaces resources or brings impacts into the protected resource or resource protection area.*

16. Water levels in the slough will be maintained at an elevation of between 5 and 10 feet mean sea level in order to preserve wetlands that are protected by an Environmental zone. An exception to this standard is for maintenance or emergency situations when a lower level is necessary.

*Comment: This standard meets the objectives of protection of resource values by maintaining water levels at an elevation sufficient to reestablish and maintain the historic ecosystem.*

17. Nonconforming situations

- a. Paved exterior areas in an EC or EP zone. Paved areas which do not meet Plan District regulations must be removed from Environmental-zoned areas when the value of the proposed alterations on the site is more than \$10,000. However, required changes costing over 10 percent of the value of the proposed alterations do not have to be made.
- b. Unpaved exterior areas. Unpaved exterior improvements must comply fully with development standards at the time of development on the site. However, required changes costing over 10 percent of the value of the proposed alterations do not have to be made.
- c. Removal of existing bridges, utilities, or public improvements is not required.

*Comment: Full conformance with the Plan in a timely manner is a major emphasis in the regulations. By accelerating nonconforming situation regulations, particularly for those uses or activities which have relatively low capital investment but are of high impact to the resource, other regulations such as the resource protection area requirements are able to be reduced to the minimum. Nonconforming situation regulations meet objectives regarding resource protection and providing certainty to property owners about development requirements.*

## APPROVAL CRITERIA

Land uses and activities noted in Figure 4-2, Review Level, as requiring review will have to meet applicable approval criteria from those following. Applicable criteria are noted on Figure 4-2 in parenthesis following the note that review is required. In addition, development standards must be met. Because of the Zoning Code format, the precise wording and arrangement of approval criteria will vary slightly from that contained in this section. Title 33 (Zoning Code) language is contained in Appendix B.

1. All mitigation will meet the following:
  - a. All resource values listed in Table 2-3 of the Natural Resources Protection Plan for the Columbia South Shore being altered or destroyed will be replaced through mitigation. If the mitigation site is within a protected resource, values that already exist do not count towards mitigation;
  - b. The mitigation area is in the Columbia South Shore Plan District and abuts or is within a protected resource;
  - c. If the mitigation area abuts a protected resource, the mitigation area will be at least 110 percent of the size and values of the altered resource area;
  - d. If the mitigation area is within a protected resource:
    - (1) The mitigation area will be at least 330 percent of the size of the altered area; and will replace at least 110 percent of the values of the altered resource area; and
    - (2) Mitigation will be provided for all resource values lost, including those lost in the protected resource as part of mitigation efforts.
  - e. The maintenance plan insures the maintenance and protection of resource mitigation areas and associated functions and values for 5 years after success has been achieved. The 5 year period will begin when the Bureau receives and approves a report from the applicant which describes the manner in which mitigation success has been achieved. Success shall be defined in the approved mitigation plan to include:
    - (1) Full achievement of required resource values; and
    - (2) Compliance with development standards of 33.515.278.
  - f. Except for public improvement projects undertaken by the City, a performance guarantee which meets the requirements of Section 33.700.050, Performance Guarantees, for construction, monitoring, and maintenance of the mitigation site in accordance with the

mitigation plan will be filed with the City Auditor prior to issuance of any development or building permit.

*Comment: This criteria addresses objectives of protection of resource values, restoring the historic ecosystem, and retaining or enhancing drainage and flood capacity through locating mitigation in a manner which is connected to protected resources. Connection to protected resources also ensures ease of wildlife and plant passage along the Columbia Slough corridor and into abutting protected resources, allowing recharge of species which might not otherwise survive. Mitigation next to isolated protected resources such as Mays Lake, increases the size of the overall resource, again supporting the survival of species which need larger areas or greater habitat diversity for long-term success. It also addresses the objective of providing certainty by guiding the location and specifying the size of mitigation required, as well as limiting mitigation to values identified in the inventory and ESEE analysis. The bonding requirement ensures attainment of objectives allowing alteration of protected resources, either through destruction or allowing conflicting uses when mitigation is necessary to protect resource values.*

2. Activities will result in no loss of resource values identified in Table 2-3 of the Natural Resources Protection Plan for the Columbia South Shore.

*Comment: This criteria addresses objectives related to protection of identified resource values and providing certainty to property owners by limiting resource values considered to those identified through the inventory and ESEE analysis.*

3. Non-native planting will be approved if the vegetation:
  - a. Provides food or other values for native wildlife that cannot be achieved by native vegetation; and
  - b. Is not classified as a nuisance or prohibited plant on the Portland Plant List.

*Comment: This criteria addresses the objectives of protecting or enhancing wildlife areas or activities and promoting diversity of habitat, although at the possible expense of objectives retaining the historic ecosystem.*

4. Activities will be approved if:
  - a. The proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable; and
  - b. All detrimental environmental impacts are mitigated.

*Comment: This criteria addresses objectives of protecting identified resources and resource values through the reduction of initial impacts. It recognizes that many resource values are location-specific and interrelated with other nearby sites, and reducing impacts through modification of a development*



*proposal is preferable to mitigating impacts not only on-site, but also for upstream and downstream consequences.*

5. Fencing in an environmental zone will be approved if :
  - a. It is needed for resource protection or enhancement;
  - b. It allows for appropriate passage of wildlife;
  - c. It is the minimum necessary, both in height and length; and
  - d. There are no alternative sites or methods of resource protection which have less impact on the protected resource.

*Comment: This criteria addresses objectives of protecting identified resources and resource values through the reduction of initial impacts.*

6. There are no practicable alternatives which have less impact on the protected resource.

*Comment: This criteria addresses objectives of protecting identified resources and resource values through the reduction of initial impacts.*

7. The proposal is dependent upon and relates directly to the resource.

*Comment: This criteria addresses objectives of protecting identified resources and resource values through the reduction of initial impacts by allowing only those uses that need the resource.*

## **ADJUSTMENTS**

One criterion for approval would be added to the adjustment criteria of Section 33.805.040, subsections A-E for natural resource protection regulations in the Columbia South Shore. It addresses objectives of protecting identified resources and resource values through the reduction of initial impacts.

33.805.040 A-E...no change

**F. If in an environmental zone in the Columbia South Shore Plan District, the proposal has as few significant detrimental environmental impacts on the resource and resource values as is practical;**

Change subsections F-H to G-I

*Comment: This criterion is in addition to, not in place of, the existing adjustment criteria in Section 33.805.*

## **DEFINITIONS**

The intent of resource enhancement as defined by Title 33 is to allow projects which will improve the quality or quantity of a resource and resource values. The definition of Resource Enhancement implies that water quality projects can be a type of resource enhancement, if it improves the resource or its values. As such, they can be allowed by the Plan within a protected resource or transition area with review. The proposed amendment to the definition of Resource Enhancement clarifies this.

33.910.030

**Resource Enhancement.** The modification of a natural resource or resources to improve the quantity or quality of the resource and resource values. It can include actions that result in increased animal and plant species, increased numbers of types of natural habitat, and/or increased amount of area devoted to natural habitat. It may also include improvements in scenic views and sites, increased capacity for stormwater detention, changes in water quantity or quality, or other improvements to resource values. A resource enhancement project must result in no loss of any functional resource values, and the gain of at least one.

## **ADVISORY COMMITTEE**

There will be an advisory committee formed to provide expert advice to the Bureau of Planning on implementation of the Natural Resources Protection Plan. Specific duties include:

- Reviewing and preparing recommendations on environmental reviews, particularly those involving mitigation;
- Reviewing and commenting on mitigation reports;
- Making recommendations on any Plan changes or amendments; and
- Other activities related to natural resource protection in the Columbia South Shore on which the Bureau of Planning requests help.

There will be seven members: one appointed by the East Portland District Coalition (EPDC), one appointed by the Columbia Corridor Association, one appointed by the Portland Development Commission (PDC), one appointed by East County Coordinating Office (ECCO), and three others who are acceptable to the three out of four appointed members and who have experience with wetlands or biology, or have knowledge of the Columbia South Shore. Five members of the advisory committee constitute a quorum. The Bureau of Planning will provide support for the advisory committee.

Working rules (meeting times and places, etc.) for the advisory committee will be determined by committee members and Bureau of Planning staff.

Within five working days of the determination that an application for environmental review in the Columbia South Shore is complete, the application and supporting data will be mailed to advisory committee members. The advisory committee will comment in writing within ten working days of submission on the sufficiency of the proposal in complying with the Plan requirements. If the advisory committee's report finds that the proposal does not meet the Plan requirements, the applicant may within five working days after receipt of the report amend the proposal to comply with the report recommendations. The staff report will include the advisory committee's report and find whether or not the applicant has adequately addressed the advisory committee's concerns. The advisory committee will not participate in further proceedings on the application and the advisory committee's responsibilities as to the application end with the submission of its report.

The advisory committee will review and comment on any resource mitigation monitoring and maintenance reports within 60 days. If there is disagreement between the City and advisory committee, the advisory committee's comments will be appended to the report and responded to by the City. Failure of the advisory committee to comment within the time specified will be deemed concurrence with the monitoring and maintenance report.

## **MITIGATION GUIDELINES**

Some resources identified in the Plan but not protected are wetlands regulated by state or federal agencies. Alteration of these resources may require mitigation. This section provides a series of non-mandatory guidelines, to encourage mitigation that would be complementary with and meet the objectives of the Plan.

- Restore the natural ecosystem by use of native vegetation and recreation of sloughs, palustrine wetlands, and riparian areas.
- Allow for migration, travel, dispersion, and recharge of plants and wildlife into and through mitigation and other landscaped areas by connections with protected natural resource areas.
- Provide for diversity of wildlife habitat by use of a broad range of native plants and combination of wetlands and uplands.
- Integrate mitigation into site design by encouraging use of native plants throughout the entire development site, use of wetlands for stormwater retention and detention, and connection of landscaped areas to provide corridors and larger areas for food, water, cover, resting, and nesting.

- Encourage trails, passive recreation facilities in a manner compatible with wildlife protection and which minimize adverse impacts to wildlife habitat.
- Reduce stormwater runoff through use of on-site stormwater detention or retention systems.
- Improve water quality by integrating sediment trapping systems into landscaping and using vegetation for trapping and uptake of chemical pollutants.

### **OTHER MITIGATION ACTIONS**

In addition to creating new resources or enhancing existing ones, a number of activities will be carried out by local governments to aid in mitigation, and ensure that area-wide resource values will continue to function. Figure 4-3 lists those responsibilities, while a brief description of each follows.

**Figure 4-3  
Mitigation Responsibilities of Local Governments**

<b>GOVERNMENTAL UNIT</b>	<b>RESPONSIBILITY</b>
<b>Portland Bureau of Planning</b>	<ul style="list-style-type: none"> <li>• Review development plans</li> <li>• Provide support to the advisory committee</li> <li>• Review monitoring plans and reports</li> <li>• Determine mitigation success</li> <li>• Meet additional DEQ water quality requirements</li> </ul>
<b>Portland Bureau of Parks and Recreation</b>	<ul style="list-style-type: none"> <li>• Maintain trail and related easements</li> <li>• Advise the Bureau of Planning</li> </ul>
<b>Portland Bureau of Environmental Services</b>	<ul style="list-style-type: none"> <li>• Review stormwater and water quality protection facilities</li> <li>• Meet additional DEQ water quality requirements</li> <li>• Advise the Bureau of Planning</li> </ul>
<b>Portland Development Commission</b>	<ul style="list-style-type: none"> <li>• Review monitoring plans and reports</li> <li>• Aid financing for in-water maintenance</li> <li>• Meet additional DEQ water quality requirements</li> <li>• Advise the Bureau of Planning</li> </ul>
<b>PORTLAND OFFICE OF TRANSPORTATION</b>	<ul style="list-style-type: none"> <li>• Review monitoring plans and reports</li> <li>• Support transportation-related mitigation</li> <li>• Advise the Bureau of Planning</li> </ul>
<b>Multnomah County Drainage District No. 1</b>	<ul style="list-style-type: none"> <li>• Implement in-water maintenance</li> <li>• Advise the Bureau of Planning</li> </ul>

- **PORTLAND BUREAU OF PLANNING**

**Mitigation Plan Review** Mitigation plans are a land use review under the Plan. These reviews are processed by the Bureau of Planning.

**Advisory Committee Support** An advisory committee will be formed to review implementation of the Natural Resources Protection Plan, and to advise the City during land use reviews. Its responsibilities and limitations are described elsewhere in this chapter.

**Monitoring Plan Review** The Bureau of Planning will conduct a review of annual monitoring information provided by the property owner to determine mitigation success. Failure by the property owner to provide adequate monitoring may result in either a finding of non-compliance with City land use regulations and/or forfeiture of the bond or other assurance to the City, at which time the City may perform the monitoring function. The advisory committee will advise the Bureau of Planning.

**Mitigation Success Determination** The Bureau of Planning will make a final determination of mitigation success. The Bureau will use monitoring information supplied by the property owner, field observations, advice from the advisory committee, and other information as necessary.

**DEQ Water Quality Requirement Compliance** The Oregon Department of Environmental Quality may require an additional 2.4 acres of water quality functions (sediment trapping and nutrient retention) be added to the overall mitigation requirements. Required mitigation will occur upon completion of the fills identified in this Plan. A plan will be developed by the Portland Development Commission, Bureau of Planning, and Bureau of Environmental Services to provide the necessary mitigation for water quality functions.

- **PORTLAND BUREAU OF PARKS AND RECREATION**

**Trail and Easement Area Maintenance** If the Slough Trail and easement meets standards, the property owner may deed it to the Portland Bureau of Parks and Recreation. If this is done, all future maintenance will be carried out by the City.

**Advice to the Bureau of Planning** The Bureau of Parks and Recreation will oversee and coordinate implementation of the Plan with Slough Trail and nearby recreational activities in the Columbia South Shore. The Bureau of Parks and Recreation will review mitigation proposals and advise the Bureau of Planning during land use reviews.

- **PORTLAND BUREAU OF ENVIRONMENTAL SERVICES**

**Stormwater and Water Quality Protection Facility Review** The Bureau of Environmental Services will review proposed mitigation activities to insure that they meet water quality standards.

**DEQ Water Quality Requirement Compliance** The Oregon Department of Environmental Quality may require an additional 2.4 acres of water quality functions (sediment trapping and nutrient retention) be added to the overall mitigation requirements. Required mitigation will occur upon completion of the fills identified in this Plan. A plan will be developed by the Portland Development Commission, Bureau of Planning, and Bureau of Environmental Services to provide the necessary mitigation for water quality functions.

**Advice to the Bureau of Planning** The Bureau of Environmental Services will oversee and coordinate implementation of the Plan with stormwater management and water quality activities in the Columbia South Shore. The Bureau of Environmental Resources will review mitigation proposals and advise the Bureau of Planning during land use reviews.

- **PORTLAND DEVELOPMENT COMMISSION**

**Monitoring Plan Review** The Portland Development Commission will coordinate implementation of the Plan with urban renewal activities in the Airport Way Urban Renewal District. The Portland Development Commission will review monitoring plans and evaluate the success of mitigation sites, and advise the Bureau of Planning during mitigation monitoring review.

**Aid Financing for In-Water Maintenance** The Portland Development Commission has signed a memorandum of understanding with the Multnomah County Drainage District No. 1 to provide limited financing and aid in property acquisition for implementation of in-water drainageway maintenance. Some of these funds have been released, and the Drainage District has taken delivery on and is now testing the equipment. Support in accordance with the agreement will continue.

**DEQ Water Quality Requirement Compliance** The Oregon Department of Environmental Quality may require an additional 2.4 acres of water quality functions (sediment trapping and nutrient retention) be added to the overall mitigation requirements. Required mitigation will occur upon completion of the fills identified in this Plan. A plan will be developed by the Portland Development Commission, Bureau of Planning, and Bureau of Environmental Services to provide the necessary mitigation for water quality functions.

**Advice to the Bureau of Planning** The Portland Development Commission will coordinate implementation of the Plan with urban renewal activities in the Airport Way Urban Renewal District. The Portland Development Commission will review mitigation proposals and advise the Bureau of Planning during land use reviews.

- **PORTLAND OFFICE OF TRANSPORTATION**

**Monitoring Plan Review** The Office of Transportation will provide information to the Bureau of Planning as required for annual mitigation review for any mitigation sites created by the City as a result of transportation system development. It will also advise the Bureau of Planning during mitigation monitoring review.

**Support Transportation-Related Mitigation** The Office of Transportation will provide mitigation for resource impacts related to transportation system development by the City.

**Advice to the Bureau of Planning** The Office of Transportation will review mitigation proposals and advise the Bureau of Planning during land use reviews.

- **MULTNOMAH COUNTY DRAINAGE DISTRICT NO. 1**

**Implement In-Water Maintenance** The Portland Development Commission has signed a memorandum of understanding with the Multnomah County Drainage District No. 1 to provide limited financing and aid in property acquisition for implementation of in-water drainageway maintenance. Some of these funds have been released, and the Drainage District has taken delivery on and is now testing the equipment. Support in accordance with the agreement will continue.

**Advice to the Bureau of Planning** The Drainage District will oversee and coordinate implementation of the Plan with Drainage District activities in the Columbia South Shore. The Drainage District will review mitigation proposals and advise the Bureau of Planning during land use reviews.

## **SUMMARY**

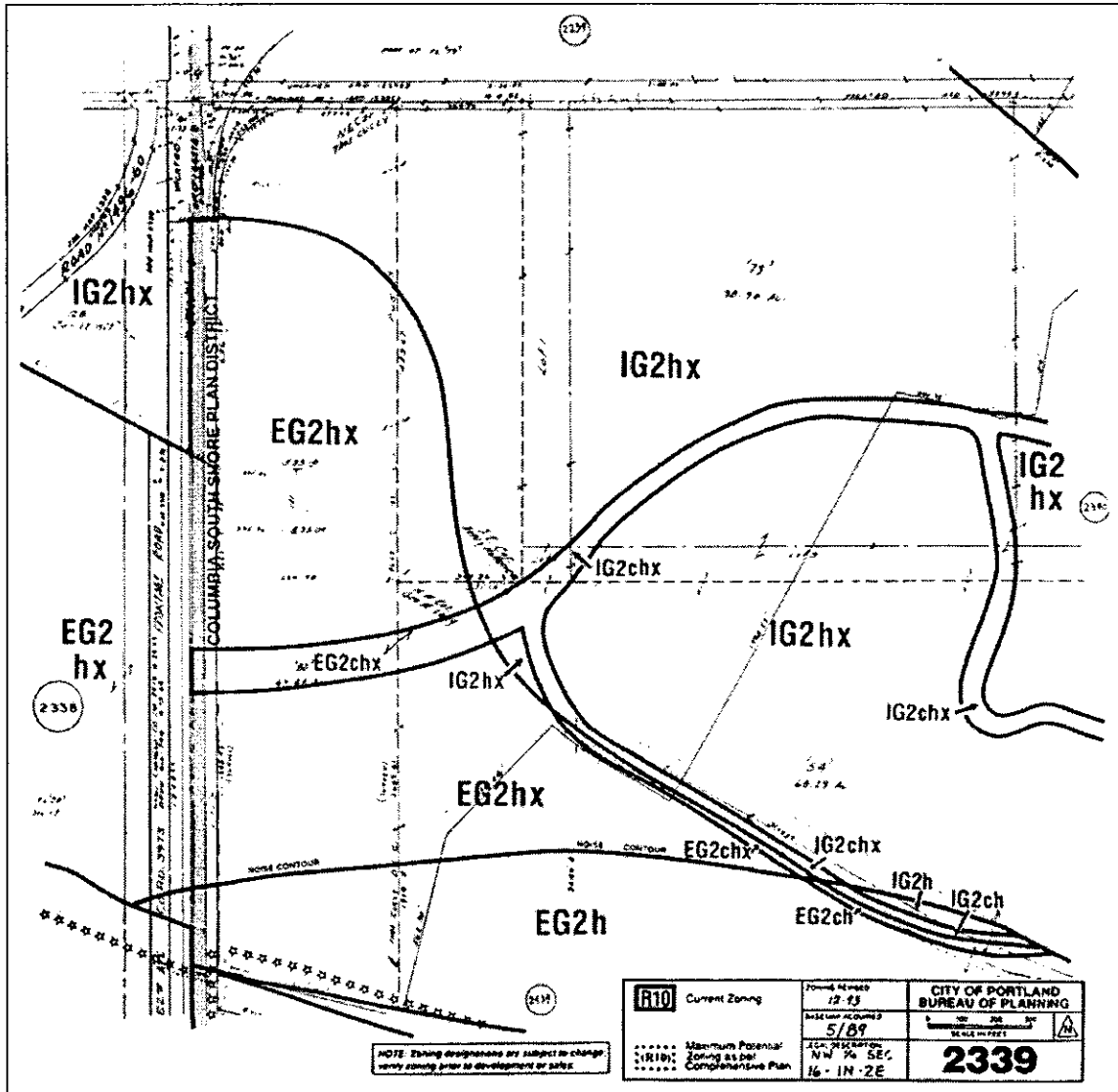
Mitigation for alteration of natural resources in the Columbia South Shore requires compensation for loss of resource values and ongoing maintenance to insure long-term resource protection. Responsibility for mitigation site creation and success is that of the property owner of the site on which resource alteration is occurring. Long-term maintenance, as well as protection of area-wide values such as the wildlife corridor, water quality, and stormwater control, is the responsibility of local governments. This chapter has described the requirements of each and their interrelationship. Natural Resource Protection Plan implementation should balance Comprehensive Plan goals by allowing limited resource alteration for other urban development while preserving significant resource values.

# Zoning Maps

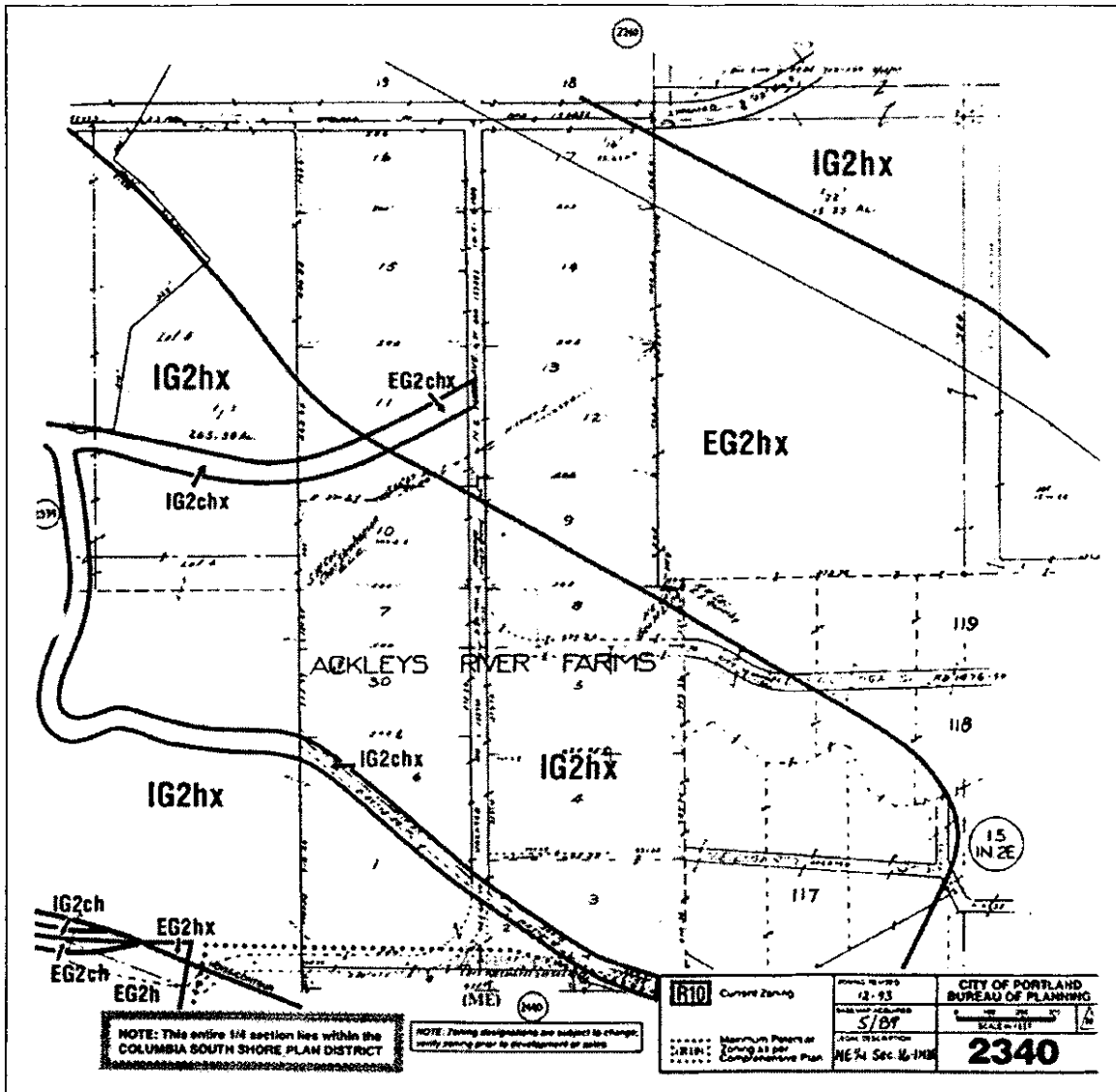


Appendix A

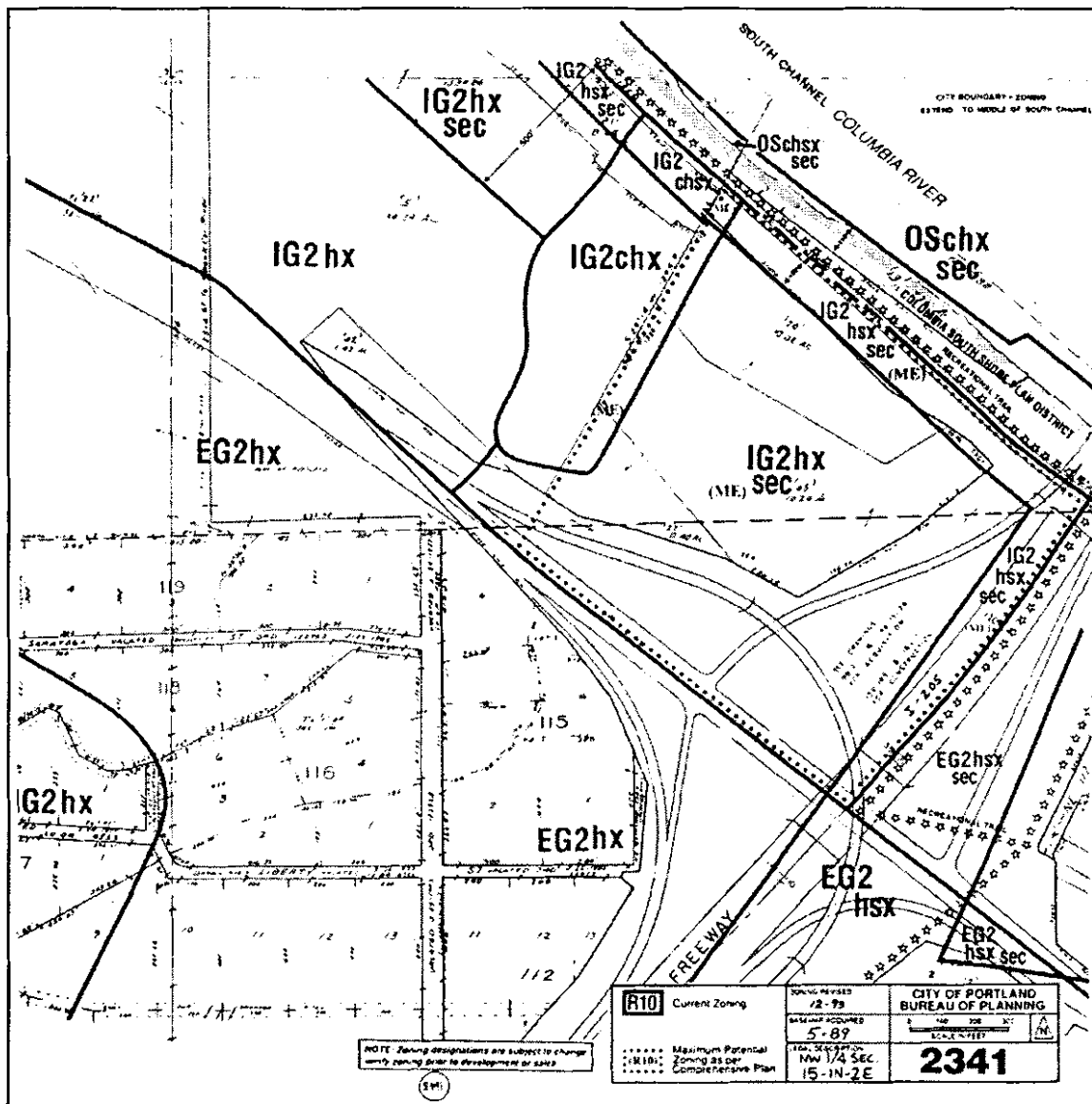




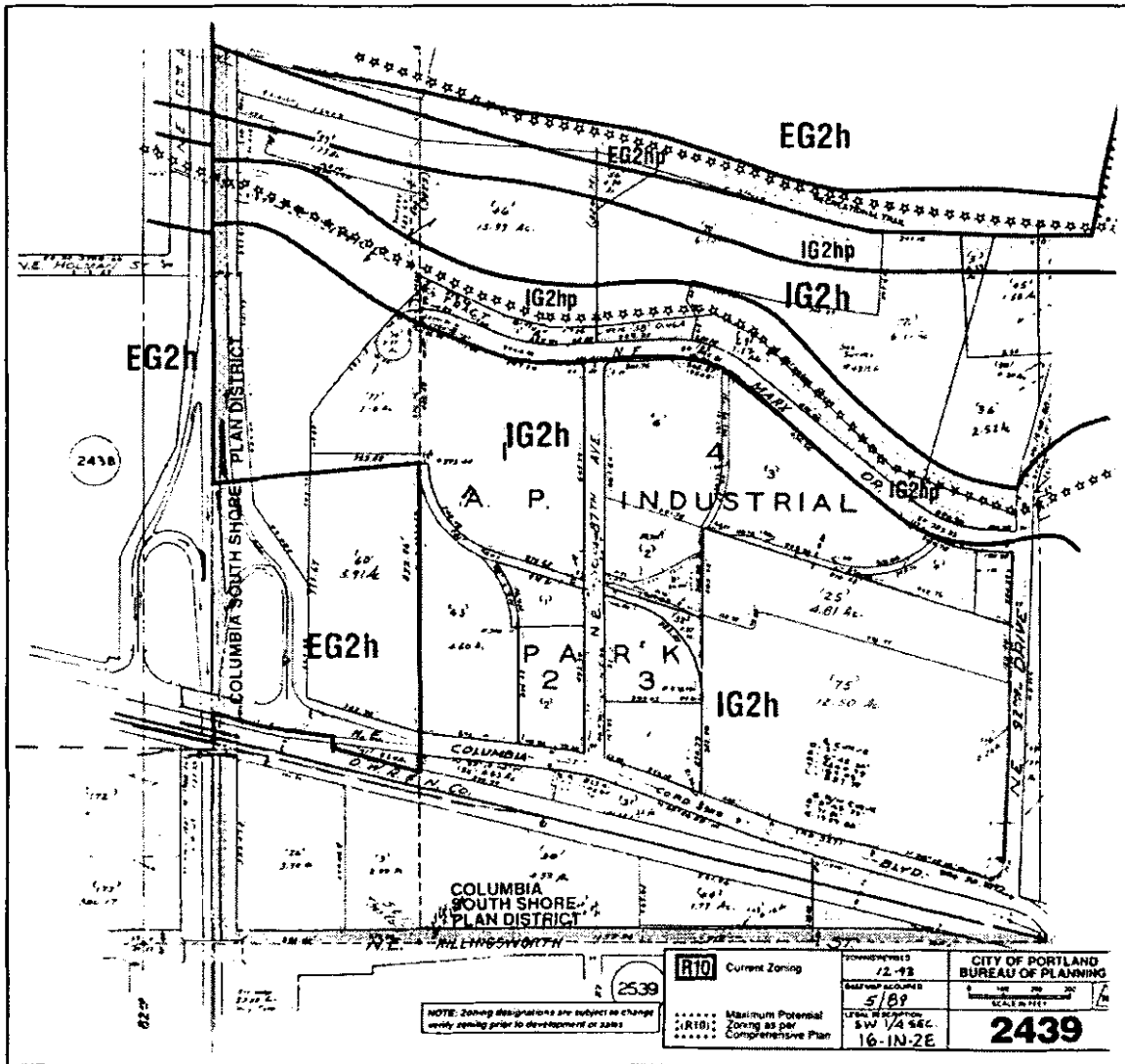
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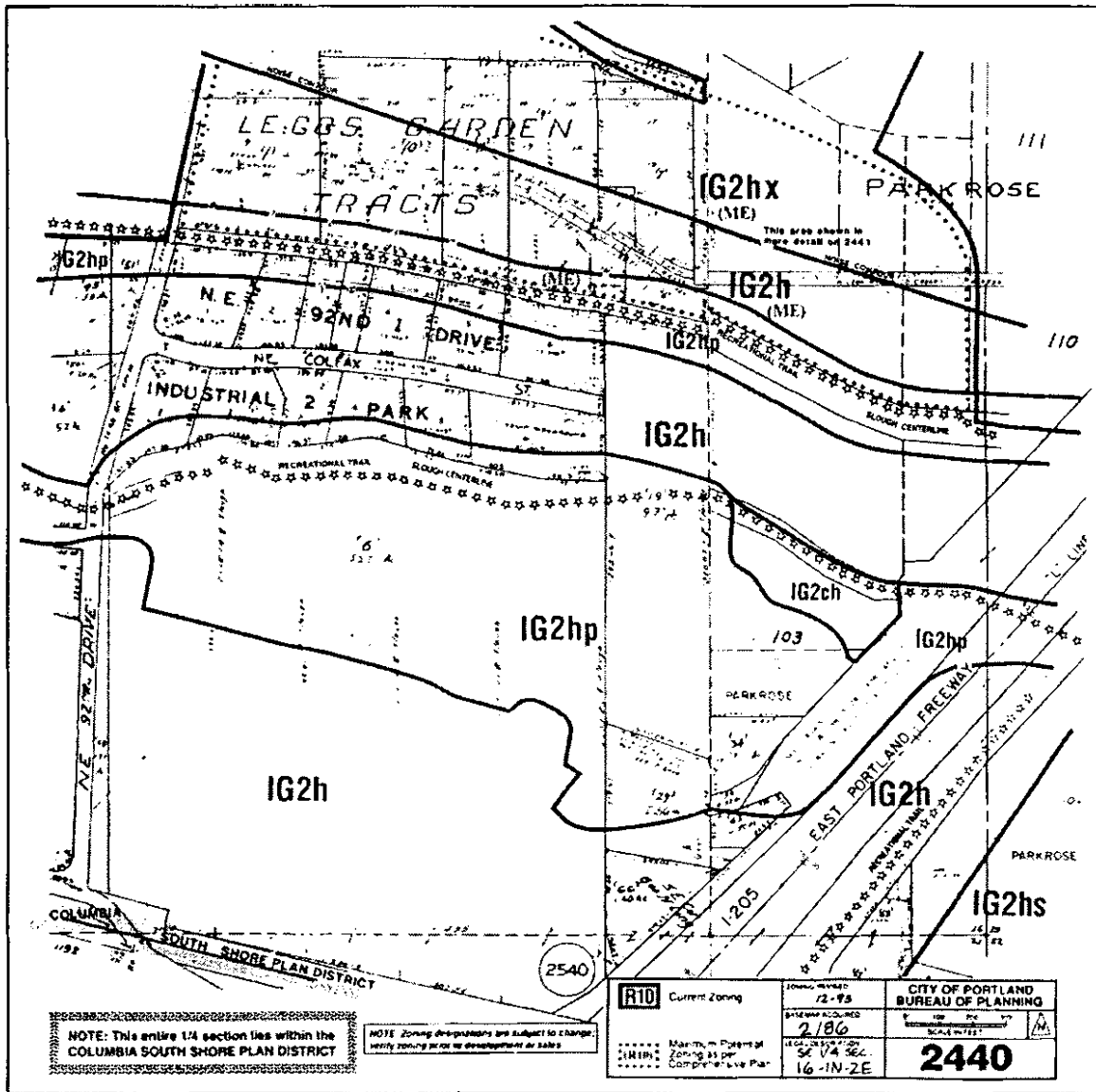
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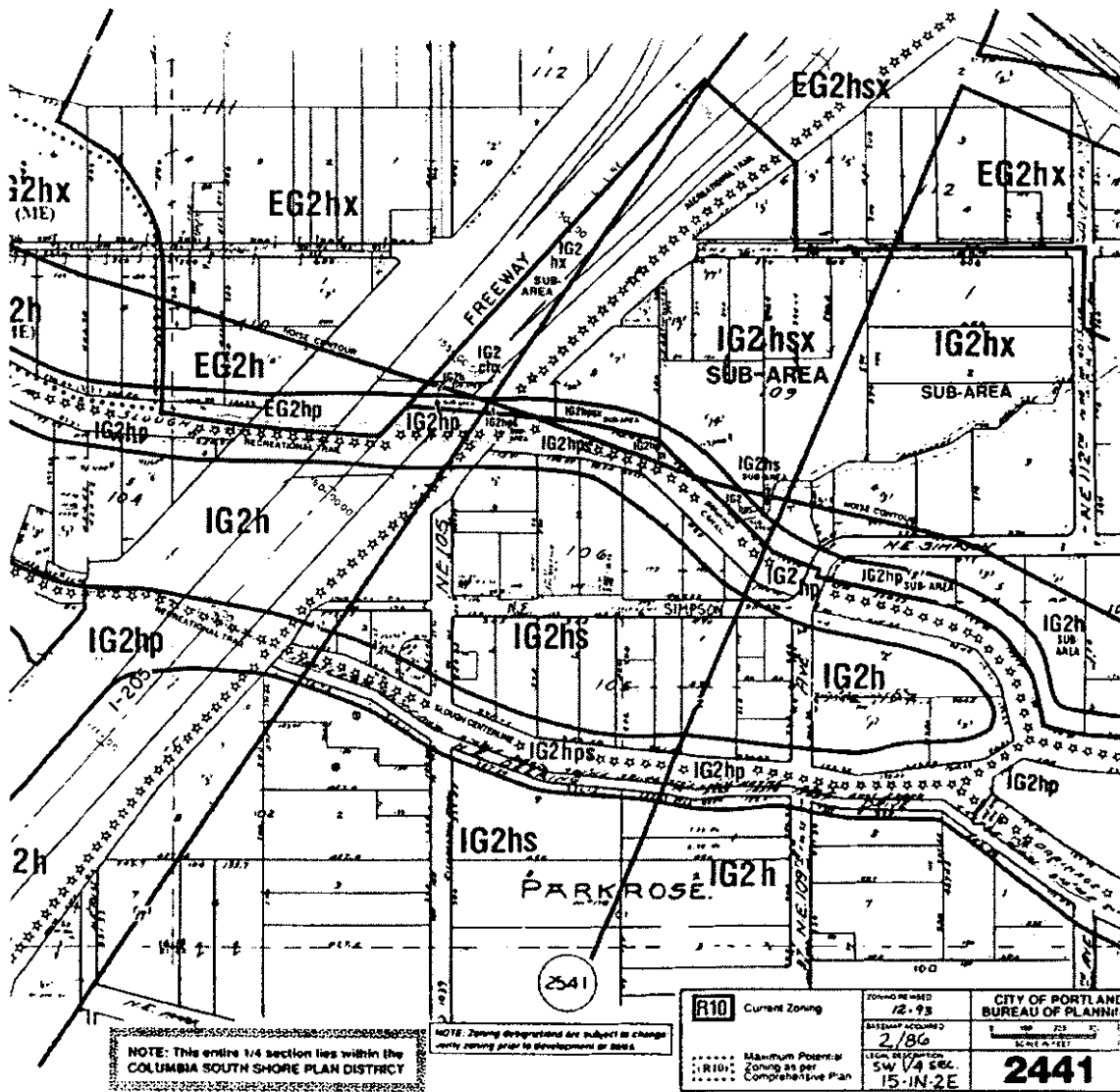
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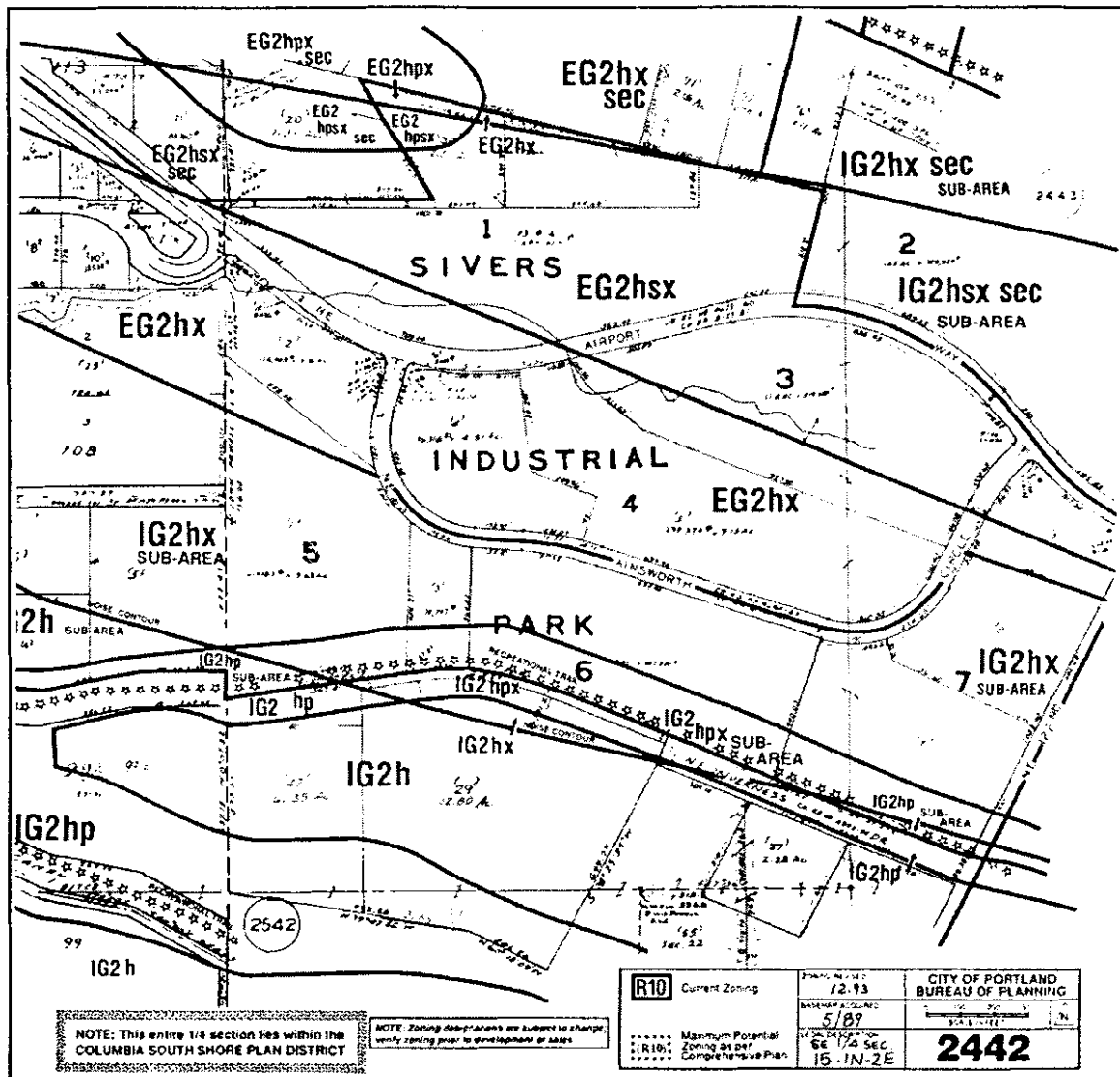
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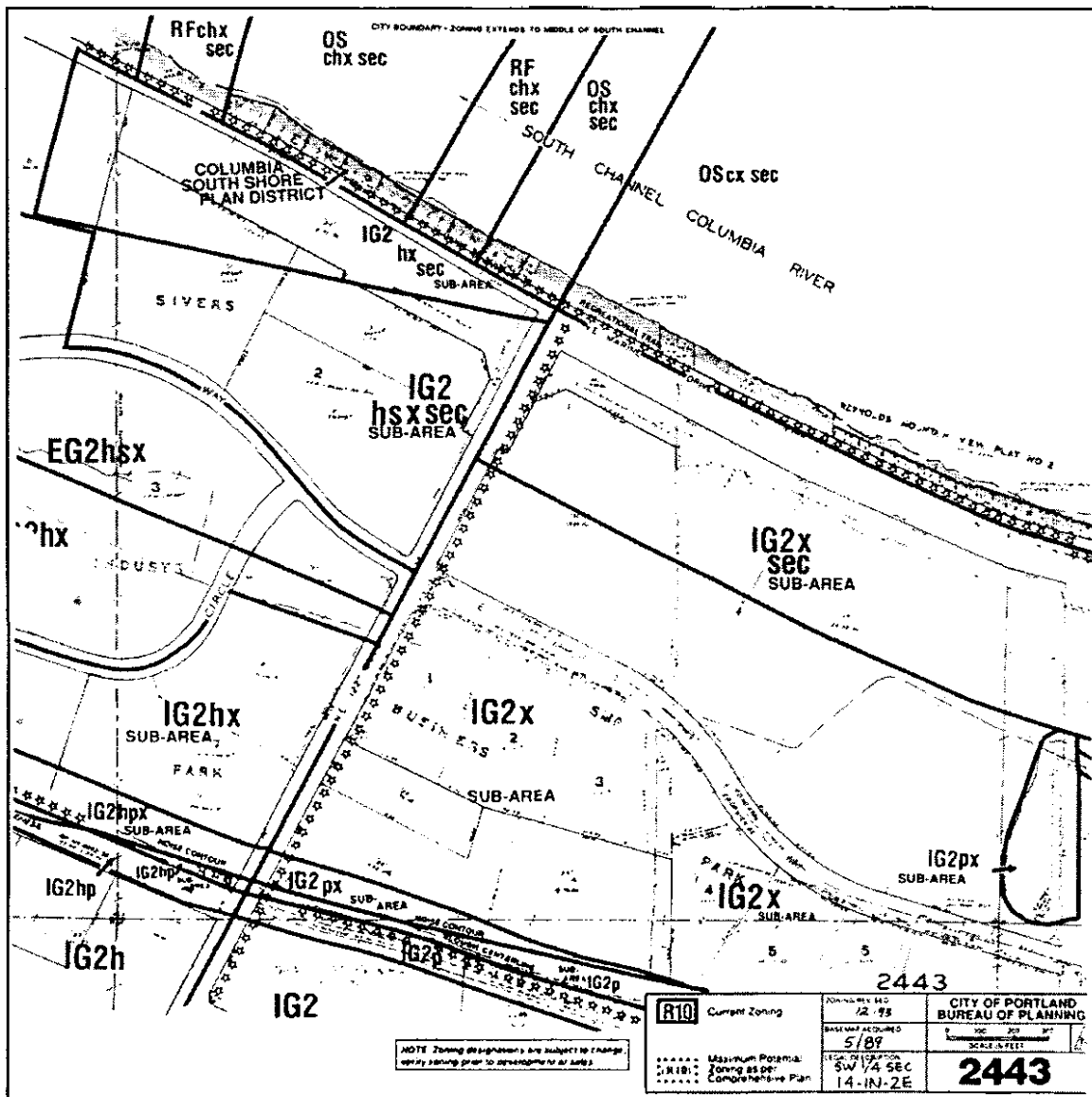
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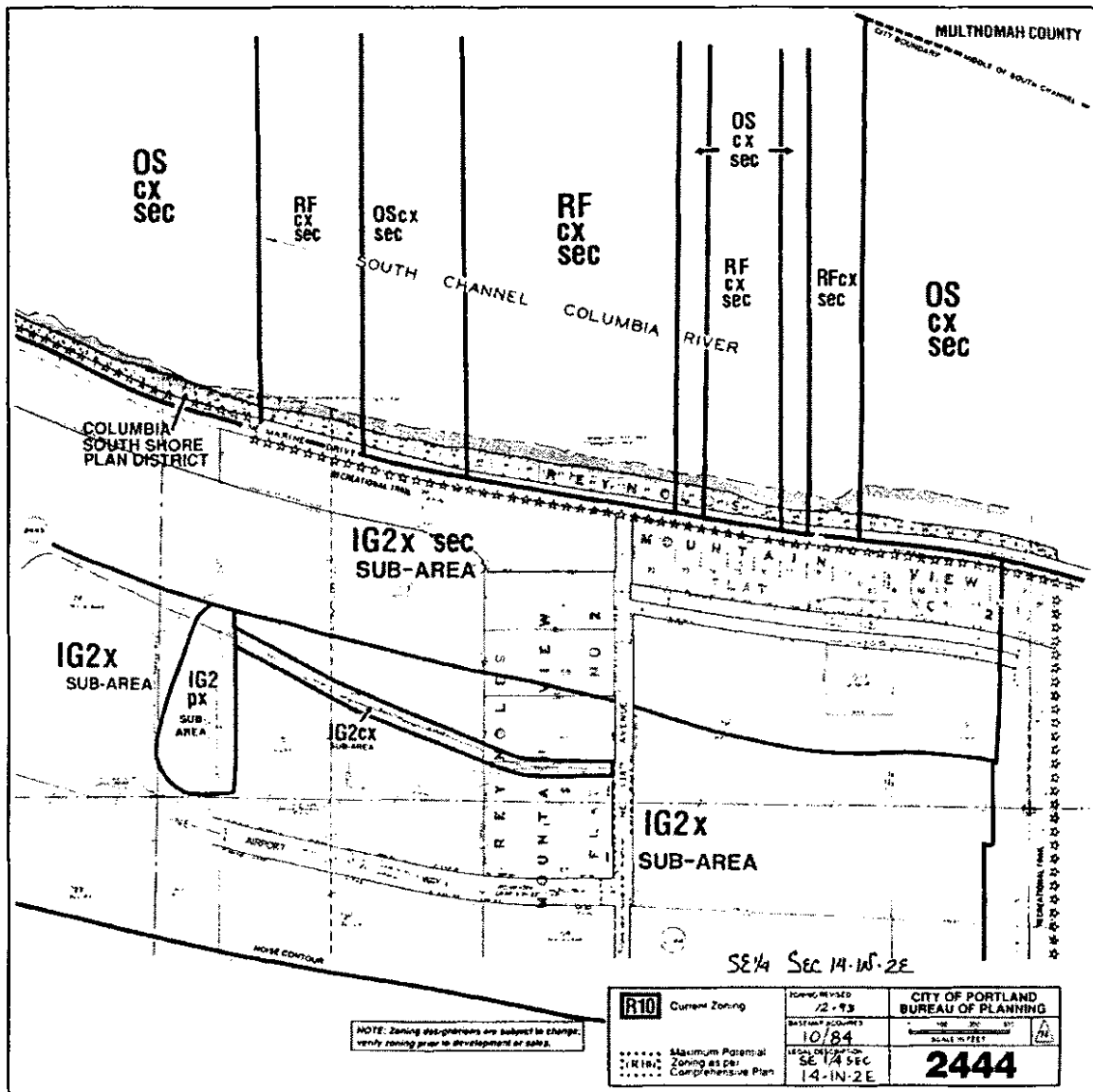


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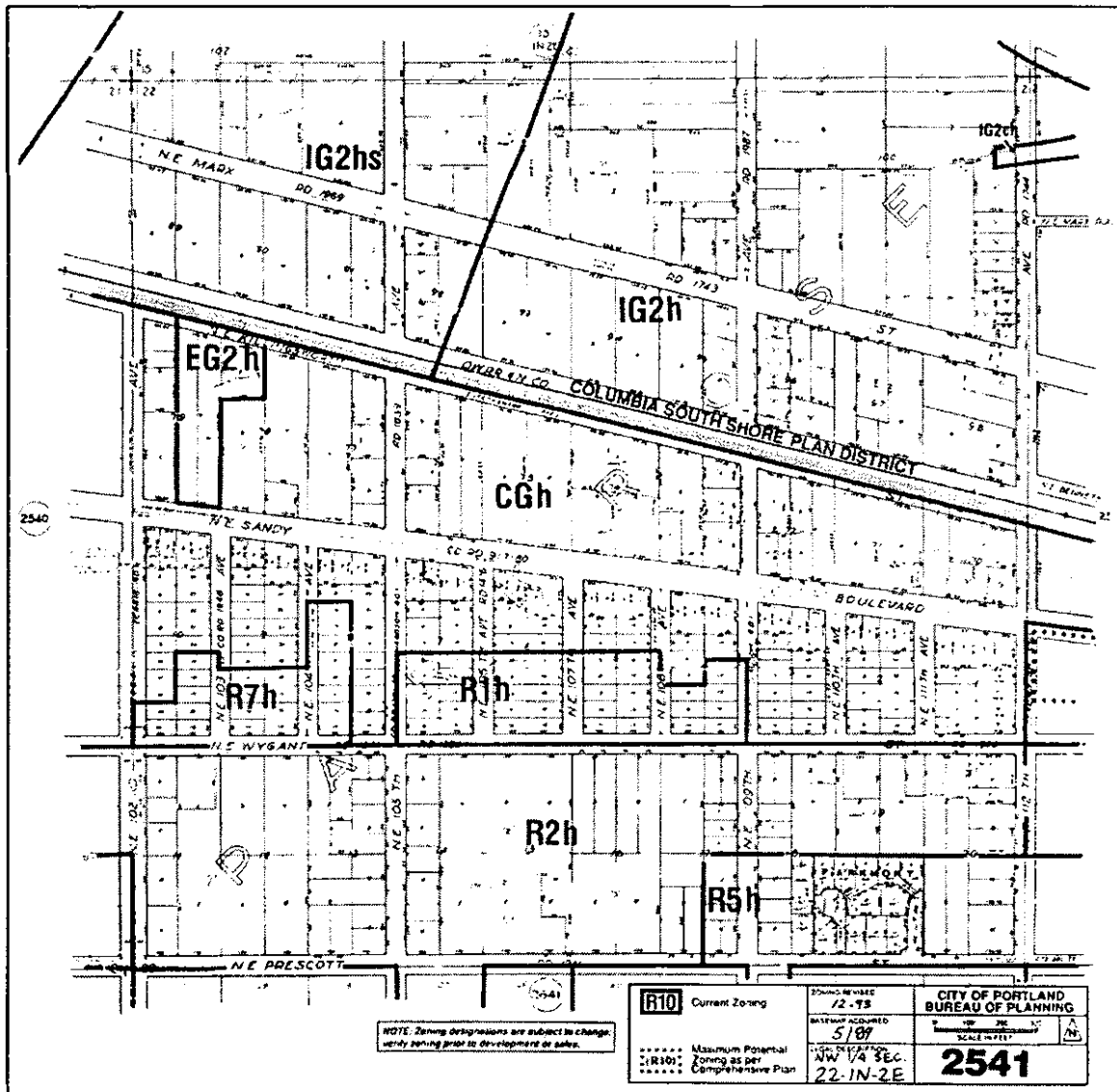


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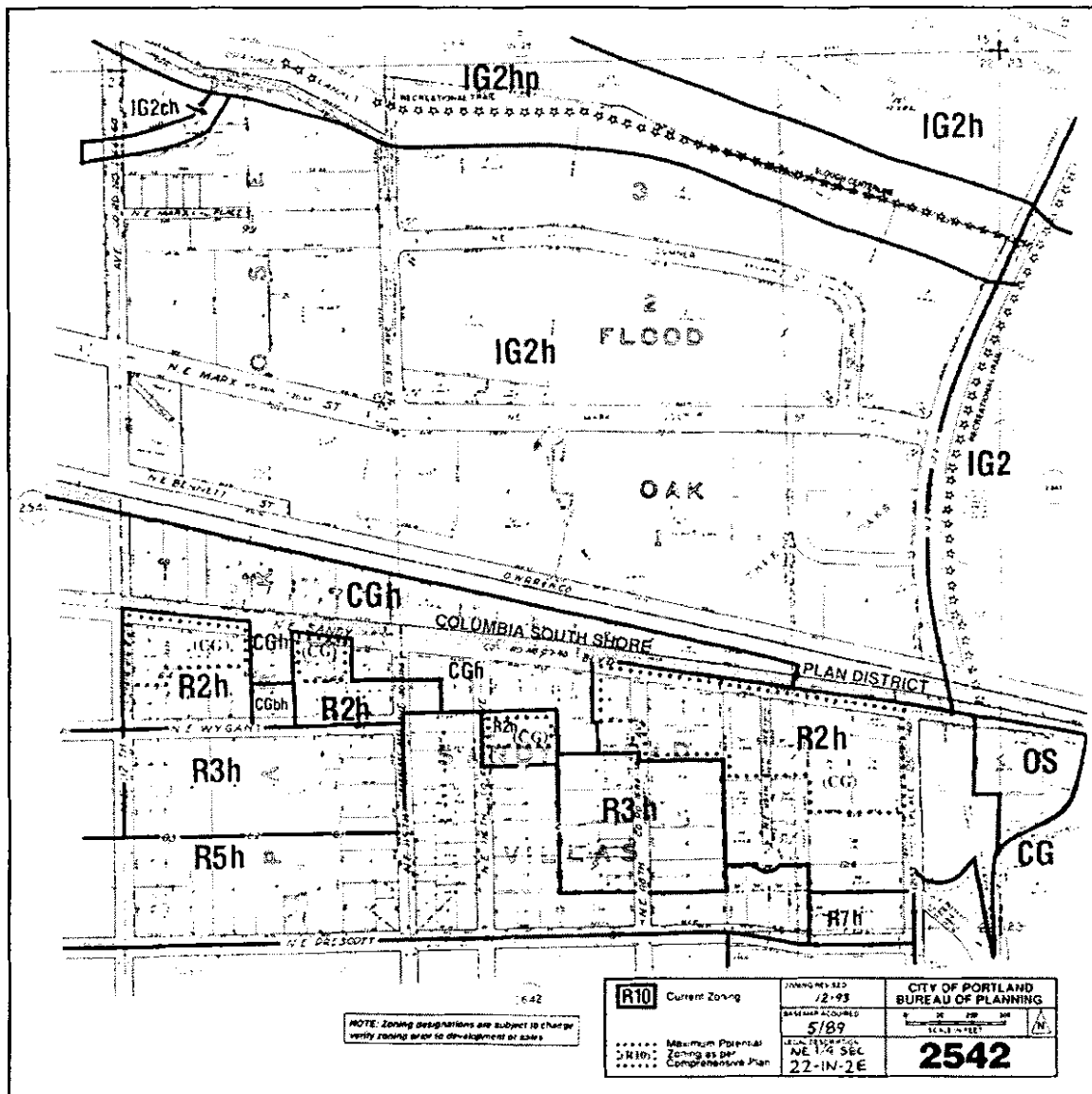




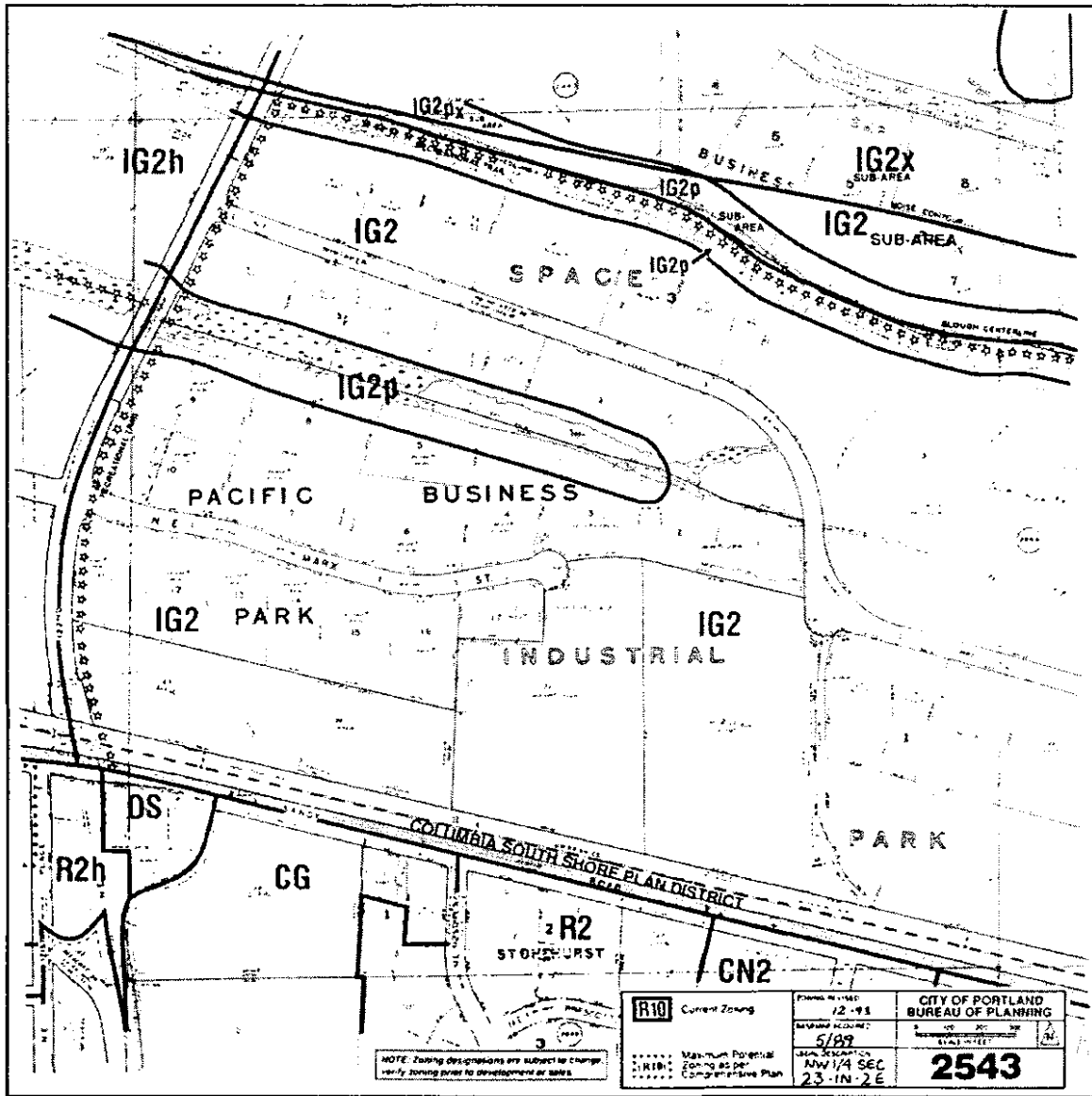
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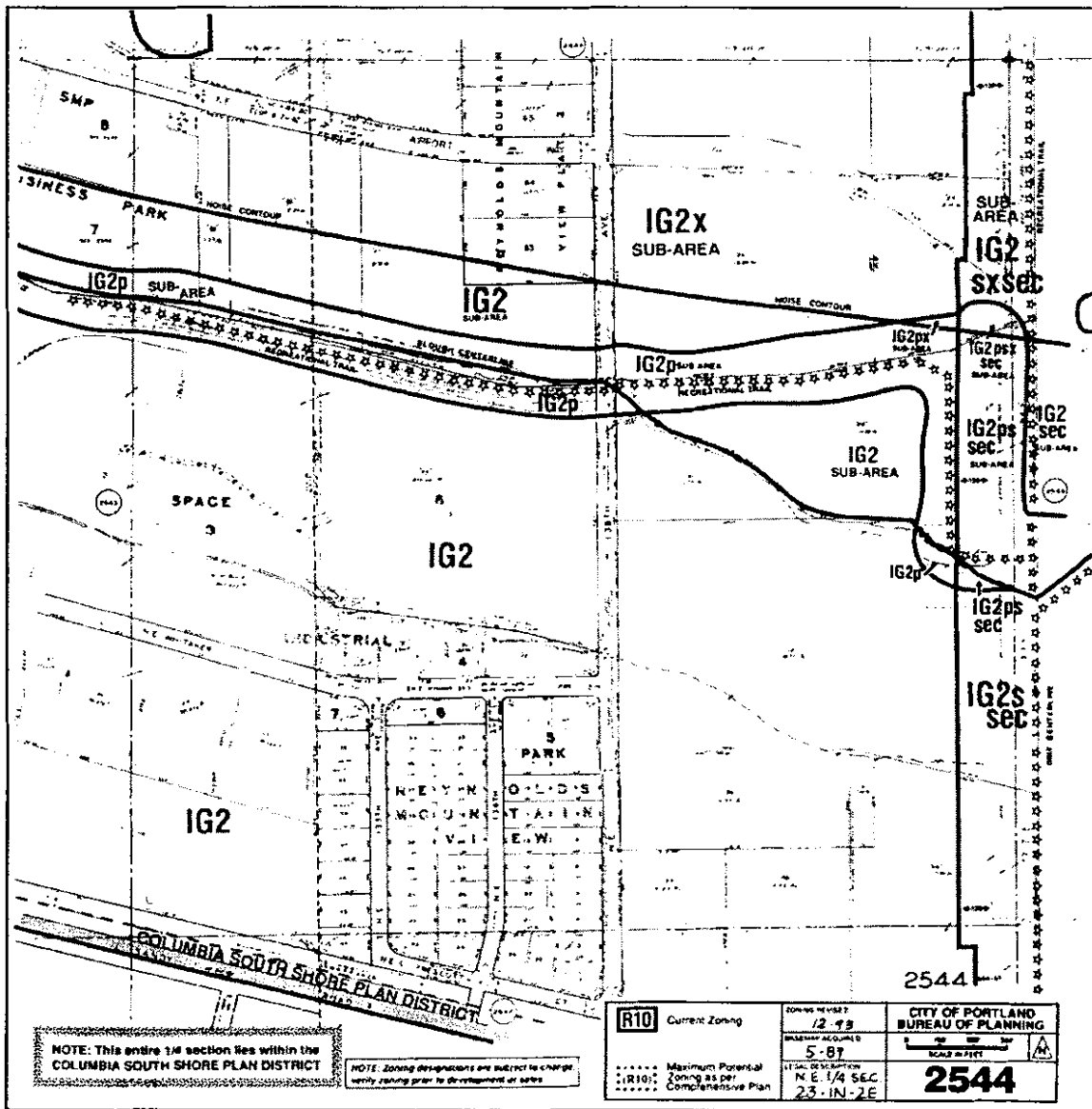
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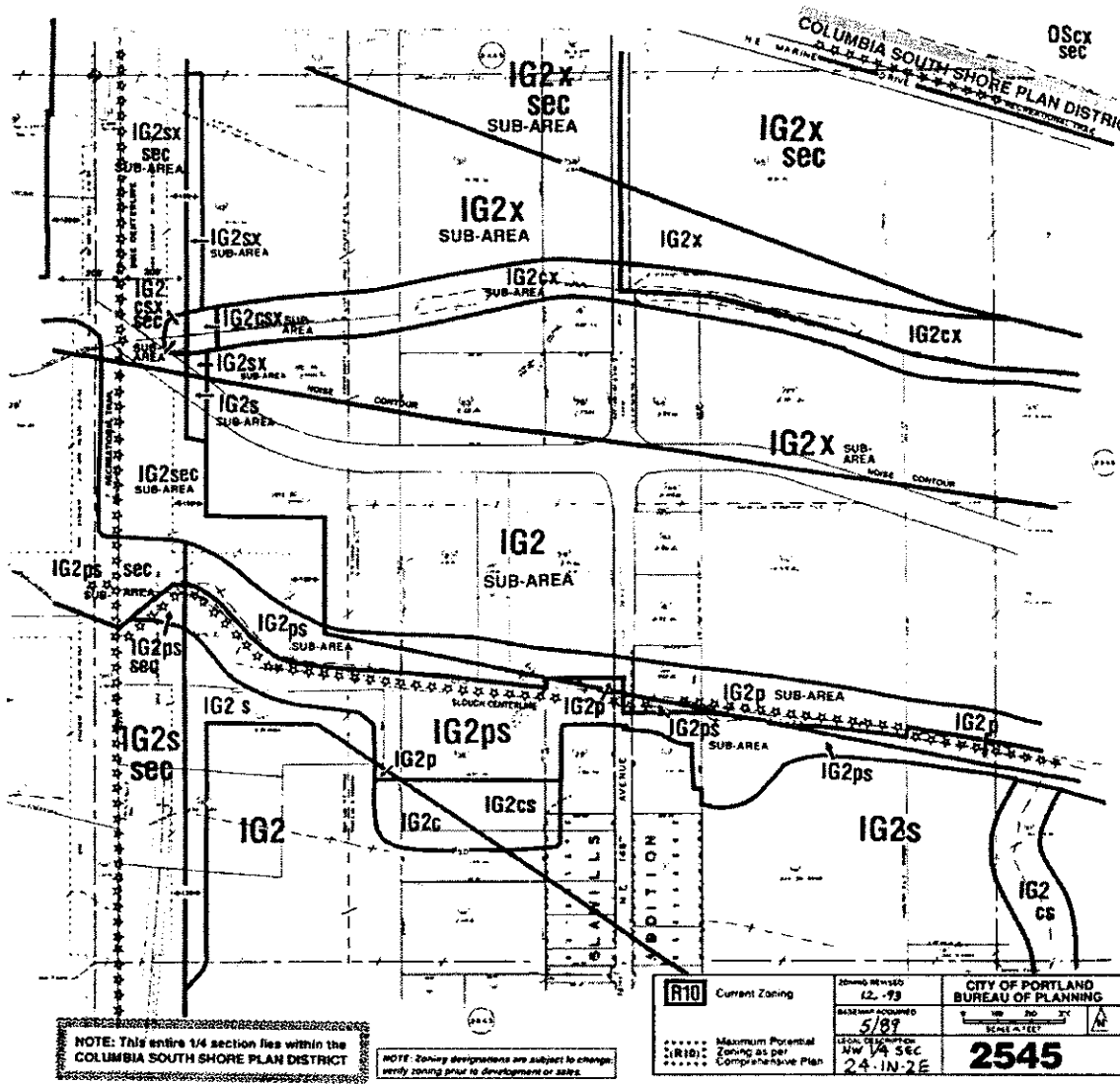
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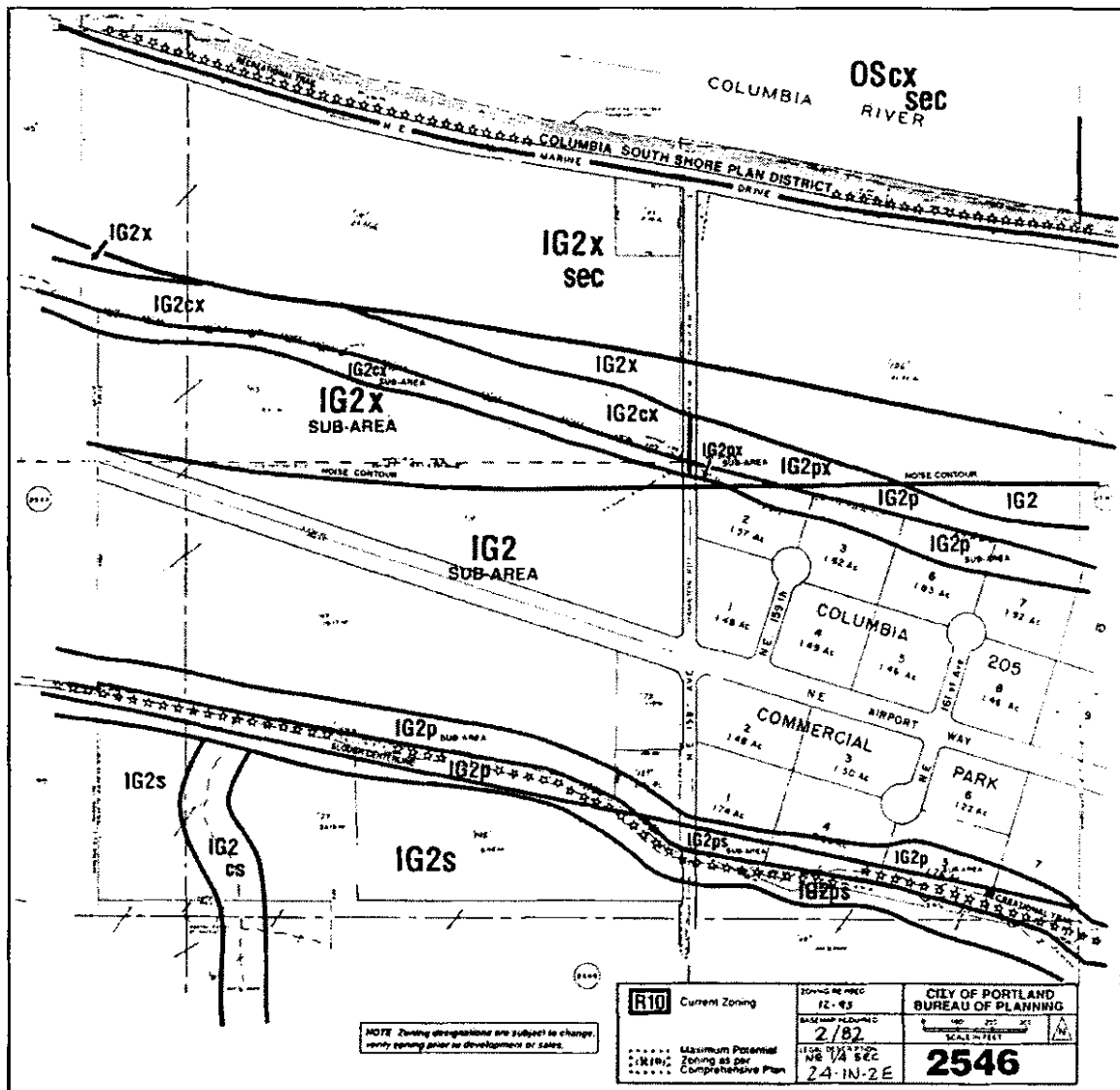
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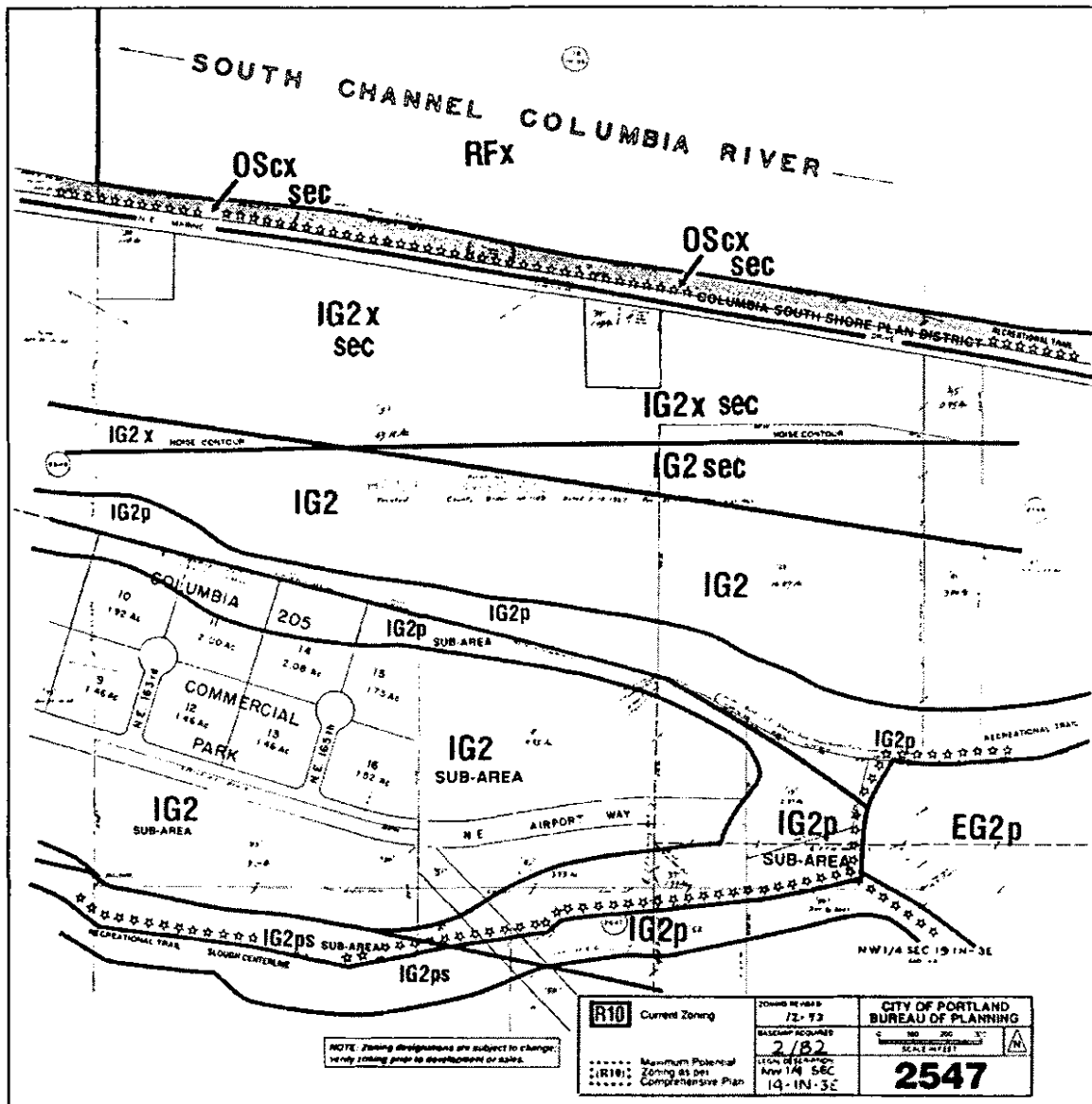
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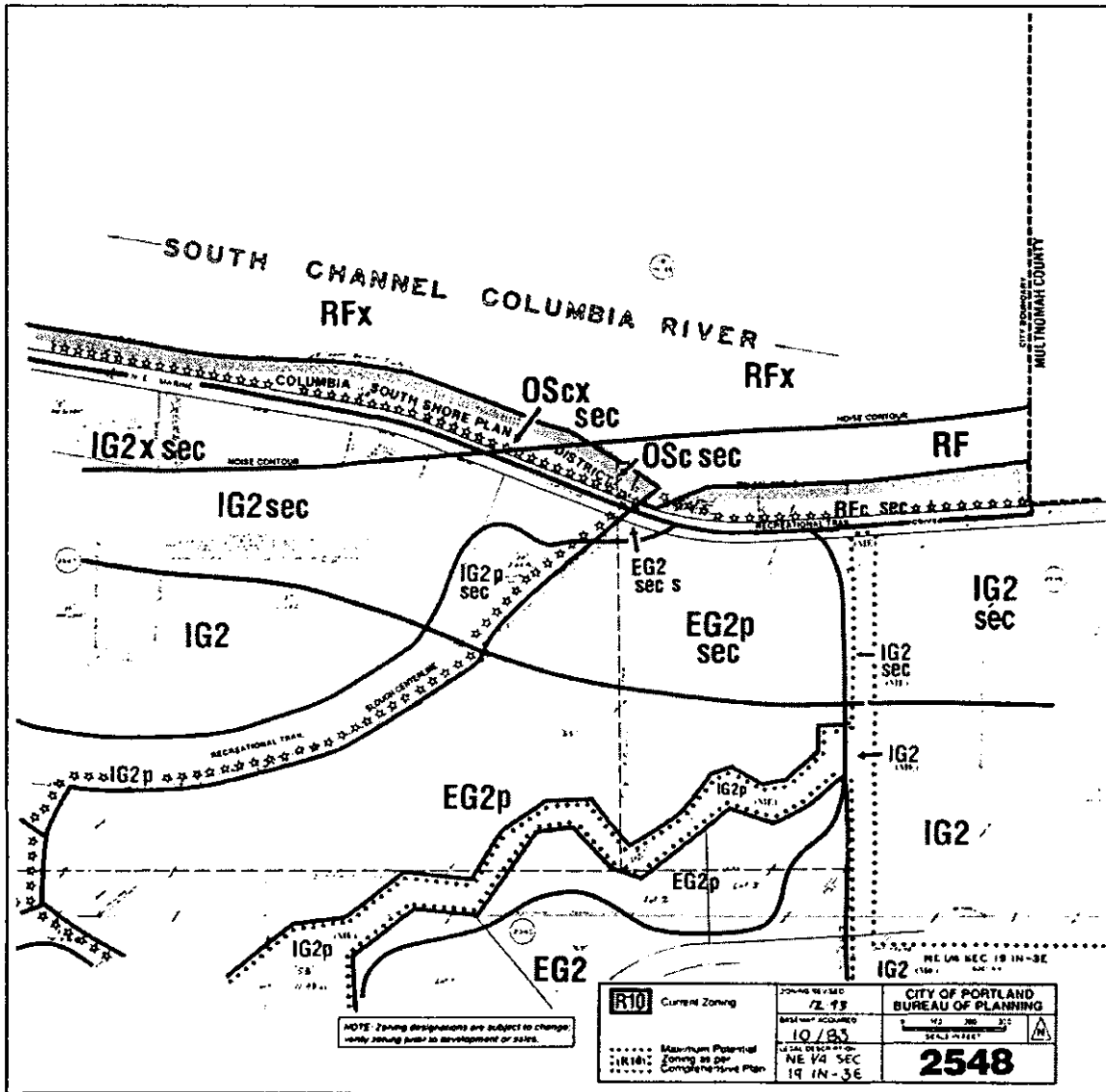


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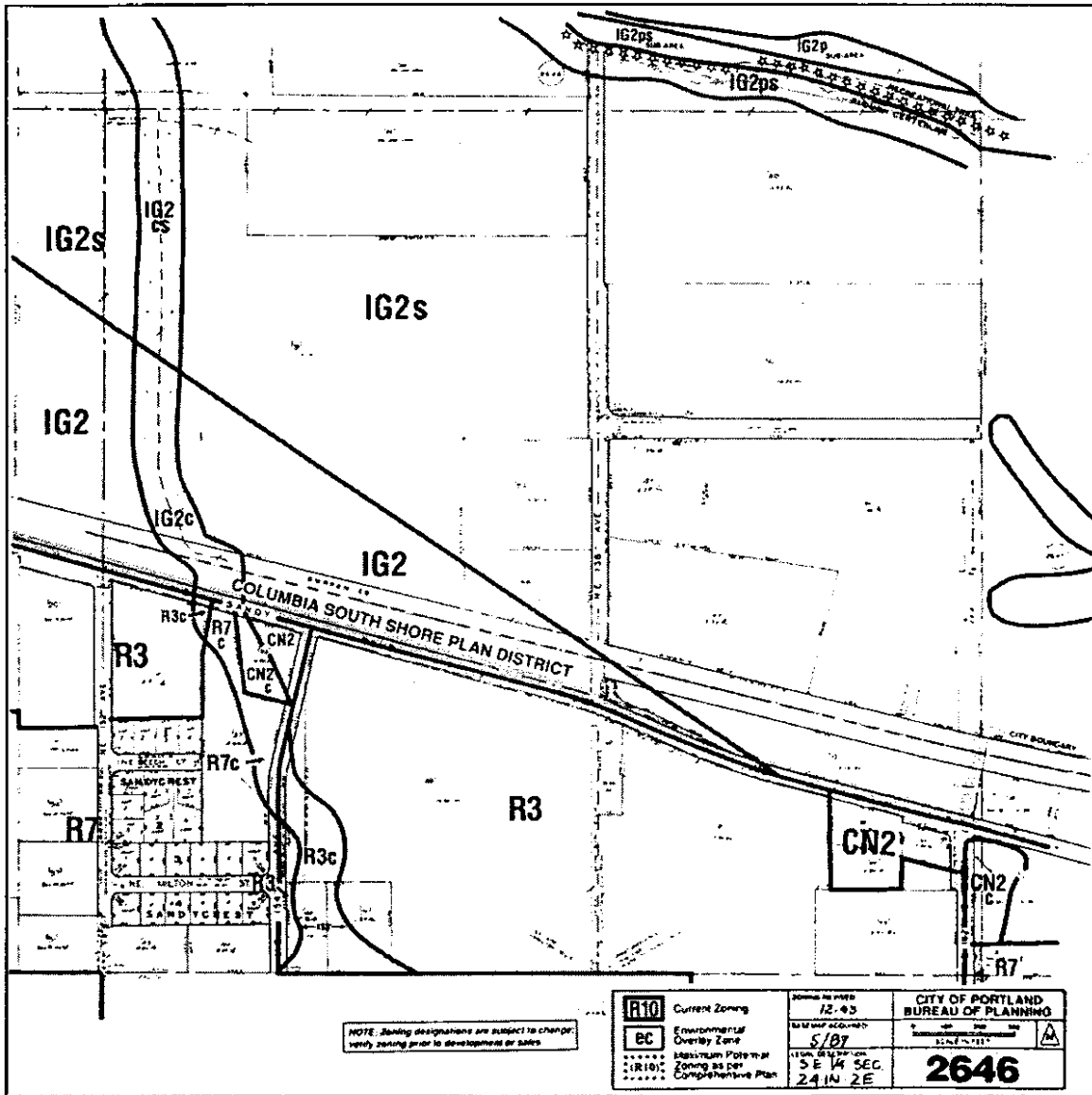


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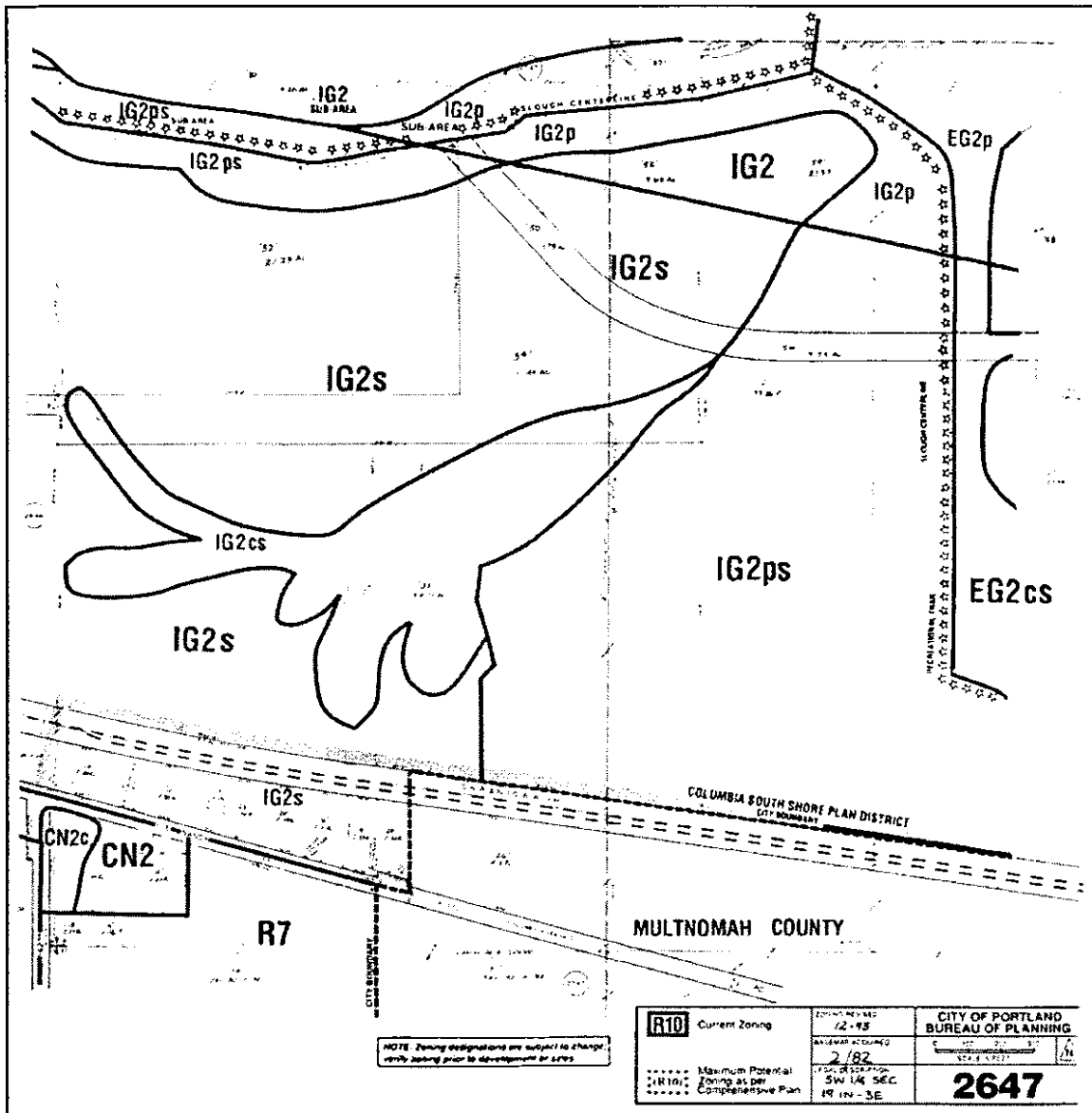




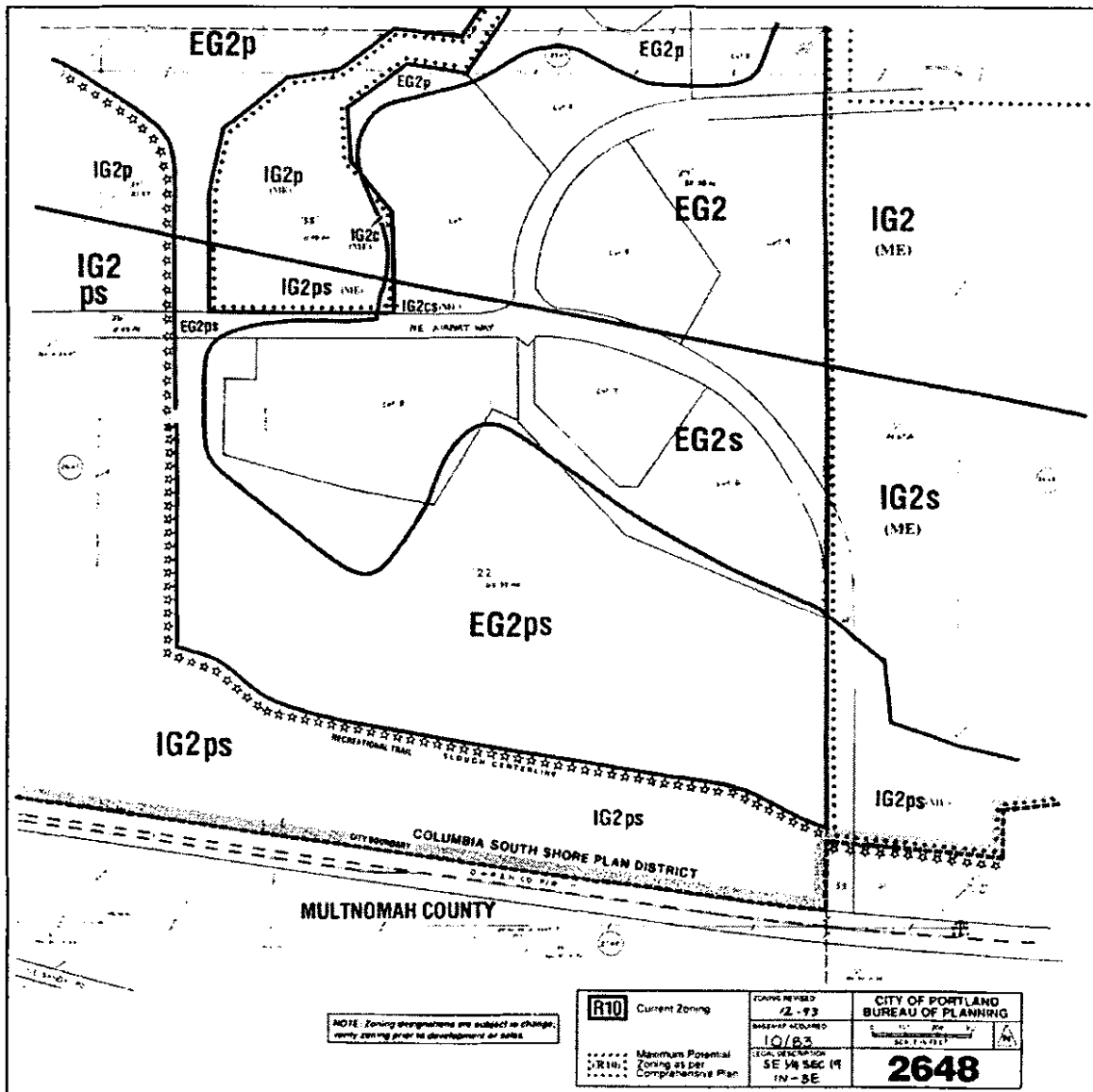
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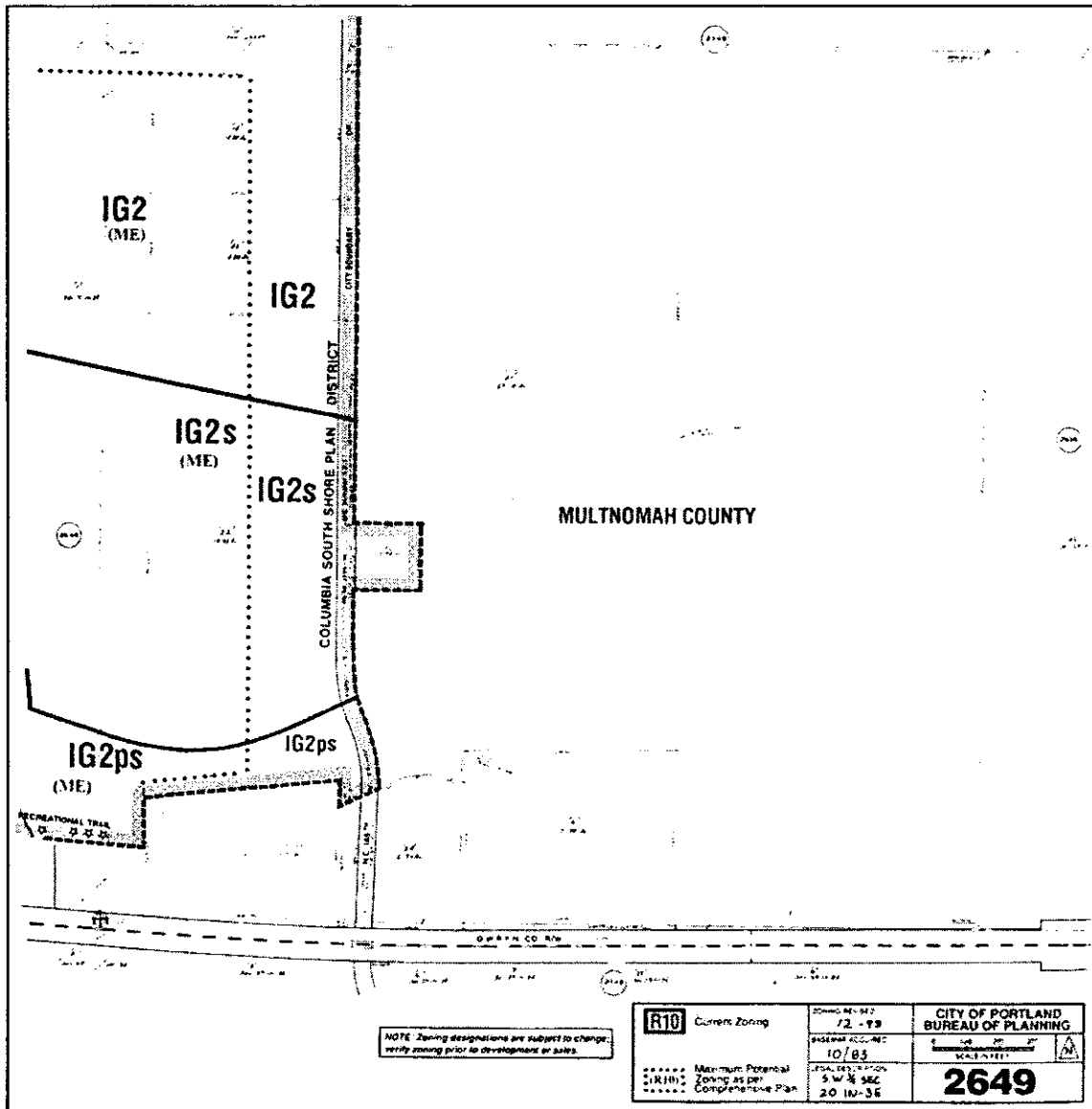
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# **Title 33 Amendments**

## **Chapter 33.430**

Environmental Zones

## **Chapter 33.515**

Columbia South Shore Plan  
District

## **Chapter 33.805**

Adjustments

## **Chapter 33.910**

Definitions



**Appendix B**

**(Note that the material in this Appendix was adopted by City Council in November 1993. Some of the proposed amendments presented here may have been amended again since then. Refer to the current version of the Portland Zoning Code for up-to-date code provisions.)**

### **PROPOSED AMENDMENTS TO TITLE 33**

The Natural Resources Protection Plan for the Columbia South Shore proposes zoning code amendments to incorporate regulations into the Zoning Code (Title 33). Following are amendments to the Environmental Zone, Columbia South Shore Plan District, and Adjustments Chapters.

#### **ENVIRONMENTAL ZONE AMENDMENTS**

The Natural Resources Protection Plan provides more specificity and direction than city-wide environmental regulations of Chapter 33.430, Environmental Zones. Plan District regulations will replace environmental regulations of 33.430. The amendment to 33.430, Environmental Zones, will exempt land in the Columbia South Shore from environmental land use regulations other than those of the Plan District.

#### **AMENDMENTS TO 33.430 (additions are underlined):**

##### **33.430.060 Items Exempt From These Regulations**

The following items are exempt from the development standards and required reviews stated in this chapter:

**A-J...no change**

**K. Activity, development, and land divisions in the Columbia South Shore Plan District south of NE Marine Drive. See Chapter 33.515, Columbia South Shore Plan District.**

#### **PLAN DISTRICT AMENDMENTS**

Generally, development or land uses on land containing a natural resource protected with an environmental zone will require planting in the transition area, and land uses or activities within areas zoned EC or EP and subject to environmental review must meet the other natural resource protection requirements of the Plan District. Natural resources zoned EC can be destroyed or altered if identified natural resource values are mitigated. Some nonconforming situations within a protected resource are subject to additional regulations to accelerate conformance.

**AMENDMENTS TO 33.515 (This is a new section to the Columbia South Shore Plan District Chapter of the Zoning Code. To improve readability of its text this new section is not shown with the text underlined):**

**ENVIRONMENTAL ZONES**

**33.515.265 Purpose**

The purpose of the environmental regulations in the Columbia South Shore Plan District south of NE Marine Drive is to:

- Protect inventoried significant natural resources and their functional values in the Columbia South Shore Plan District, as identified in the Comprehensive Plan;
- Implement the Comprehensive Plan environmental policies and objectives; and
- Encourage coordination between City, county, regional, state, and federal agencies concerned with natural resources.

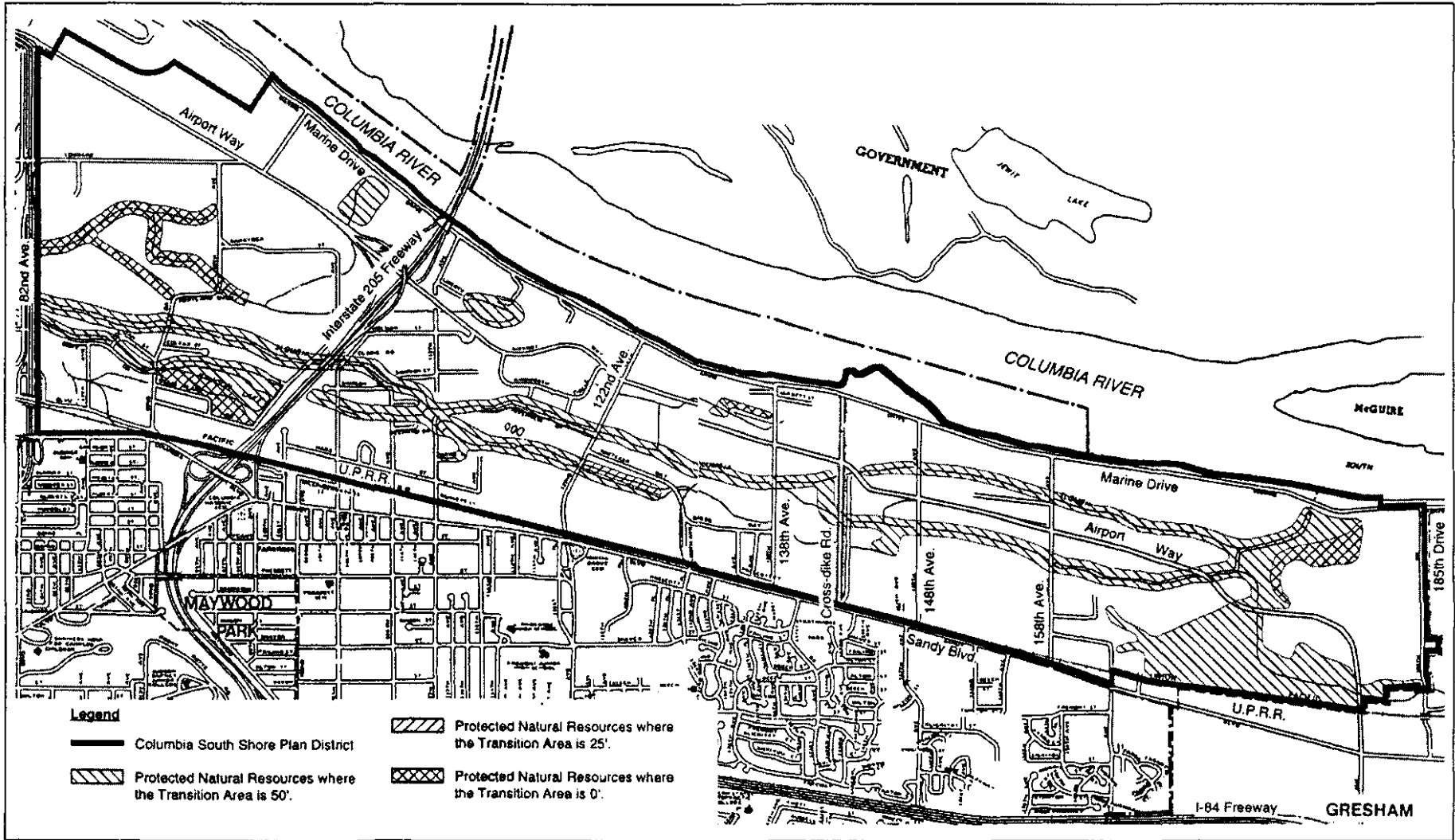
**33.515.268 Where These Regulations Apply**

The regulations of Sections 33.515.265 through 33.515.280 apply to all lots or sites which contain an Environmental Zone on any portion of them, and any portion of a right-of-way which contains an Environmental Zone which are south of NE Marine Drive.

**33.515.270 Overlay Zones**

- A. General.** Natural resources values in the District have been inventoried. Because some natural resource areas have greater public benefits than others, the two environmental overlay zones have different emphases.
  1. The Environmental Protection (ep) overlay zone is applied to areas with the highest functional values and where the natural resource is so significant that almost all development would have detrimental impact. The regulations of the ep zone are intended to preserve the resource and its values.
  2. The Environmental Conservation (ec) overlay zone is applied to areas with high functional values where development may be allowed if adverse impacts are mitigated. The regulations of the ec zone are intended to conserve the resource and its values.
- B. Subareas of the Environmental Zone in the Columbia South Shore.** Each environmental zone in the Columbia South Shore contains a protected natural resource and a transition area surrounding the



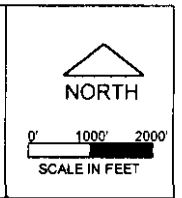


**Figure 515-5**

**Transition Areas**

NOTE: This map was adopted in December 1993. It shows the transition areas in effect at that time. Check the zoning code for current information.

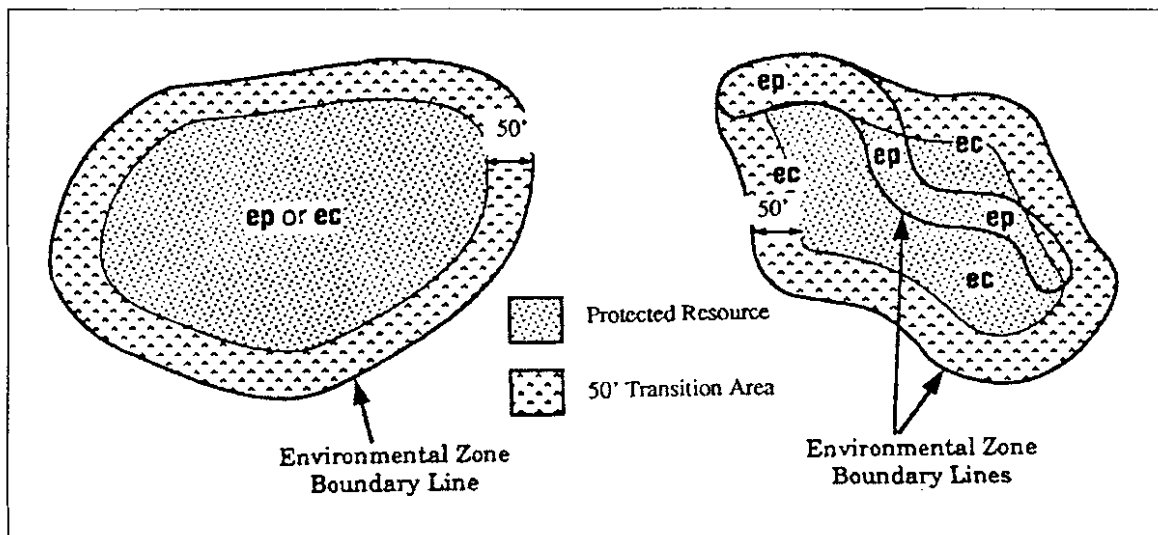
**Natural Resources Protection Plan for the Columbia South Shore**



protected resource. The purpose of the transition area is to protect the adjacent natural resource. The transition area provides a buffer between the protected resource and impacts of adjacent development.

The transition area is the outer 50 feet of the environmental zone except as shown on Map 515-5. Figure 515-6 illustrates two different situations: when either the EC or EP environmental zone is applied, and when the two zones are applied together and border each other.

**Figure 515-6  
Environmental Zone Subareas**



**NOTE:** This diagram was correct as of December 1993, and may be outdated.

### 33.515.272 Items Subject to These Regulations

Unless exempted in Section 33.515.274, the following are subject to the regulations of Sections 33.515.265 through 33.515.280:

- A. Change of use where there are concurrent exterior alterations to the buildings, site, or activities;
- B. New development;
- C. Exterior alteration of a building and site expansions or modifications, including increased cultivated area, grazing area, or other agricultural activities;
- D. New above or below ground utilities;

- E.** Dedication or extension of rights-of-way and rail rights-of-way;
- F.** Removal of trees and removal, cutting, or mowing of noncultivated vegetation including herbicide application;
- G.** Resource enhancement activities; and
- H.** Land division as regulated by Title 34, Subdivision and Partitioning Regulations.

### **33.515.274 Items Exempt from these Regulations**

The following are exempt from the development standards and required reviews stated in this section:

- A.** Sale of property or change of ownership of a business;
- B.** Changes to the interior of a building;
- C.** Normal repair and maintenance of structures and development, including irrigation;
- D.** Temporary emergency procedures necessary for the safety or protection of property;
- E.** Single utility poles required to provide service to the local area;
- F.** Right-of-way dedications for widening existing rights-of-way, when additional right-of-way is needed to ensure consistent width.
- G.** Actions taken by the City to correct or abate a nuisance;
- H.** Utilities installed below portions of public rights-of-way with existing paved travel lanes and utility lines installed above developed public rights-of-way;
- I.** Activities which the City is directed to perform by judgements entered by courts of competent jurisdiction; and
- J.** Activities specifically exempted by state or federal law from compliance with local comprehensive plans or land use regulations.

### **33.515.276 Use Regulations**

- A. Permitted Uses.** The following uses and activities are allowed if they comply with the development standards of Section 33.515.278:
  1. In areas without environmental overlay zones, uses and development allowed by the Plan District regulations.

2. In environmental zones:
  - a. Planting required vegetation;
  - b. Removal of vegetation identified as nuisance or prohibited plants on the Portland Plant List;
  - c. Resource maintenance;
  - d. Stormwater discharge;
  - e. Sewer connections to individual properties;
  - f. Water quality monitoring facilities;
  - g. Construction of the Columbia South Shore Slough Trail;
  - h. Water-based drainageway maintenance, including construction of staging areas;
  - i. Maintenance of the water level in the Columbia Slough system;
  - j. The addition of sidewalks and bicycle lanes to public rights-of-way with existing paved travel lanes; and
  - k. Land divisions.
3. In the transition area:
  - a. Overhead and underground utilities;
  - b. Planting native vegetation if not required; and
  - c. Recreation or trail facilities identified in the Columbia South Shore Slough Trail Master Plan.

**B. Review Required.** The following uses are allowed if they comply with the development standards of Section 33.515.278 and subject to review as set out in Section 33.515.280:

1. In environmental zones:
  - a. Fill or destruction of a resource in an EC zone;
  - b. Removal of vegetation which is not identified as nuisance or prohibited plants on the Portland Plant List;
  - c. Planting non-native vegetation;
  - d. Other resource enhancement or alteration;

- e. Fencing;
  - f. Dedication of a public right-of-way;
  - g. New construction, widening, and relocation of roads in a public right-of-way;
  - h. Recreation or trail facilities not identified in the Columbia South Shore Slough Trail Master Plan; and
  - i. Other drainageway activities or facilities for stormwater conveyance, including flood control structures.
2. In the protected resource:
- a. Planting native vegetation if not required;
  - b. Overhead and underground utilities except sewer connections to individual properties; and
  - c. Recreation or trail facilities identified in the Columbia South Shore Slough Trail Master Plan.

**C. Prohibited.** All other uses and development are prohibited.

### **33.515.278 Development Standards**

- A.** Except for temporary uses, land uses and activities on lots or sites which contain an environmental zone on any portion of them require revegetation of the Vegetated transition area as follows:
- 1. Species must be classified as native on the Portland Plant List, and not be classified as prohibited or nuisance plants;
  - 2. Planting must cover 90 percent of the ground within one year or two growing seasons after planting;
  - 3. At least 8 species of plants must be used. Fifty percent of any seed mix used must be grass and 50 percent flowers when measured by area covered; and
  - 4. If cover requirements are not met within one year from issuance of an occupancy permit, final inspection, or certificate of completion, replanting is required and the requirements of this section must be met within one year or two growing seasons of replanting.
  - 5. Plants used for revegetation may also count towards other landscaping requirements.

**B.** Land uses and activities within an environmental zone must meet the following standards:

1. Revegetation in a vegetated transition area must meet the following:
  - a. Species must be classified as native on the Portland Plant List, and not be classified as prohibited or nuisance plants;
  - b. Planting must cover 90 percent of the ground within one year or two growing seasons after replanting;
  - c. At least eight species of plants must be used. Fifty percent of any seed mix used must be grass and 50 percent flowers when measured by area covered; and
  - d. If cover and species requirements are not met within one year or two growing seasons from issuance of an occupancy permit, final inspection, or certificate of completion, replanting is required and the requirements of this section must be met within one year of replanting.
  - e. Plants used for revegetation may also count towards other landscaping requirements.
2. Revegetation in a protected resource must meet the following:
  - a. Species must be classified as native on the Portland Plant List, and not be classified as prohibited or nuisance plants;
  - b. Planting must cover 90 percent of the ground within one year;
  - c. Figure 2-3 of the Natural Resources Protection Plan for the Columbia South Shore lists all protected natural resources in the Plan District and identifies their resource values. If a site is a riparian area, subparagraph 1 must be met. If a site is not a riparian area, but is a meadow or open space without trees, subparagraph 2 must be met. All other sites must meet subsection (1).
    - (1) Planting requirements with trees:
      - At least 8 species of plants must be used;
      - At least 2 species must be shrubs and 2 must be trees;
      - Fifty percent of any seed mix used must be grass and 50 percent flowers when measured by area covered;

- One tree and three shrubs are required for every 500 square feet of planting area, and
  - Trees and shrubs must be planted in clusters of at least three.
- (2) Planting requirements without trees:
- At least 8 species of groundcover plants must be used; and
  - Fifty percent of any seed mix used must be grass and 50 percent flowers when measured by area covered.
- d. If cover and species requirements are not met within one year from issuance of any occupancy permit or final inspection, replanting is required and the requirements of this section must be met within one year of replanting.
- e. Plants used for revegetation may also count towards other landscaping requirements.
3. Herbicides used for removal of vegetation must be listed by the U.S. Environmental Protection Agency as appropriate for application in aquatic areas and use must be in accordance with directions for application.
4. Areas cleared of vegetation must be reseeded or replanted within one year of vegetation removal.
5. All development or activities which disturb ground or remove vegetation must conform to Chapter 24.70, Clearing, Grading, and Erosion Control and to the Erosion Control Technical Guidance Handbook. In addition, the following standards must be met:
- a. Wet weather. All development between November 1 and April 30 of any year, which disturbs more than 500 square feet of ground, requires wet weather measures described in the Erosion Control Technical Guidance Handbook. These measures must be met until issuance of any occupancy permit or final inspection;
  - b. Maintenance. Erosion control measures must be maintained until 90 percent of all disturbed ground is covered by vegetation;
  - c. Self inspection. Areas where the ground is disturbed must be inspected by or under the direction of the owner at least once every 7 calendar days, within 24 hours of any storm event

greater than one-half inch of rain in any 24-hour period, or at any time when water runoff occurs. These measures must be met until issuance of any occupancy permit or final inspection; and

- d. Record keeping. Records must be kept of all inspections. Instances of measurable erosion must be recorded with a brief explanation of corrective measures taken. This record must be available to the City and retained until final inspection.
6. Stormwater discharge must pass through water quality facilities which conform to Chapter 17.38, Drainage and Water Quality.
7. Stormwater discharge into a mitigation area is not allowed unless it is part of the mitigation plan.
8. Except for stormwater discharges, industrial or sanitary discharges, including wastewater and overflow, into the slough system is not allowed.
9. Construction and ongoing maintenance for overhead or underground utilities, including sanitary sewer connections to individual properties and stormwater outfalls, cannot affect more than a 25-foot-wide corridor across the resource. These activities cannot result in the killing or removal of trees over 6 inches in diameter measured 4-1/2 feet above the ground.
10. Road improvements across the slough must be by bridge unless a water control structure is a necessary part of the design.
11. Water quality monitoring facilities may be up to 100 square feet in area.
12. In Employment and Industrial zones, new lots completely within the EP zone are exempt from minimum lot size and shape requirements of Section 33.140.200, Lot Size. All other new lots must meet the minimum size and shape requirements of Section 33.140.200, Lot Size, outside of land zoned EP.
13. Location and design of any trail or recreation facilities must conform to standards of the Columbia South Shore Plan District. All new trail easements must be in the outer 25 feet of the environmental zone except as necessary to connect to existing easements or trails on adjacent sites.
14. Construction of the trail or recreation facilities cannot result in the removal of trees more than 6 inches in diameter, measured 4-1/2 feet above the ground and are not required to be located within wetlands subject to state or federal regulations.



15. Staging areas for slough and drainageway maintenance may have up to 5,000 square feet of gravel, paving, structures, or other ground-disturbing uses or activities exclusive of an access road. Access roads within an environmental zone may be up to 300 feet in length.
16. Water levels in the slough will be maintained at an elevation of between 5 and 10 feet mean sea level in order to preserve wetlands that are protected by an Environmental zone. An exception to this standard is for maintenance or emergency situations when a lower level is necessary.
17. Nonconforming situations
  - a. Paved exterior areas in an EC or EP zone. Paved areas which do not meet Plan District regulations must be removed from Environmental-zoned areas when the value of the proposed alterations on the site is more than \$10,000. However, required changes costing over 10 percent of the value of the proposed alterations do not have to be made.
  - b. Unpaved exterior areas. Unpaved exterior improvements must comply fully with development standards at the time of development on the site. However, required changes costing over 10 percent of the value of the proposed alterations do not have to be made.
  - c. Removal of existing bridges, utilities, or public improvements is not required.

### **33.515.280 Columbia South Shore Environmental Review**

- A. Purpose of the Review.** Environmental review of uses and development in the Environmental zones is intended to provide adequate protection for the identified natural resources. The review provides for flexibility and reasonable development opportunities when development is sensitive to the special environmental concerns of the site.
- B. Modifying Environmental Zone Boundaries** Environmental zone boundaries may be modified by the City as the result of and concurrent with approving development in a natural resource area. The boundaries may be modified for either of the two situations stated below. All other requests for boundary changes are processed as a change of an overlay zone, as stated in Chapter 33.855, Zoning Map Amendments.
  1. Creation of new resource areas. The Environmental Protection zone will be expanded as part of the environmental review to include areas identified for mitigation.

2. Loss of existing resource areas. The environmental zone may be removed from an existing natural resource zoned EC where approved development will eliminate the natural resource. The zoning designation will not be removed until after all required mitigation measures have been completed.

**C. Procedures** All required reviews are processed through a Type II procedure. A pre-application conference is required for all reviews.

**D. Approval Criteria**

1. Fill or destruction of a natural resource in an EC zone will be approved if the review body finds that:
  - a. All resource values listed in Table 2-3 of the Natural Resources Protection Plan for the Columbia South Shore being altered or destroyed will be replaced through mitigation. If the mitigation site is within a protected resource, values that already exist do not count towards mitigation;
  - b. The mitigation area is in the Columbia South Shore Plan District and abuts or is within a protected resource;
  - c. If the mitigation area abuts a protected resource, the mitigation area will be at least 110 percent of the size and values of the altered resource area;
  - d. If the mitigation area is within a protected resource:
    - (1) The mitigation area will be at least 330 percent of the size of the altered area; and will replace at least 110 percent of the values of the altered resource area; and
    - (2) Mitigation will be provided for all resource values lost, including those lost in the protected resource as part of mitigation efforts.
  - e. The maintenance plan insures the maintenance and protection of resource mitigation areas and associated functions and values for 5 years after success has been achieved. The 5 year period will begin when the Bureau receives and approves a report from the applicant which describes the manner in which mitigation success has been achieved. Success shall be defined in the approved mitigation plan to include:
    - (1) Full achievement of required resource values; and
    - (2) Compliance with development standards of Section 33.515.278.

- f. Except for public improvement projects undertaken by the City, a performance guarantee which meets the requirements of Section 33.700.050, Performance Guarantees, for construction, monitoring, and maintenance of the mitigation site in accordance with the mitigation plan will be filed with the City Auditor prior to issuance of any development or building permit.
2. Removal of vegetation in an environmental zone or planting of native vegetation if not required in a protected natural resource will be approved if the review body finds that all activities will result in no loss of resource values identified in Table 2-3 of the Natural Resources Protection Plan for the Columbia South Shore.
  3. Planting non-native vegetation in an environmental zone will be approved if the review body finds that the vegetation:
    - a. Provides food or other values for native wildlife that cannot be achieved by native vegetation; and
    - b. Is not classified as a nuisance or prohibited plant on the Portland Plant List.
  4. The following activities will be approved if the review body finds that the criteria of this paragraph are met: other resource enhancement or alteration or road improvements in public rights-of-way in an environmental zone; or overhead utilities, underground utilities other than sewer connections to individual properties, or recreation or trail facilities identified in the Columbia South Shore Slough Trail Master Plan in the protected resource:
    - a. The proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable;
    - b. All detrimental environmental impacts are mitigated in the following manner:
      - (1) All resource values listed in Table 2-3 of the Natural Resources Protection Plan for the Columbia South Shore for the site being altered or destroyed will be replaced at the mitigation site. If the mitigation site is within a protected resource, values that already exist do not count towards mitigation;
      - (2) The mitigation area abuts or is within a protected resource;
      - (3) If the mitigation area is within a protected resource, mitigation will be provided for all resource values lost, including those lost in the protected resource as part of mitigation efforts.

- (4) All detrimental impacts on resource values listed in Table 2-3 of the Natural Resources Protection Plan for the Columbia South Shore for the site on which the use or activity is taking place will be replaced at the mitigation site;
  - c. A monitoring or maintenance plan has been prepared which insures the maintenance and protection of resource mitigation areas and associated functions and values for 5 years after success has been achieved. The 5 year period will begin when the Bureau receives and approves a report from the applicant which describes the manner in which mitigation success has been achieved. Success shall be defined in the approved mitigation plan to include:
    - (1) Full achievement of required resource values; and
    - (2) Compliance with development standards of Section 33.515.278; and
  - d. Except for public improvement projects undertaken by the City, a performance guarantee which meets the requirements of Section 33.700.050, Performance Guarantees, for construction, monitoring, and maintenance of the mitigation site in accordance with the mitigation plan will be filed with the City Auditor prior to issuance of any development or building permit.
5. Fencing in an environmental zone will be approved if the hearings body finds that:
    - a. It is needed;
    - b. It allows for appropriate passage of wildlife;
    - c. It is the minimum necessary, both in height and length; and
    - d. There are no alternative sites or methods which have less impact on the protected resource.
  6. Public right-of-way dedication in an environmental zone will be approved if the hearings body finds that there are no practicable alternatives which have less impact on the protected resource.
  7. Recreation or trail facilities not identified in the Columbia South Shore Slough Trail Master Plan, and other activities or drainageway facilities for stormwater conveyance, including flood control structures will be approved if the hearings body finds that:
    - a. The proposal is dependent upon and relates directly to the resource;

- b. The proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable;
- c. All detrimental environmental impacts are mitigated in the following manner:
  - (1) All resource values listed in Table 2-3 of the Natural Resources Protection Plan for the Columbia South Shore for the site being altered or destroyed will be replaced at the mitigation site. If the mitigation site is within a protected resource, values that already exist do not count towards mitigation;
  - (2) The mitigation area abuts or is within a protected resource;
  - (3) If the mitigation area is within a protected resource, mitigation will be provided for all resource values lost, including those lost in the protected resource as part of mitigation efforts.
  - (4) All detrimental impacts on resource values listed in Table 2-3 of the Natural Resources Protection Plan for the Columbia South Shore for the site on which the use or activity is taking place will be replaced at the mitigation site;
- d. The maintenance plan insures the maintenance and protection of resource mitigation areas and associated functions and values for 5 years after success has been achieved. The 5 year period will begin when the Bureau receives and approves a report from the applicant which describes the manner in which mitigation success has been achieved. Success shall be defined in the approved mitigation plan to include:
  - (1) Full achievement of required resource values; and
  - (2) Compliance with development standards of Section 33.515.278.
- e. Except for public improvement projects undertaken by the City, a performance guarantee which meets the requirements of Section 33.700.050, Performance Guarantees, for construction, monitoring, and maintenance of the mitigation site in accordance with the mitigation plan will be filed with the City Auditor prior to issuance of any development or building permit.

## ADJUSTMENTS

One criterion for approval would be added to the adjustment criteria of Section 33.805.040, subsections A-E for natural resource protection regulations in the Columbia South Shore. It addresses objectives of protecting identified resources and resource values through the reduction of initial impacts

### AMENDMENTS TO CHAPTER 33.805, ADJUSTMENTS (additions are underlined):

#### 33.805.040 A-E...no change

**F.** If in an environmental zone in the Columbia South Shore Plan District, the proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable ;

#### 33.805.040 F-H...reletter to G-I

## DEFINITIONS

The intent of resource enhancement as defined by Title 33 is to allow projects which will improve the quality or quantity of a resource and resource values. The definition of Resource Enhancement implies that water quality projects can be resource enhancement, if it improves the resource or its values. As such, they can be allowed by the Plan within a protected resource or transition area with review. The proposed amendment to the definition of Resource Enhancement clarifies this.

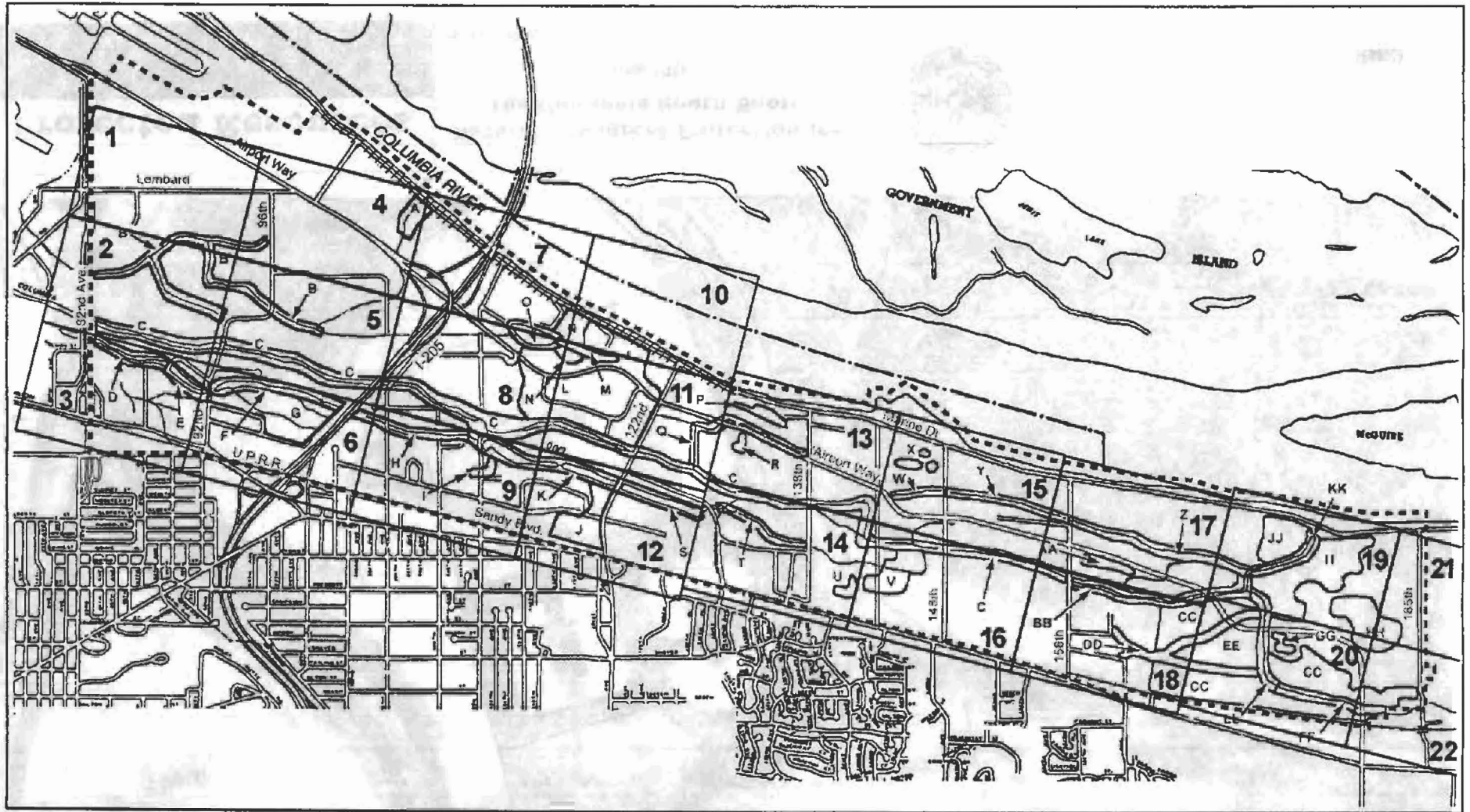
### AMENDMENTS TO CHAPTER 33.910, DEFINITIONS (additions are underlined):

**Resource Enhancement.** The modification of a natural resource or resources to improve the quantity or quality of the resource and resource values. It can include actions that result in increased animal and plant species, increased numbers of types of natural habitat, and/or increased amount of area devoted to natural habitat. It may also include improvements in scenic views and sites, increased capacity for stormwater detention, changes in water quantity or quality, or other improvements to resource values. A resource enhancement project must result in no loss of any functional resource values, and the gain of at least one.

## Resource Boundaries



Appendix C

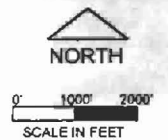


**Figure C-1**

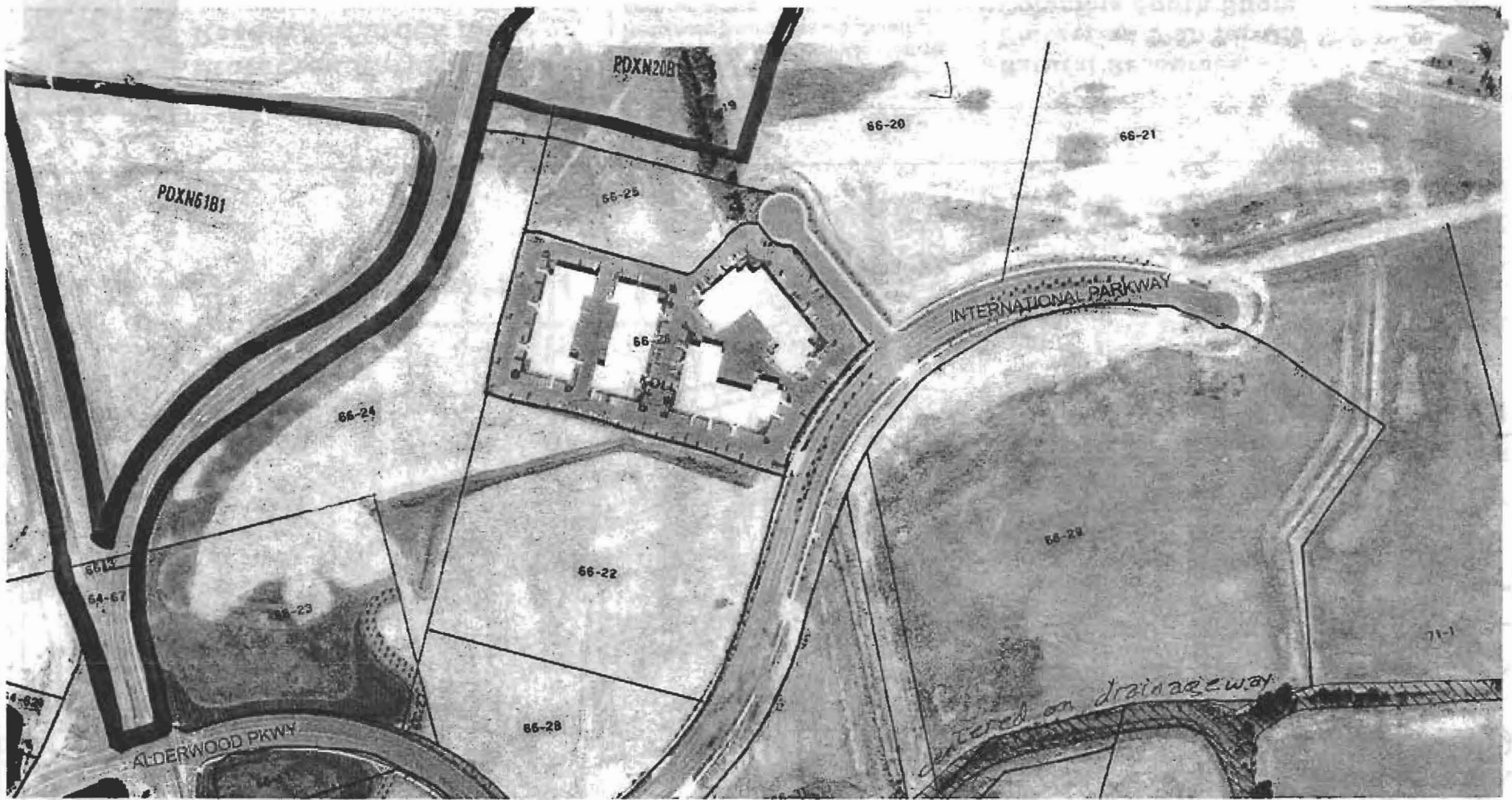
**Protected Natural Resources Index Map**

NOTE: Outlined areas refer to locations of aerial maps. Only Protected Natural Resources Boundaries are shown on each aerial map.

**Natural Resources Protection Plan for the Columbia South Shore**







# Protected Resources

## Map 1 of 22

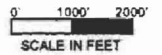
### Natural Resources Protection for the Columbia South Shore

June 2000

(Plan adopted November 1993.)



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Bureau of Planning





# Protected Resources

## Map 2 of 22

### Natural Resources Protection for the Columbia South Shore

June 2000

(Plan adopted November 1993.)



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SCALE IN FEET



# Protected Resources

## Map 3 of 22

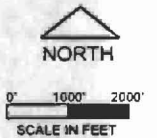
### Natural Resources Protection for the Columbia South Shore

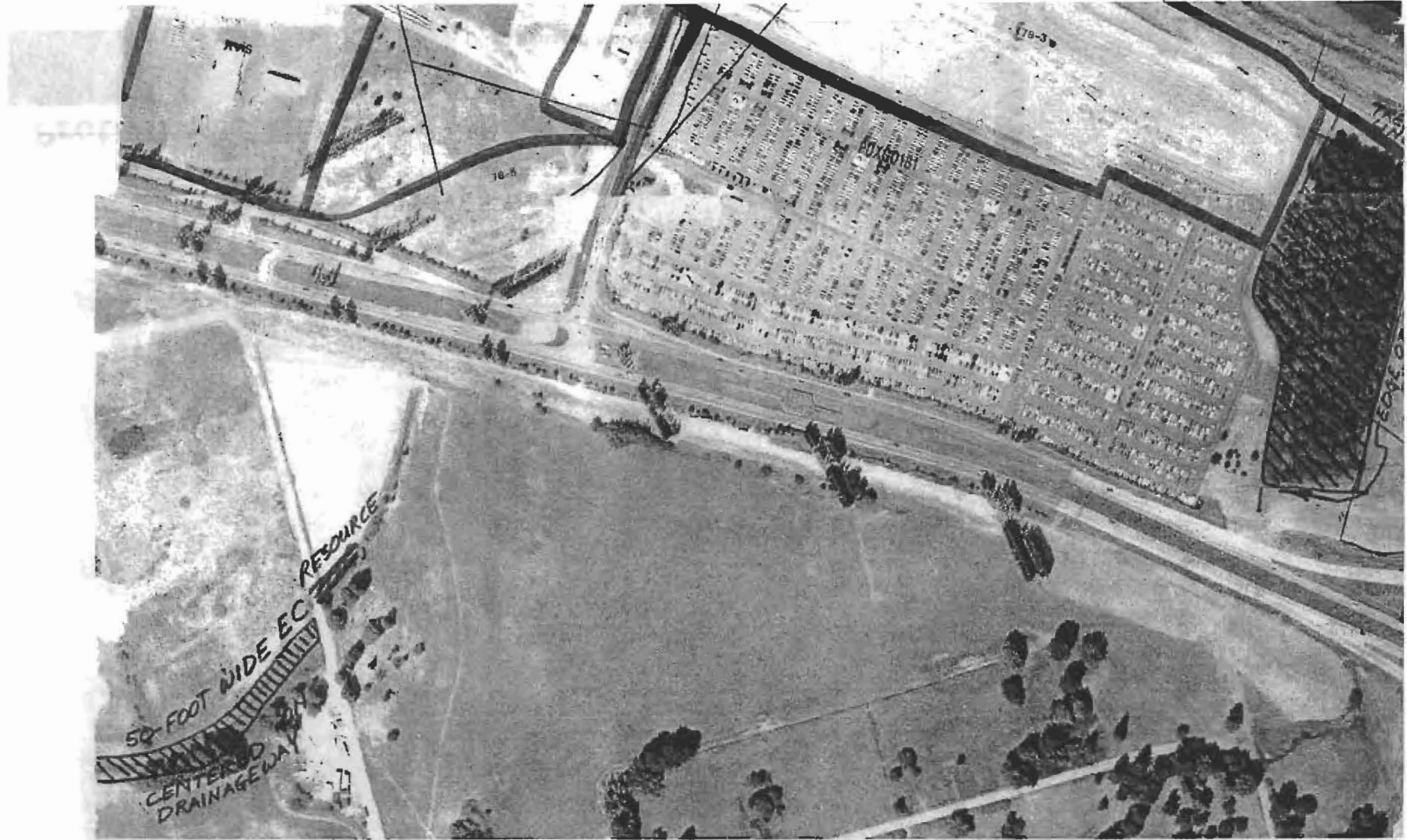
June 2000

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# Protected Resources

## Map 4 of 22

### Natural Resources Protection for the Columbia South Shore

June 2000

(Plan adopted November 1993.)



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# Protected Resources

## Map 5 of 22

### Natural Resources Protection for the Columbia South Shore

June 2000

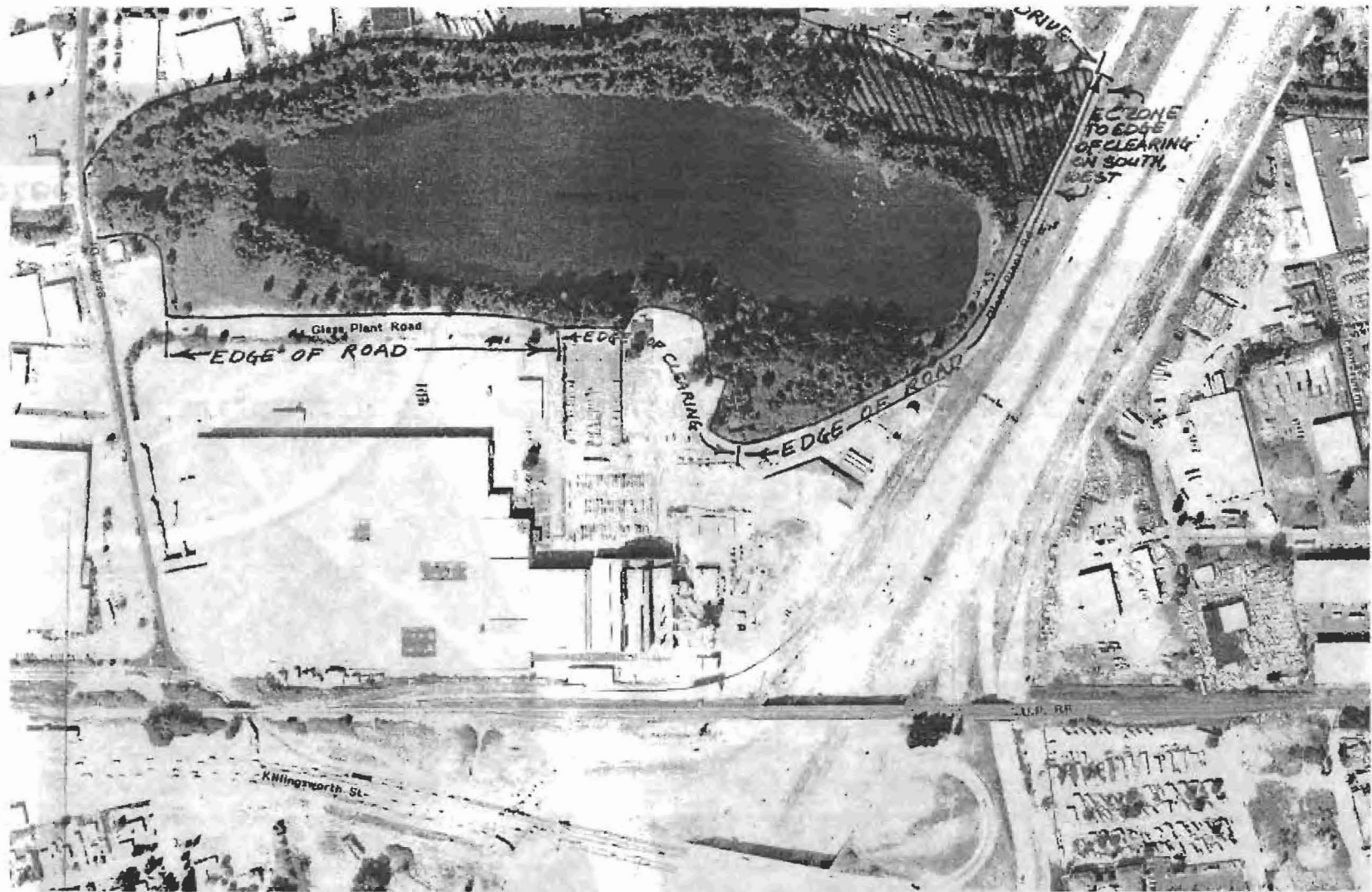
(Plan adopted November 1993.)



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# Protected Resources

## Map 6 of 22

### Natural Resources Protection for the Columbia South Shore

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(Plan adopted November 1993.)



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# Protected Resources

## Map 7 of 22

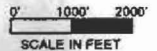
### Natural Resources Protection for the Columbia South Shore

June 2000

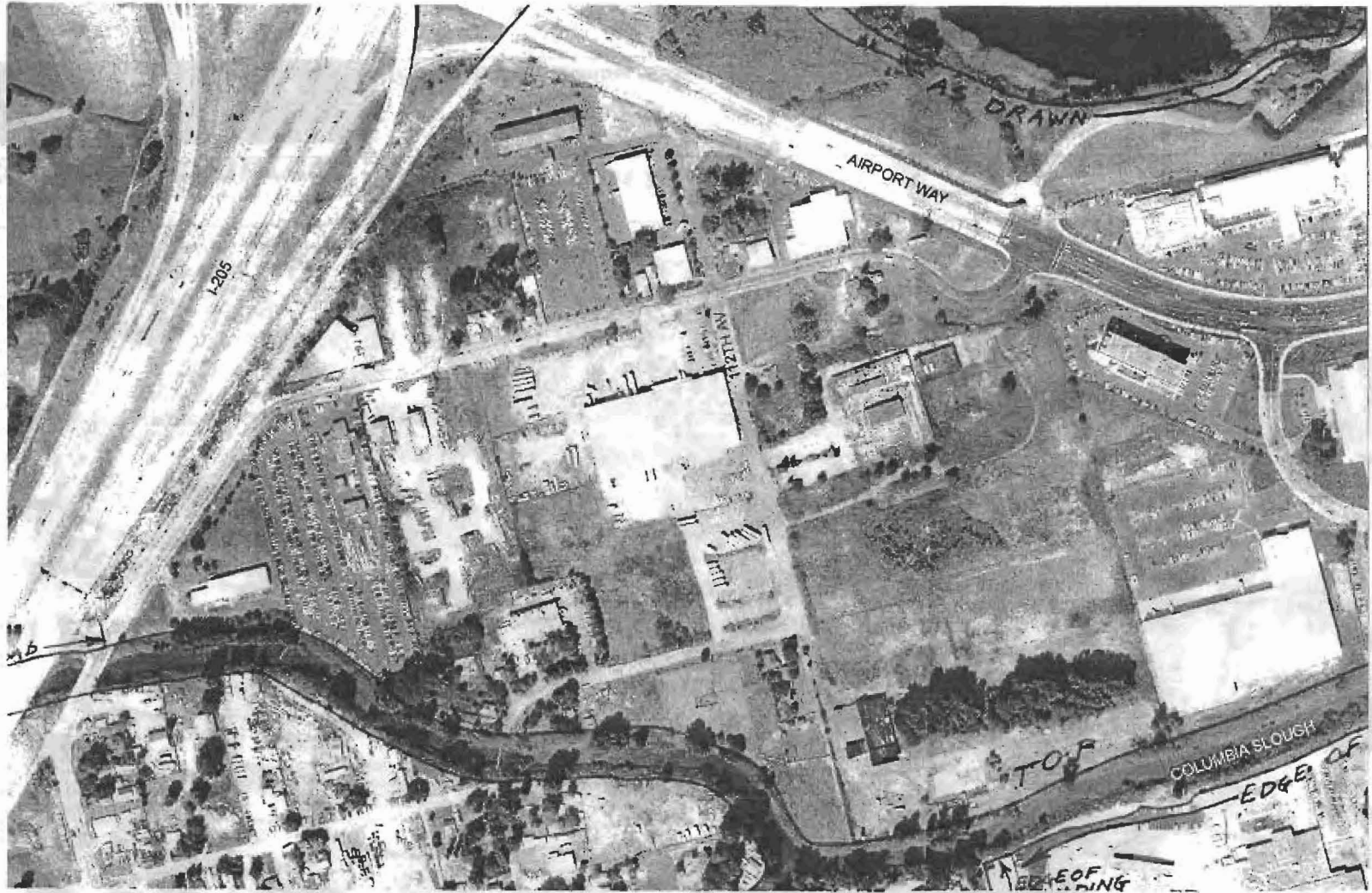
(Plan adopted November 1993.)



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# Protected Resources

## Map 8 of 22

### Natural Resources Protection for the Columbia South Shore

June 2000

(Plan adopted November 1993.)

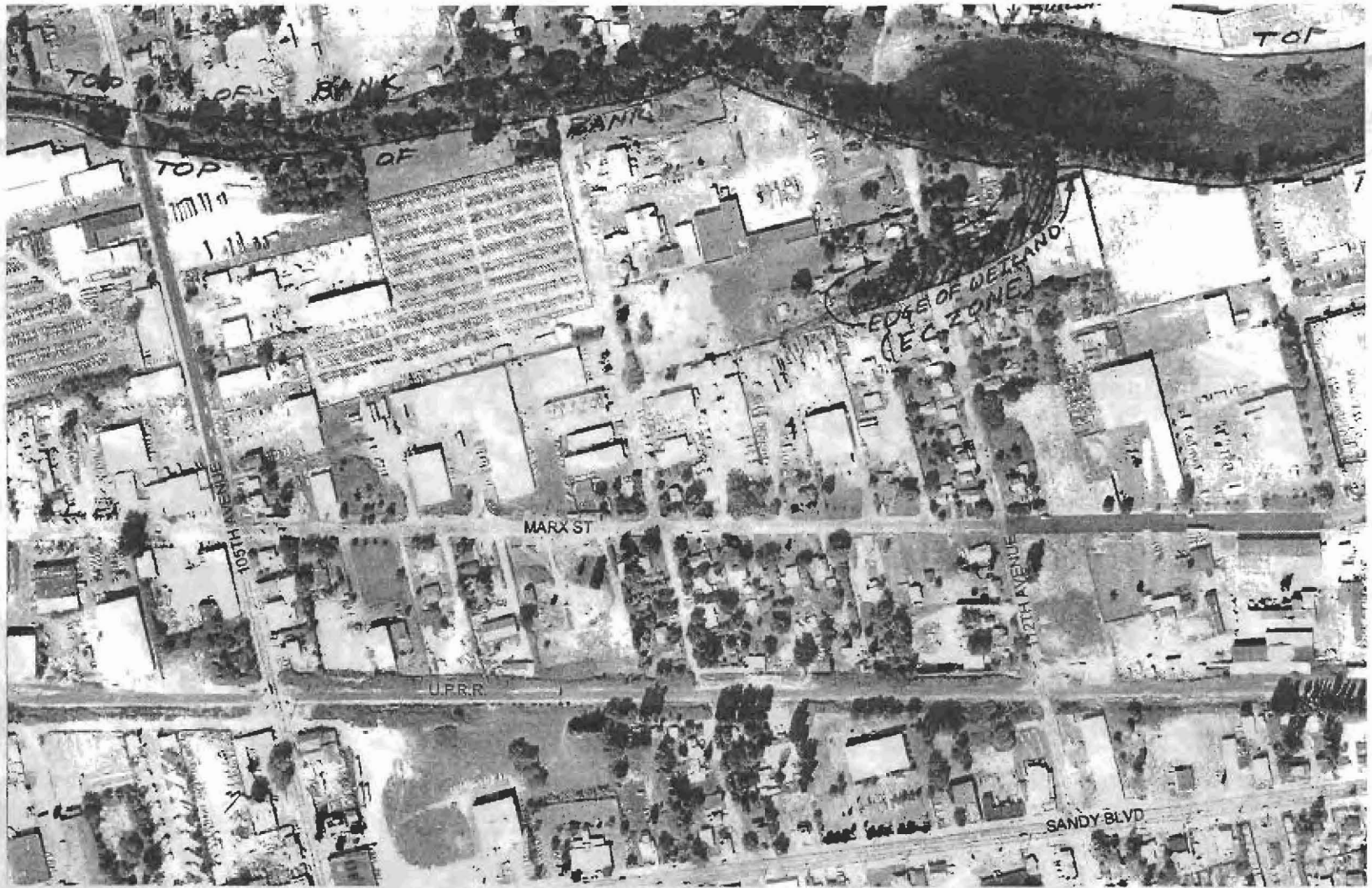


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# Protected Resources

## Map 9 of 22

### Natural Resources Protection for the Columbia South Shore

June 2000

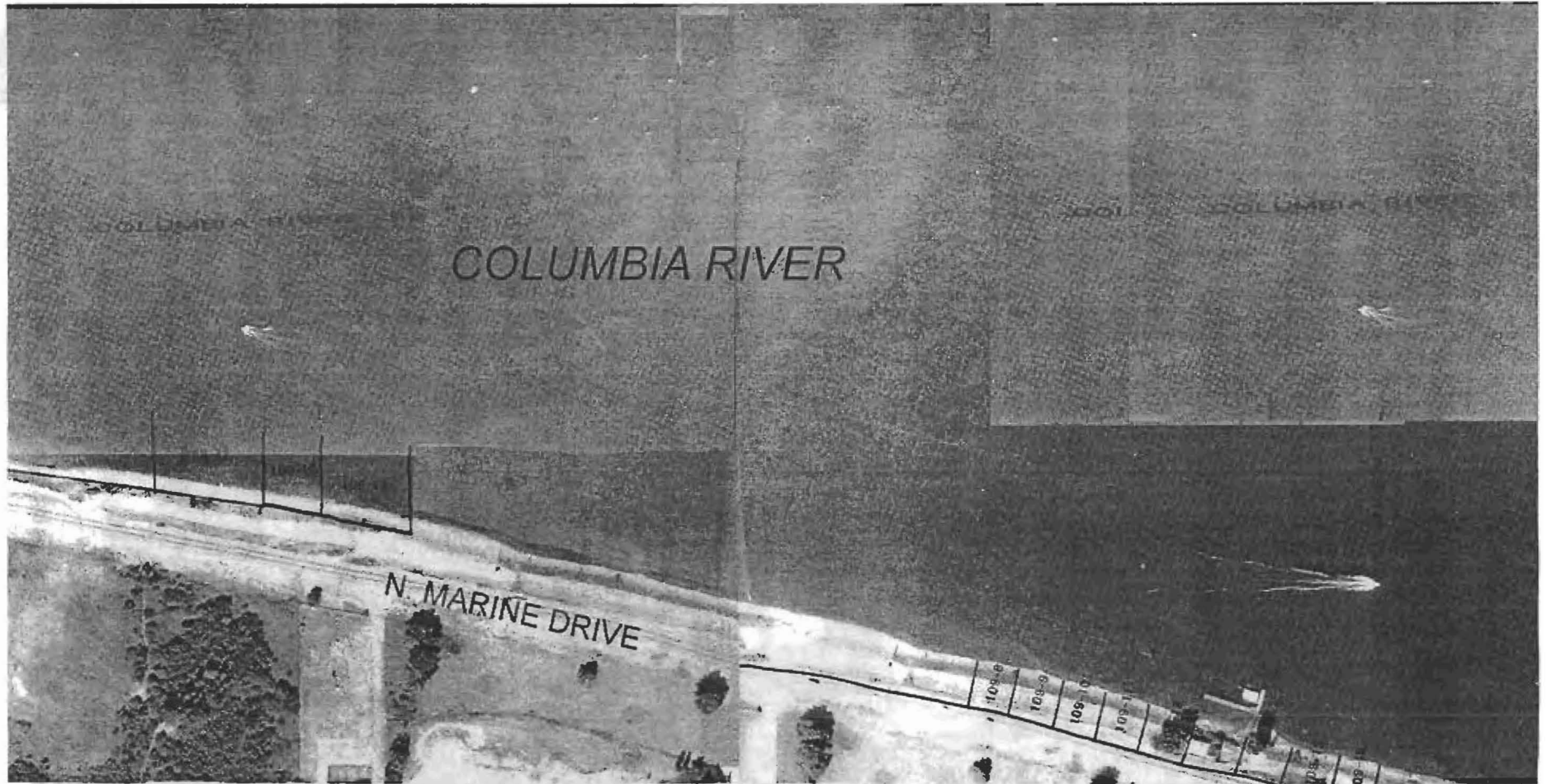
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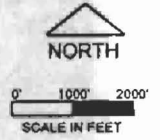


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<p><b>Protected Resources</b></p> <p>Map 10 of 22</p>	<p><b>Natural Resources Protection for the Columbia South Shore</b></p> <p>June 2000 (Plan adopted November 1993.)</p>	 <p>City of Portland Bureau of Planning</p>	 <p>NORTH</p> <p>0' 1000' 2000'</p> <p>SCALE IN FEET</p>
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# Protected Resources

## Map 11 of 22

### Natural Resources Protection for the Columbia South Shore

June 2000

(Plan adopted November 1993.)


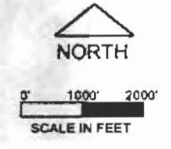


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<p><b>Protected Resources</b></p> <p><b>Map 12 of 22</b></p>	<p><b>Natural Resources Protection for the Columbia South Shore</b></p> <p>June 2000</p> <p>(Plan adopted November 1993.)</p>	 <p>City of Portland Bureau of Planning</p>	 <p>NORTH</p> <p>0' 1000' 2000'</p> <p>SCALE IN FEET</p>
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# Protected Resources

## Map 13 of 22

### Natural Resources Protection for the Columbia South Shore

June 2000

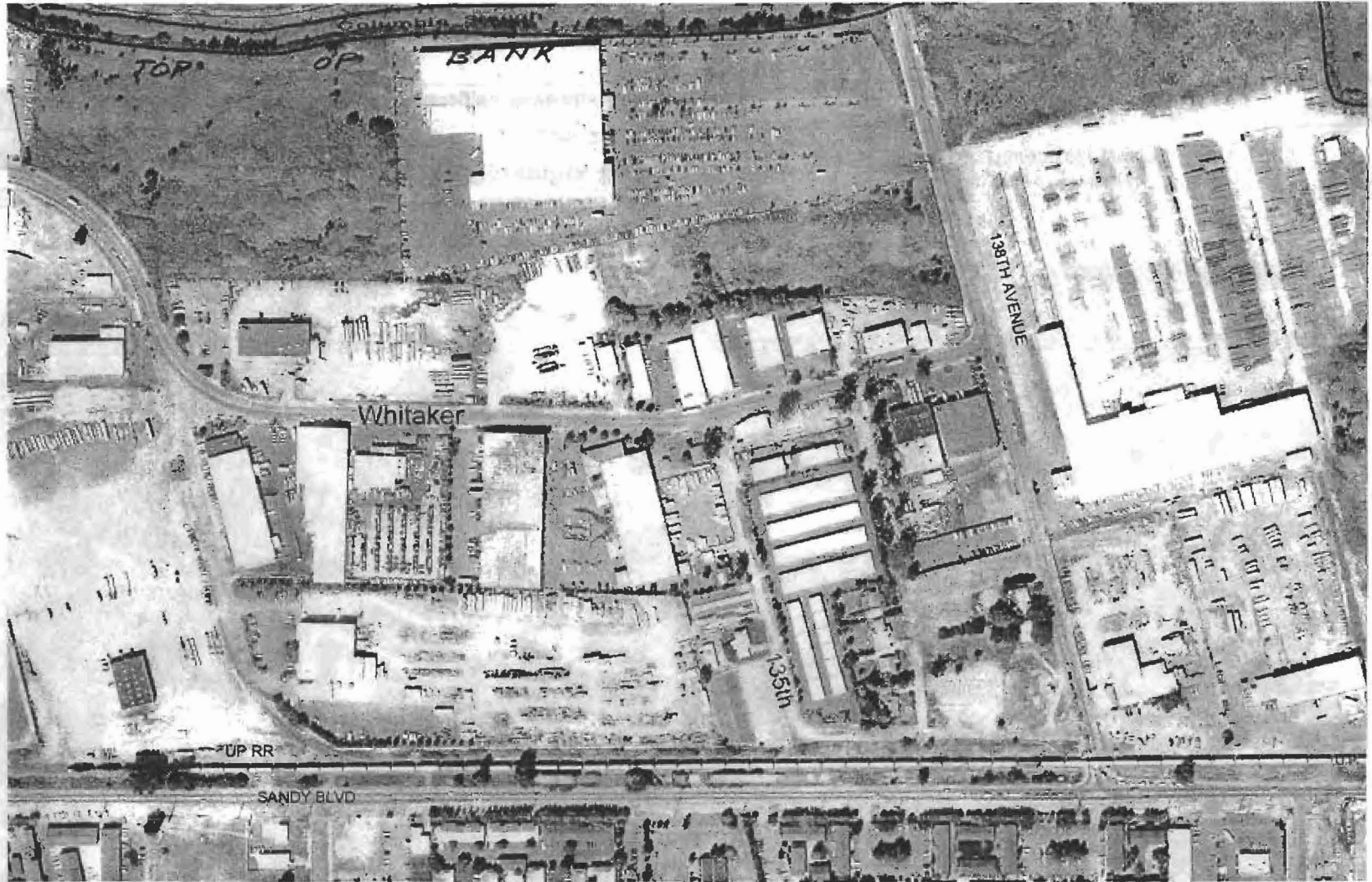
(Plan adopted November 1993.)



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# Protected Resources

## Map 14 of 22

Natural Resources Protection for  
the Columbia South Shore

June 2000

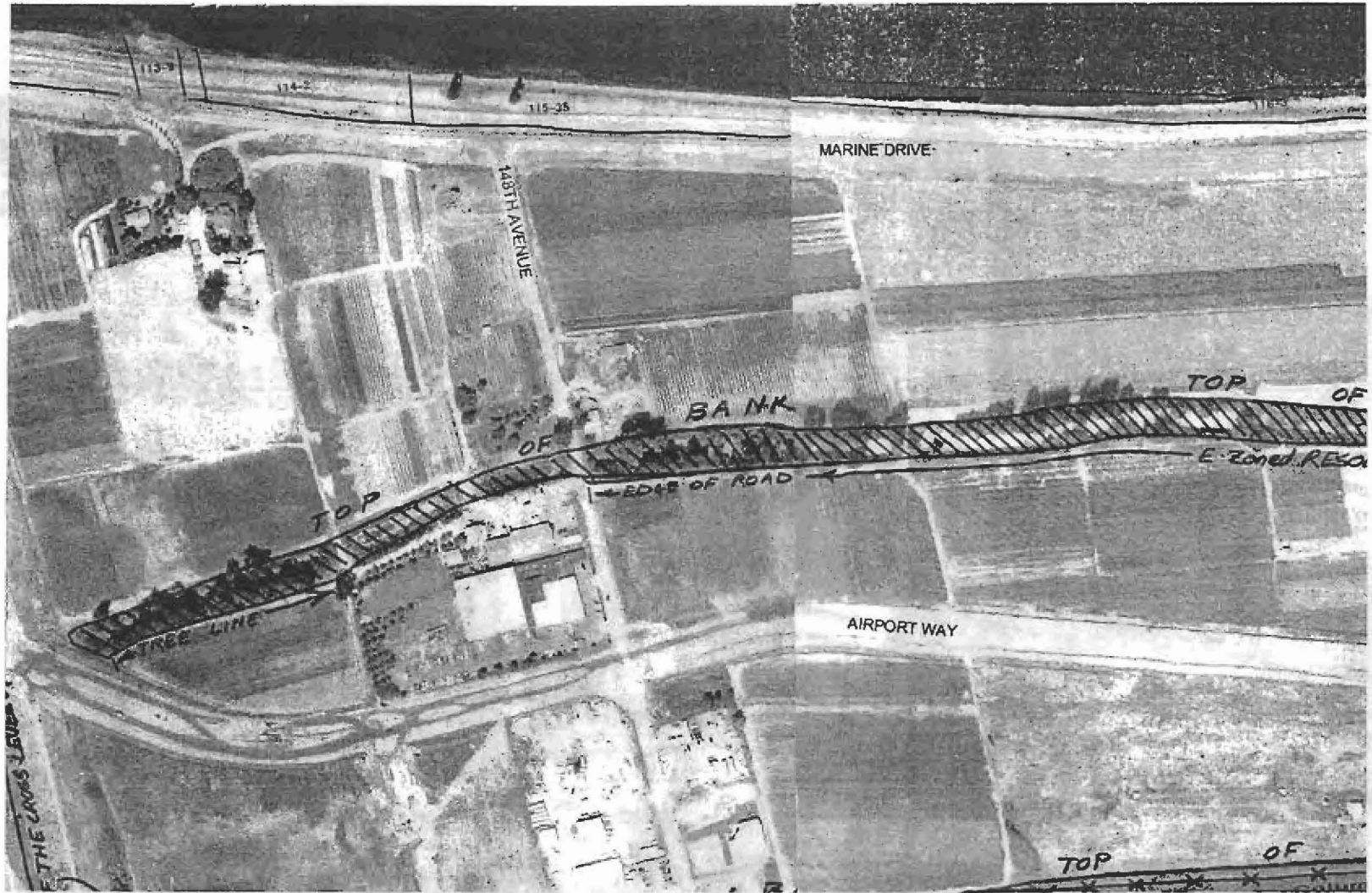
(Plan adopted November 1993.)



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# Protected Resources

## Map 15 of 22

### Natural Resources Protection for the Columbia South Shore

June 2000

(Plan adopted November 1993.)



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# Protected Resources

## Map 16 of 22

Natural Resources Protection for the Columbia South Shore

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(Plan adopted November 1993.)



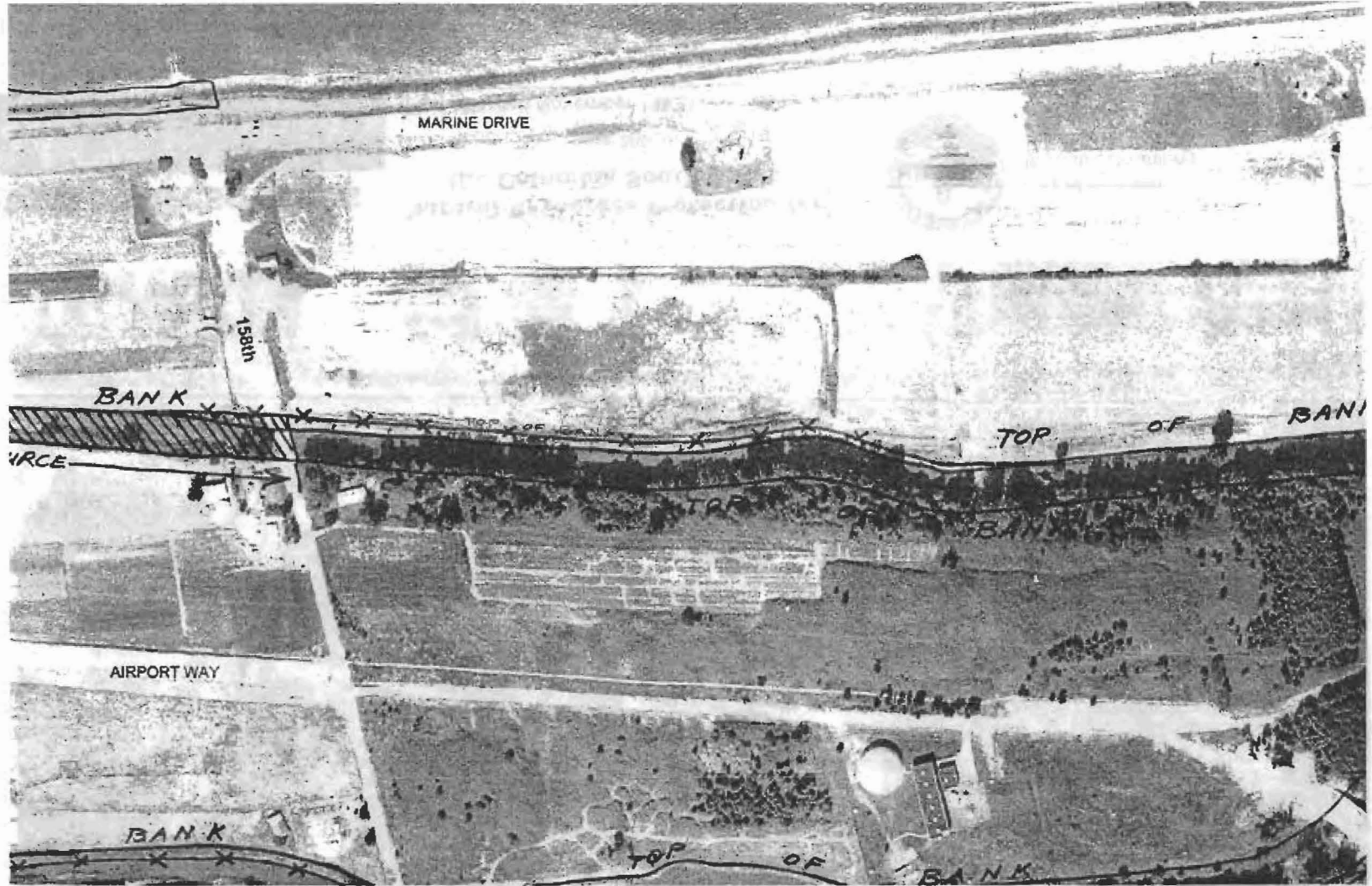
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Bureau of Planning



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# Protected Resources

## Map 17 of 22

### Natural Resources Protection for the Columbia South Shore

June 2000

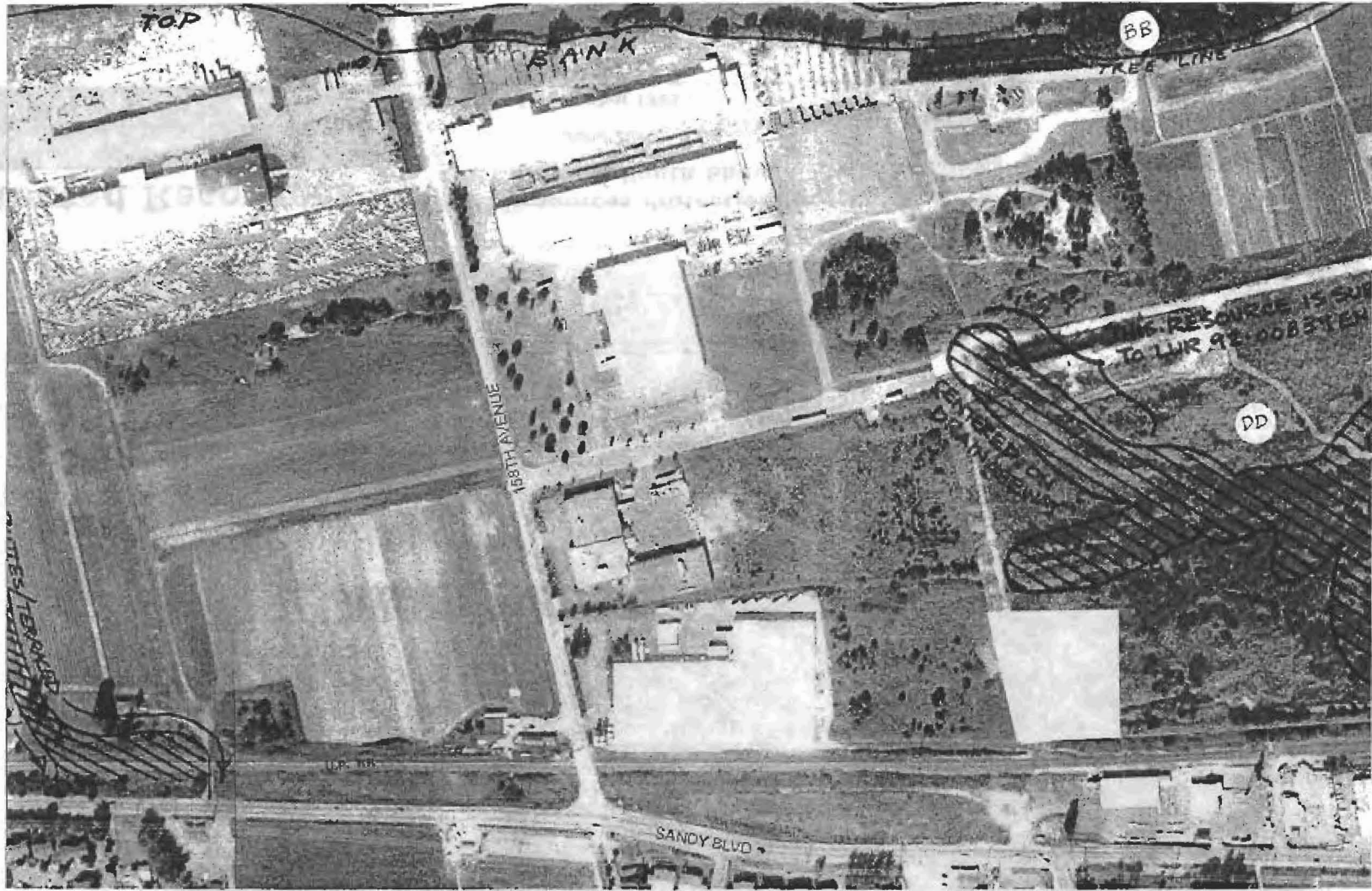
(Plan adopted November 1993.)



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# Protected Resources

## Map 18 of 22

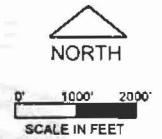
### Natural Resources Protection for the Columbia South Shore

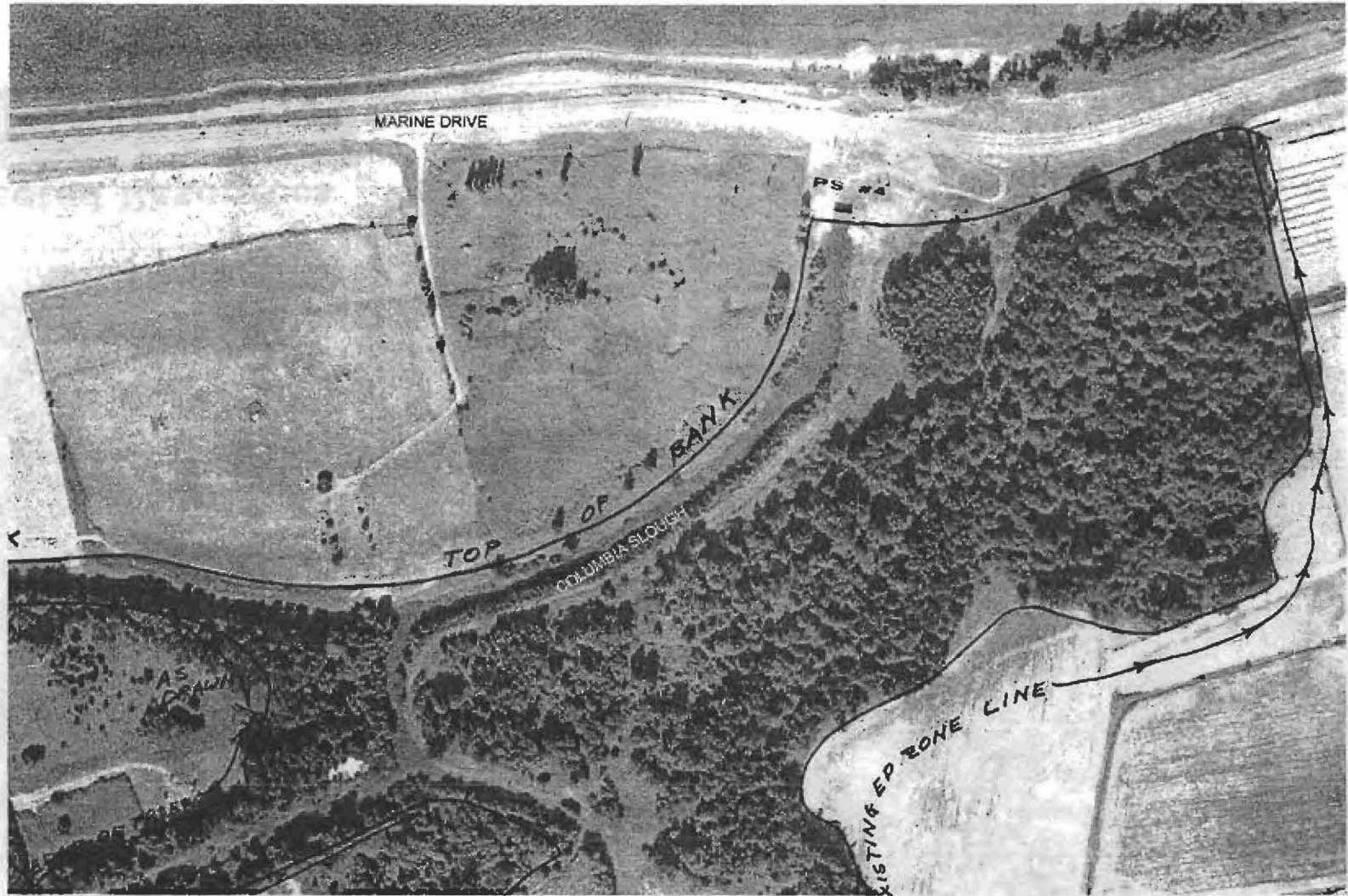
June 2000

(Plan adopted November 1993.)



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# Protected Resources

## Map 19 of 22

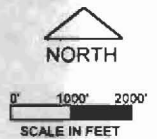
### Natural Resources Protection for the Columbia South Shore

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(Plan adopted November 1993.)



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# Protected Resources

## Map 20 of 22

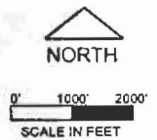
### Natural Resources Protection for the Columbia South Shore

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(Plan adopted November 1993.)



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# Protected Resources

## Map 21 of 22

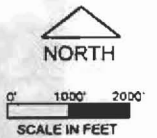
### Natural Resources Protection for the Columbia South Shore

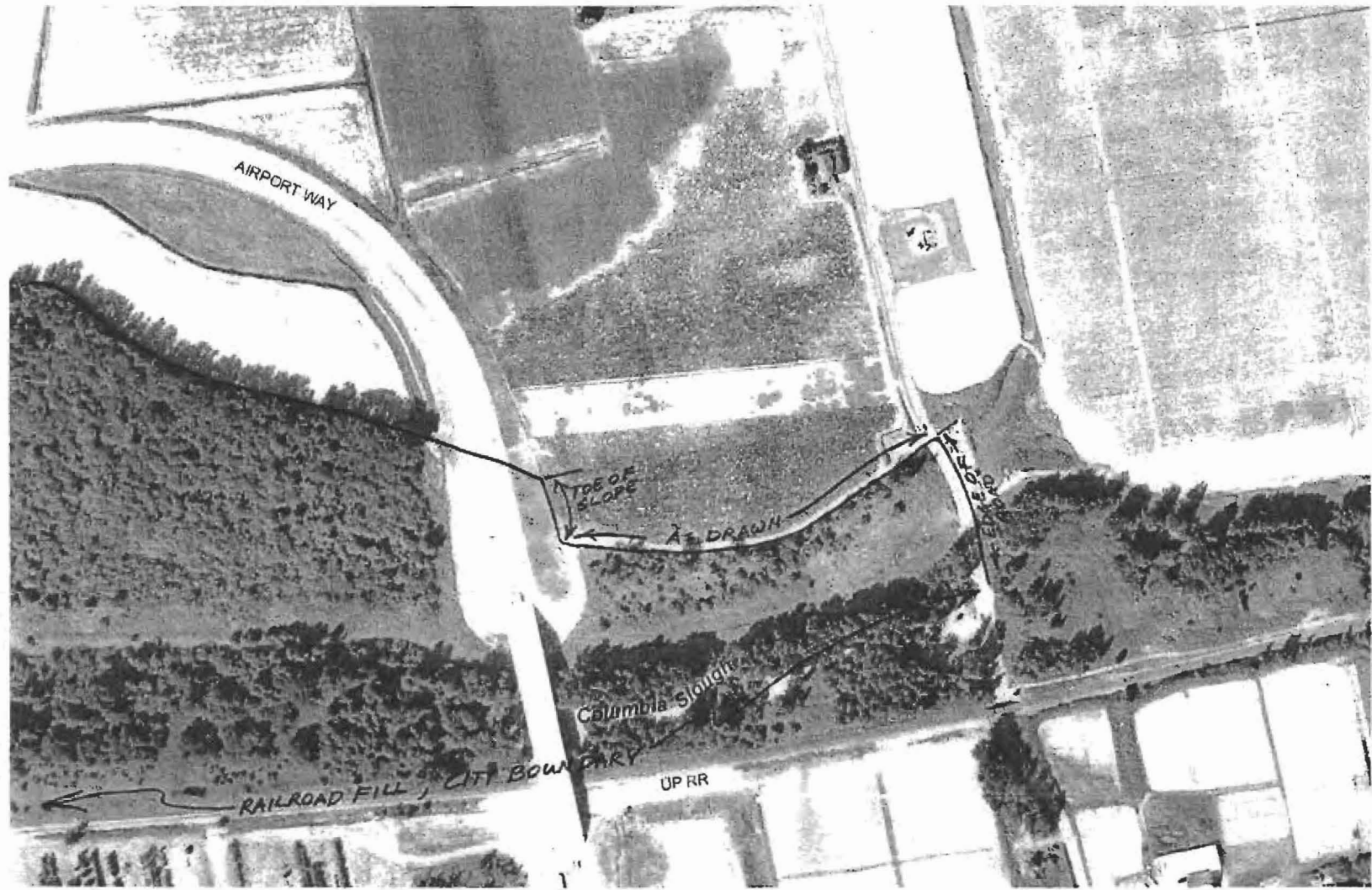
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# Protected Resources

## Map 22 of 22

### Natural Resources Protection for the Columbia South Shore

June 2000

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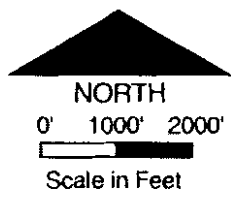
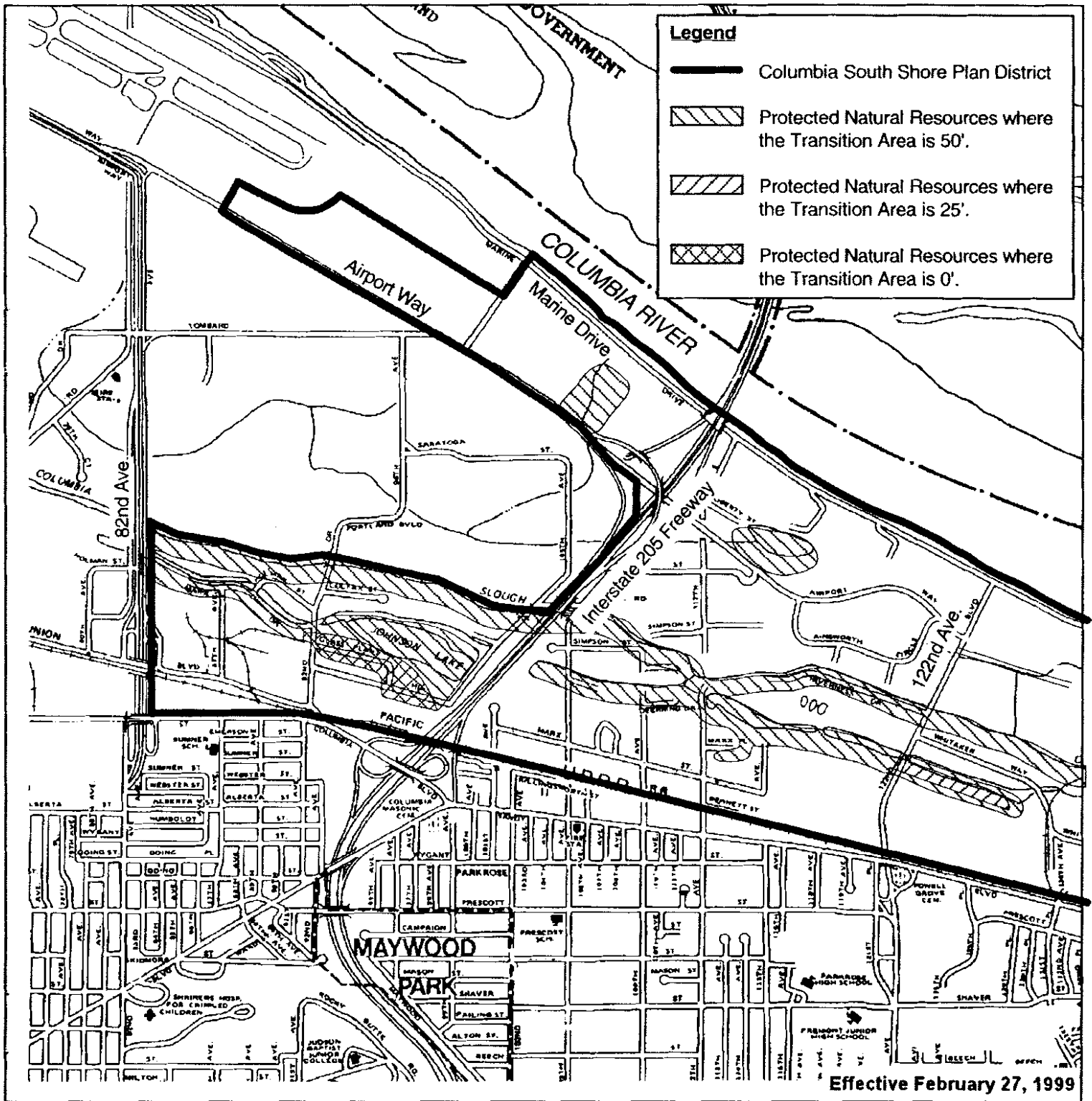


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**Current  
Environmental Zone  
Transition Areas**



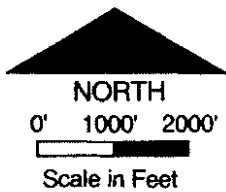
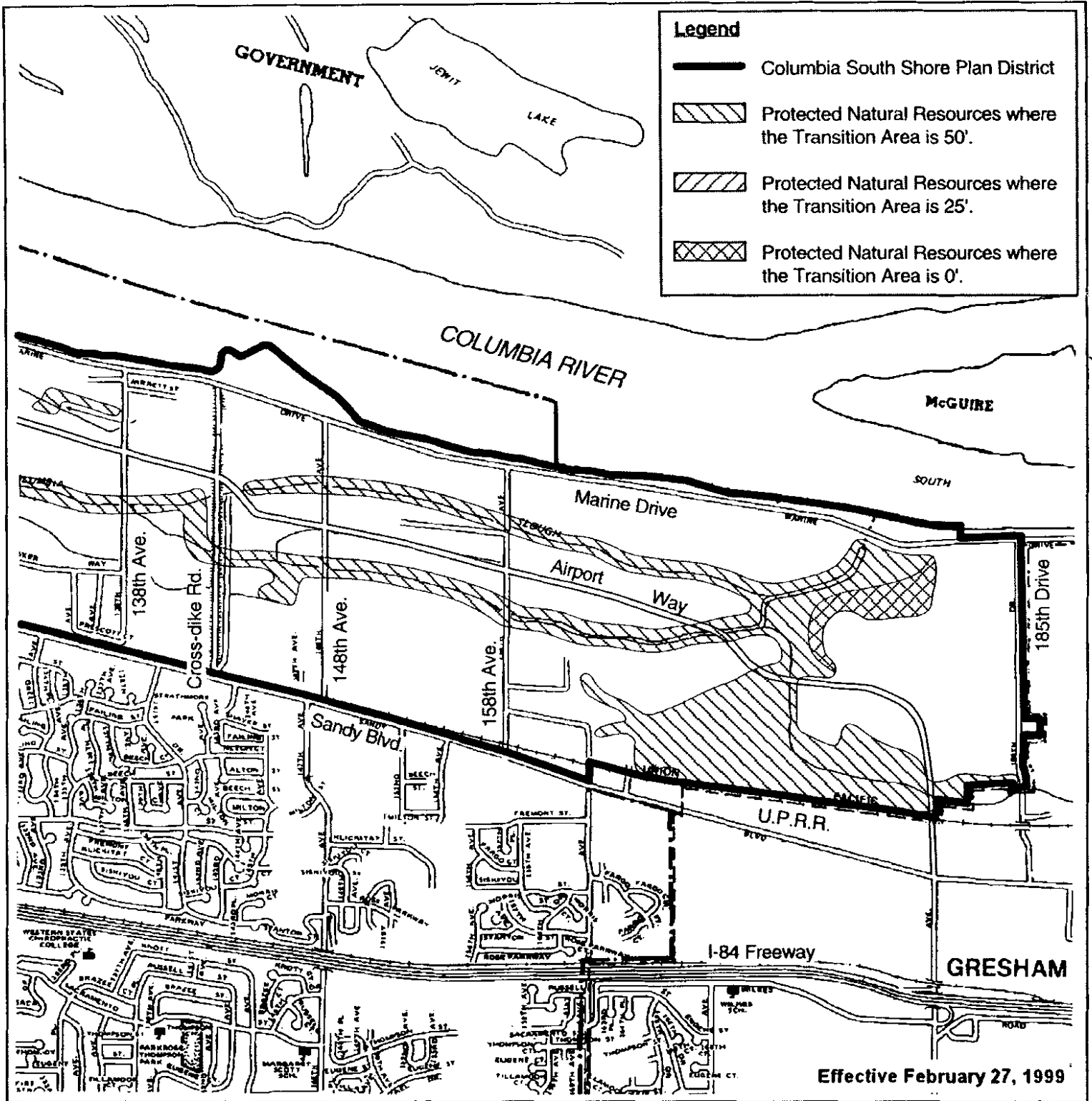
**Appendix D**



Columbia South Shore  
Plan District Boundary

**Map 515-5**  
**Environmental**  
**Transition Areas**  
Map 1 of 2

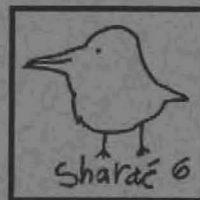




Columbia South Shore  
Plan District Boundary

**Map 515-5**  
**Environmental**  
**Transition Areas**  
Map 2 of 2

**Analysis of Economic,  
Social, Environmental,  
and Energy Consequences  
of Conflicting Uses  
Permitted by the  
Underlying Zone**



**Appendix E**

A copy of Appendix E, "Analysis of Economic, Social, Environmental, and Energy Consequences of Conflicting Uses Permitted by the Underlying Zone," is available for review at the Bureau of Planning. A copy is also stored at the City of Portland archives and can be retrieved for viewing at the Bureau of Planning upon request.