CHAPTER 4
Land Use and Demographics

INTRODUCTION

Land use describes the way humans use the land on an everyday basis. Land use patterns and regulations, development trends, and population characteristics have significant impacts on watershed and waterway health. Nearly all land uses can have a negative impact on water quality. Further, as the land is developed, stormwater is piped to the Columbia Slough instead of seeping into the ground or flowing to streams that formerly fed the Slough. Land use considerations are an important factor in selecting management alternatives that best protect, restore, and enhance natural resources in the Columbia Slough Watershed.

Demographics describe the characteristics of human populations living and working in an area. The demographics of the watershed are important for developing public involvement and educational opportunities that foster stewardship.

WATERSHED OVERVIEW

The Columbia Slough Watershed once contained a vast system of side channels, lakes, and marshes that covered the floodplain of the Columbia River between the mouths of the Willamette and Sandy Rivers. (See the *Map Atlas* for historic maps of the watershed.) High water seasonally inundated the floodplain, cutting new channels and depositing sediment.

Over the years, land use practices and development have drastically altered these historic conditions. Dozens of streams, wetlands, and side channels have disappeared. The remaining major surface water features include Fairview Creek, Fairview Lake, Smith and Bybee Lakes, and the Columbia Slough and its hydrologically connected channels, lagoons, and marshes. Land in the watershed is now primarily used for industry, housing, transportation, businesses, and recreation, with some agriculture still occurring.

LAND USE HISTORY[1]

In its natural state, the Columbia Slough Watershed was the floodplain of the Columbia River. It contained a series of streams, wetlands, marshes, and uplands. The watershed was seasonally inundated by floodwater from the Columbia River. The watershed was primarily used seasonally by Native Americans for fishing, hunting, and gathering food.

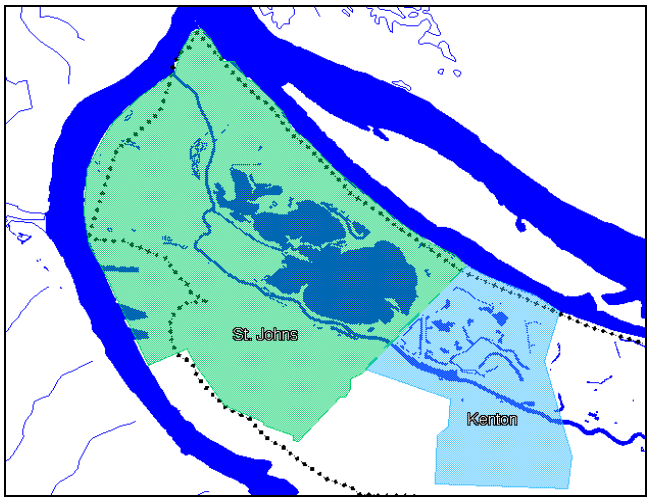
[1] This section focuses on historic events specific to land use and demographics. Chapter 3: A Brief History, provides a broader overview of historic events and conditions in the watershed. Appendix B: Regulatory Background, provides additional information about regulatory requirements that affect the watershed.

Major human alterations began in the watershed following the Lewis and Clark expedition in 1805. As European settlers moved into the region, they drained the watershed and used the land for logging and agriculture and the waterway for rafting logs. By the 1850s, Portland's population had increased to more than 90,000. Industries began to develop along the Slough by the turn of the century, and towns began to grow around Portland's central city. The town of Albina, partly located in the Columbia Slough Watershed, was annexed by Portland in 1891.

Shipbuilding became a major industry in Portland in the early 1900s. By 1920, the U.S. Army Corps of Engineers and Multnomah County Drainage District No. 1 (MCDD) were constructing levees to reduce seasonal flooding, drain the watershed, and encourage development. Large companies developed thousands of acres of wetlands in the watershed. Lumber mills, iron works, a cotton mill, box factories, stockyards, and a meatpacking company were constructed. Most of the waste from these industries was discharged directly to the Columbia Slough.

As industries and businesses moved in, people migrated to the area in search of work. The industrial growth resulted in a need for housing, and the City of Portland began to take an active role in housing planning. The towns of Kenton and St. Johns were prime areas for development and grew quickly (Figure 4-1). St. Johns was annexed by Portland in 1915.

Figure 4-1: St. Johns and Kenton Neighborhoods



The City of Portland approved its first zoning code in 1924. The code included street locations, parking, buildings, sanitation, and utilities, and generally regulated future growth. No open space zones, or codes to protect natural resources, were included. The focus was on protecting neighborhoods by placing industry and manufacturing away from housing. All river frontages, including the Willamette River and Columbia Slough within the city limits, were generally placed in zones for factories and warehouses. Because many sensitive natural resources are found along river frontages, industrial uses in these areas had a large impact on the Slough, including decreasing habitat and displacing wildlife. Many of these new industries also discharged pollutants to the waterway, impairing water quality and fish habitat.

In the 1920s, the automobile made it easier for people to live further away from their jobs. The planning focus began to switch from housing and industry to the transportation system. As more streets were built, increased stormwater runoff and pollution went directly into the Slough. City parks were developed, but most were located in areas other than north Portland.

After World War I, the City of Portland focused on improving services, including sewer and transportation. In the 1930s and 1940s, numerous utilities were placed in the watershed, including Bonneville Power Administration power lines, Portland International Airport (PDX) (Figure 4-2), and sewers along the Columbia Slough and Willamette River. The St. Johns Landfill was located adjacent to Smith and Bybee Lakes, a 2,000-acre wetland area containing many sensitive natural resources. The Columbia Slough Watershed was selected for these services because of its availability of land and distance from the central city.

Figure 4-2: Portland International Airport Construction (1939)

World War II revived Portland's shipbuilding industry and brought in other industries, such as shipping goods. The influx of workers caused a housing shortage, and the Housing Authority of Portland administered construction of the town of Vanport in 1942, which eventually housed roughly 100,000 people (Figures 4-3 and 4-4). Vanport became the country's largest public housing project. In 1948, a levee break along the Columbia Slough caused Vanport to flood, and the town was destroyed (Figure 4-5).

Following the war, Portland planners focused on economic development, including improved transportation, industrial expansion, and suburban development. The available land in the Columbia Slough Watershed was an ideal location for all three. Airport expansion, sewers, and parks were also planned.

Figure 4-3: Vanport Location

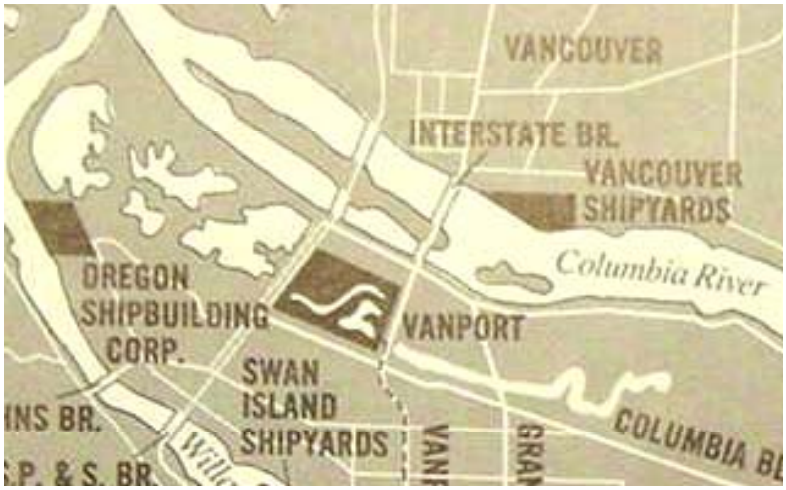
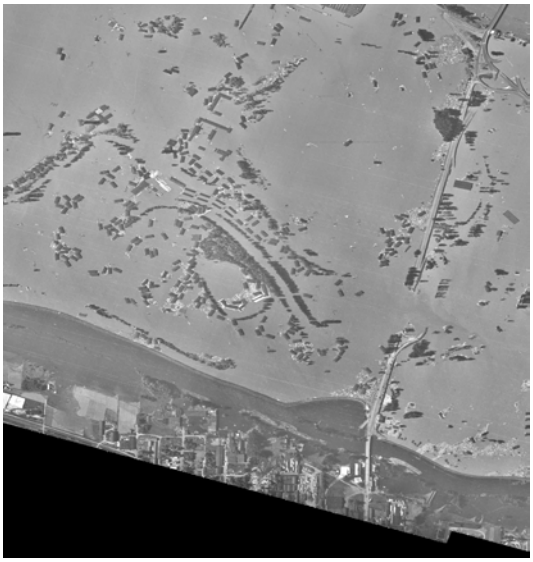


Figure 4-4: Vanport in 1943

Figure 4-5: Vanport 1948 Flood



The City of Portland planned the new suburban communities to have low densities, no nonresidential activities, and no through-traffic. The ongoing development continued to reduce natural habitat, increase impervious surface, and increase pollution runoff into the Columbia Slough.

In the 1950s, Portland began building pipes to take the city's sewage to the Columbia Boulevard Wastewater Treatment Plant. Many sewer pipes were "combined," meaning they carried both sewage and stormwater. Designed to overflow during heavy rainstorms, the combined pipes

discharged a mixture of raw sewage and stormwater (called a combined sewer overflow, or CSO) into the Columbia Slough and Willamette River.

Suburban growth continued in the 1960s and 1970s. Many jobs moved out of downtown Portland; 44 percent of all jobs in the metropolitan area were in the suburbs (Abbott 1983). Land in the Columbia Slough Watershed was available for warehouses, industries, and housing, and development pushed eastward. Interstate 5 opened in 1964, and planning began for Interstate 84 and Interstate 205.

In the 1970s, Governor Tom McCall said, "There is a shameless threat to our environment and to the whole quality of life – unfettered despoiling of the land." Planners began to look at regional issues and natural resources. Senate Bill 100 was formed by the Oregon Legislature, creating Oregon's comprehensive planning program and the Department of Land Conservation and Development. Statewide planning goals were written in 1974, including goals to protect farmland, preserve open space, provide energy-efficient land use, and define an urban growth boundary (UGB). The UGB was designed to contain urban development, protect farmland, and minimize the costs of expanding public facilities. Urban growth, including neighborhoods, businesses, and industries, was to be concentrated within cities, while areas outside the UGB were to remain natural or farmland. The state goals addressed natural hazards, such as flooding, and included regulations to protect air, land, and water. The goals also aimed to protect natural resources of regional value located within city limits, such as Smith and Bybee Lakes.

A number of federal laws were passed in the 1970s to help protect the environment. The Clean Water Act of 1972 required certain industries to acquire a National Pollution Discharge Elimination System (NPDES) permit before discharging waste to a waterway.

The City of Portland adopted its *Comprehensive Plan* in 1980 (with subsequent revisions). The plan provides land use goals and policy guidance for the future growth and development of the City, including sewer and water systems, transportation systems, educational facilities, recreational facilities, natural resources, and air and water quality management programs. Several goals are closely related to watershed planning:

- **Goal 2, Urban Development**, seeks to maintain Portland as a regional employment, population, and cultural center and to expand programs and policies that encourage jobs and housing.
  - This means that development is likely to continue in the Columbia Slough Watershed.

- **Goal 6, Transportation**, seeks to develop an affordable, balanced, and efficient transportation system.
  - This means that major transportation systems in the watershed are likely to expand.

- **Goal 8, Environment**, seeks to improve the quality of Portland's air, water, and land resources and decrease noise pollution.
  - This means that although urban development will continue, the natural resources in the watershed are important, and steps should be taken to protect those resources.

In the 1980s, the City of Portland began to focus on economic redevelopment in north Portland and on bringing people back to the old neighborhoods. The area of focus was the Albina community, containing the neighborhoods of Kenton, Bridgeton, Sunderland, Piedmont, Arbor Lodge, Woodlawn, Humboldt, Overlook, Concordia, Vernon, King, and Beaumont-Wilshire. In 1992, City Council adopted the *Albina Community Plan,* which addresses land use, education, transportation, historic preservation, and family service issues. The Plan calls for:

- A proposed north/south light rail system
- Preservation and management of the environment
- Recognition of the Columbia Slough as a significant natural resource
- Park improvements, community gardens, street trees, and development of brownfields (sites that may have been contaminated by past activities, but can be cleaned up and developed)

This was the first plan of its kind in the watershed, although many other neighborhood and special district plans were developed after the *Albina Community Plan* was adopted. Implementation of the plan has brought high-density housing, businesses and employment, better transportation systems, and open space/parks to the Albina community.

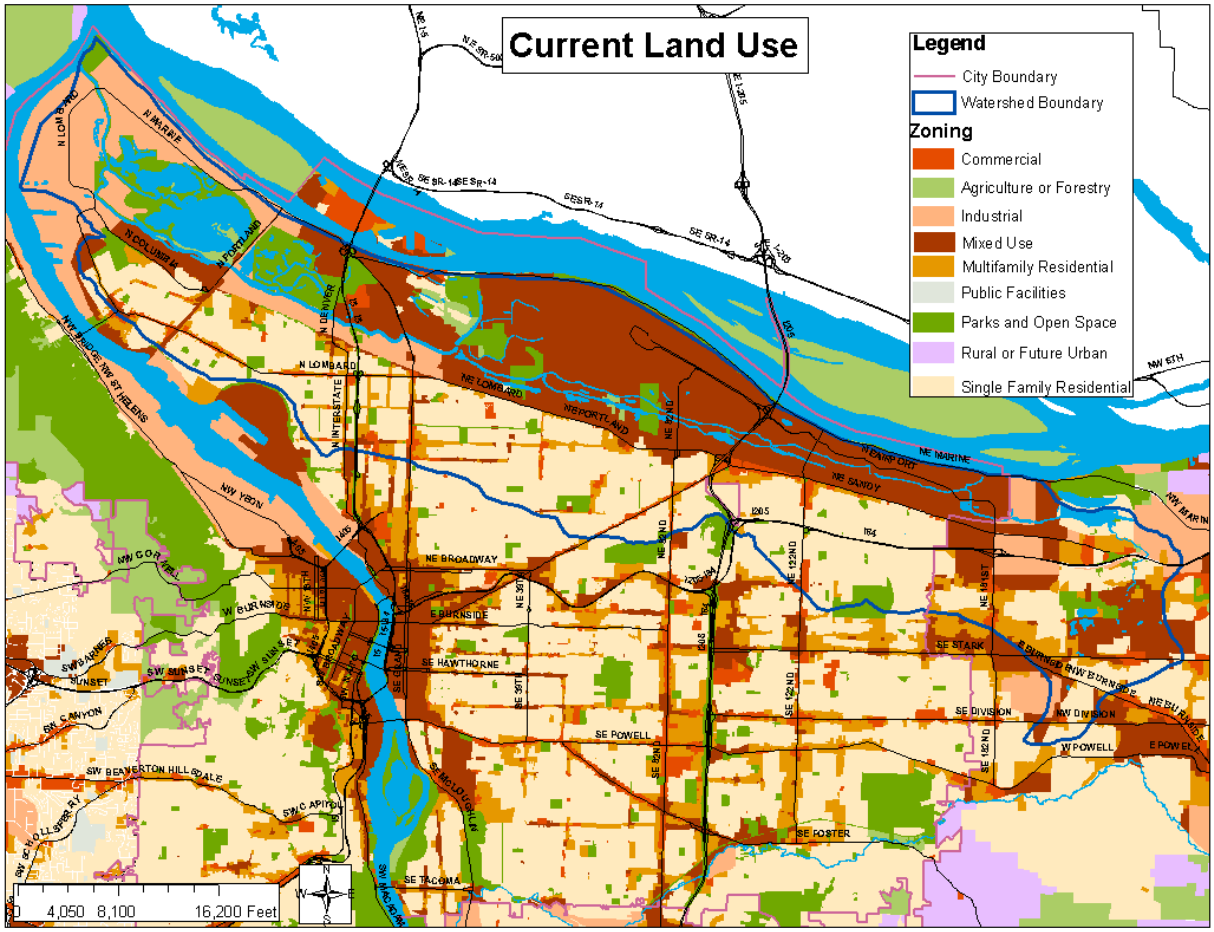
In 1988, the City established environmental overlay zones (e-zones) to protect and conserve natural resources and their functions. The purpose of the environmental overlay zone regulations is to ensure that development is designed to avoid adverse impacts to significant natural resources, where possible, and to ensure that unavoidable impacts are mitigated. Application of the e-zones is based on detailed studies completed throughout the City. The regulations benefit the general public and property owners by preventing erosion, landslides, and flooding and benefit the environment by protecting water quality and wildlife habitat. The City is currently working on an update to its environmental land-use planning program through the *Natural Resources Inventory* update, which may modify e-zones to better protect important riparian resources and upland wildlife habitat. (See Appendix B: Regulatory Background.)

Since 1895, Portland's primary source of drinking water has been the Bull Run Watershed. In the 1960s and 1970s, floods, landslides, and high turbidity revealed the vulnerability of having a single drinking-water source. This, along with a growing population, influenced the City's decision to secure an additional water resource. In 1974, the Bureau considered three alternatives: groundwater, Columbia River water, or Willamette River water. In 1985, the City completed initial construction of the Columbia South Shore Well Field, and in 1987, the City adopted a well field protection plan to protect the drinking water wells from possible industrial contamination. (See Chapter 5: Stream Flow and Hydrology Characterization, for more information about the well field.)

CURRENT AND FUTURE LAND USE

The Columbia Slough Watershed includes virtually every type of land use: residential neighborhoods, agriculture, Portland International Airport, large open spaces, 54 schools, interstate highways, railroad corridors, and heavy and light industries. Figure 4-6 shows general land use in the watershed.

Figure 4-6: General Land Use in the Columbia Slough Watershed (2001)



In general, the portion of the watershed north of Columbia Boulevard is industrial and commercial. The area south of Columbia Boulevard is largely residential. The eastern portion of the watershed has agriculture areas that have been rezoned for commercial and are quickly developing into commercial/industrial uses. Development in the west and central portions of the watershed, from the confluence of the Willamette and Columbia Rivers to Interstate 205, has been influenced by the proximity to major air, water, rail, and truck transportation routes. The result of this development is that about 54 percent of the watershed now comprises impervious surfaces, such as roads, parking lots, and rooftops (Evonuk 1999).

Approximately 3,900 businesses and 57,000 jobs are located in the watershed. An industrial sanctuary is located in the Columbia South Shore area between NE 82nd and NE 185th Avenues north of Sandy Boulevard. (An industrial sanctuary encourages the growth of industrial activities by preserving industrial land through zoning primarily for manufacturing purposes.) Many industries are also located north of Columbia Boulevard and in the Rivergate area. These industries contribute significantly to the region's economic prosperity. The Columbia Corridor, which includes the area from Columbia Boulevard/Sandy Boulevard to the Columbia River and from the Willamette River to the Sandy River, is home to nearly 10 percent of the jobs in the

Greater Portland Metropolitan statistical area (a six-county area in the Portland region) (Columbia Corridor Association 2004).

Zoning is the legal designation placed on the land that determines what types of land uses can be developed on specific pieces of property. For instance, a residential zone might allow not only residential development, but also certain types of commercial uses, such as grocery stores. The houses and stores built in that zone are the land uses. Each type of land use will have specific impacts on the environment; these will be discussed later in this chapter. Table 4-1 shows current (2001) and projected future (2040) land uses by zoning category and acreage. The acreage of land uses relates to the magnitude of impacts from those specific land uses.

Table 4-1: Columbia Slough Watershed Zoning

Zoning Category	Current (2001)		Future (2040)	
	Acreage	Percent	Acreage	Percent
Agriculture or Forestry	626	2%	603	2%
Commercial	934	3%	1,252	4%
Industrial	3,902	12%	1,138	3%
Mixed Use	10,718	33%	12,155	37%
Multifamily Residential	2,053	6%	3,466	11%
Parks or Open Space	3,796	12%	3,591	11%
Single Family Residential	10,756	33%	10,580	32%
Total	**32,785**	**100%**	**32,785**	**100%**

Source: Metrodata 2001

The decrease in industrial land is a result of areas being rezoned for mixed use, multifamily residential, and single family residential.

TRANSPORTATION LAND USES

The Columbia Slough Watershed is a transportation hub, containing roadways, railway lines, Portland International Airport, and Port of Portland marine terminals in Rivergate. I-5, I-205, I-84 and Highway 30 all cross the watershed, and major local arterials include NE Interstate Avenue, NE Lombard Street, NE Columbia Boulevard, NE Marine Drive, and NE Sandy Boulevard, among others.

Roadways have a significant impact on the watershed. Impervious surface increases the amount of stormwater runoff that occurs. Automobiles deposit oil, grease, dirt and brake dust, trash, vehicle parts, and heavy metals such as copper, lead, and zinc on the roadways. When it rains, stormwater picks up these pollutants and transports them via pipes to the Columbia Slough. In some areas of the watershed, water quality facilities (WQF) have been constructed. Stormwater enters these facilities for treatment before entering the Slough. Treatment consists of slowing the water down to allow particles to settle out. Some treatment facilities have filtering capabilities as well. In a few cases, the stormwater is conveyed in open ditches instead of pipes, which can slow the velocity and allow some pollutant filtering to occur. (See Chapter 8: Public Health and Safety, for a description of the stormwater infrastructure system; see Chapter 6: Water and Sediment Quality Characterization, for a discussion of water quality parameters in the Slough.)

Roadways also serve as significant barriers to water flow and safe movement of wildlife throughout the watershed's habitats. Habitat connectivity is important to wildlife health in the watershed. Large habitat areas and wildlife corridors become disconnected when a roadway bisects them. Furthermore, many of the roads crossing the Slough were built with fill and culverts instead of bridges. Culverts that are too small or installed too high impound water, causing water quality impacts, and can become fish and macroinvertebrate passage barriers. Bridges mitigate many of these impacts, while also providing safe passage under roadways for terrestrial wildlife. (See Chapter 5: Stream Flow and Hydrology Characterization, and Chapter 6: Water and Sediment Quality Characterization, for more information about culverts and impoundments.)

Portland International Airport (PDX), owned and operated by the Port of Portland, is located in the Columbia Slough Watershed. PDX is both a civil and military airport. The civil airport serves scheduled airlines and all types of general aviation. The military airport is Portland Air National Guard Base, which houses airplanes and helicopters. Airport infrastructure involves a variety of facilities for aircraft operations, maintenance, ground service activities, and fueling. A typical airport facility includes terminal buildings; hangers; pavements such as runways, taxiways, exitways, and ramps; vehicle roads; and parking lots.

The impervious surface area increases stormwater runoff volumes; however, pollutant loads depend upon the specific types of activities and best management practices. The Oregon Department of Environmental Quality (DEQ) has issued the Port a 1200-COLS permit for PDX, which contains pollutant benchmarks and best management practice requirements. PDX is in compliance with this permit. The Port has also been issued and is in compliance with a permit that regulates the discharge of deicing and anti-icing stormwater runoff into the Columbia Slough. Deicing and anti-icing materials are biodegradable, but have a very high biochemical oxygen demand (BOD); glycol has a BOD of 10,000 mg/l. When these materials are discharged via stormwater runoff to the Middle Slough, they begin to deplete the dissolved oxygen (DO). The effects are seen mainly in the Lower Slough, as the deicing material slowly moves out of the system with the tides. Since 1997, the Port has implemented best management practices to reduce deicing stormwater runoff to the Columbia Slough. In addition, in 2002 the Port completed the infrastructure needed to manage deicing and anti-icing stormwater runoff in compliance with the waste load allocations in the total maximum daily load (TMDL) for DO. (See Chapter 6: Water and Sediment Quality Characterization, for more information about BOD, DO, and de-icing agents.)

The PDX airfield is approximately 1,735 acres and contains a large expanse of non-forested open area, in addition to two primary parallel runways, taxiways, and associated roads and buildings; however, it is not suitable habitat for terrestrial wildlife. Because of Federal Aviation Administration (FAA) requirements, the Port of Portland was required to develop a Wildlife Hazard Management Plan (WHMP), an integrated and adaptive program to effectively manage risk at PDX by reducing the probability of wildlife/aircraft collisions. The program utilizes a non-lethal approach to discouraging wildlife from using the airfield area and focuses on immediate operational strategies, ongoing applied research, long-term management strategies, and an information and education component. Additionally, an Aircraft Landing overlay zone

limits the heights of structures and vegetation in the area to provide safer operating conditions for aircraft. This has resulted in the filling of wetlands and ditches to remove open, standing water that attracts birds. The Port has mitigated for environmental function losses at other sites throughout the watershed.

LAND OWNERSHIP

Most of the land in the Columbia Slough Watershed, including the riparian area, is privately owned (Table 4-2). Property boundaries in the riparian areas typically extend into the Slough waterway and in some cases actually extend through the Slough and up the opposite bank. Even though the ownership is generally private, Multnomah County Drainage District (MCDD) has jurisdiction by state statute to maintain the Columbia Slough for stormwater conveyance and flood control. This is important because without the levees and pumps to manage flow and flooding, most businesses and industries and many homes could not be located in the watershed and could not get FEMA flood insurance. By statute, MCDD 1 and Peninsula Drainage Districts 1 and 2 have a prescriptive maintenance easement for all Columbia Slough waterways and ditches, including the main channel and all side channels.

The Department of State Lands, which is responsible for implementing wetland regulations, also has jurisdiction over the Columbia Slough below ordinary high-water mark.

A few public easements exist on private land to allow BES to perform restoration and maintenance activities.

Table 4-2: Land Ownership in the Columbia Slough Watershed (2002)

Owner	Acreage	Percent
Private/Other	29,732	79
Port of Portland	4,325	11
City of Portland	2,052	5
Metro	1,399	4
State of Oregon	233	1
Total	**37,741**	**100**

Source: Metrodata
Note: The total acreage for ownership is larger than the total acreage of the watershed (approximately 32,700 acres), based on the topographic boundary. This is because ownership acreage is based on areas of land that generally extend beyond the watershed boundary.

COLUMBIA SOUTH SHORE WELL FIELD

The Columbia South Shore Well Field is the second-largest developed water source in the State of Oregon, with about half the capacity of Portland's Bull Run source. The City of Portland Water Bureau operates this well field, which is capable of producing close to 100 million gallons per day (City of Portland Water Bureau 2003a). Water is drawn from 25 wells in three principal aquifers in a five-square-mile area. Other water purveyors have wells in this general area,

including the City of Fairview and Rockwood Water Public Utility District. The City of Portland wells serve as an emergency backup for the 800,000 people served by the Bull Run source and also provides additional supply during the summer season (City of Portland Water Bureau 2003a).

In July 2003, the Portland City Council adopted a revised *Columbia South Shore Well Field Wellhead Protection Area and Reference Manual*. Among the requirements of the updated plan is that all sumps must be retrofitted to include pretreatment devices by June 30, 2008. The purpose of the pretreatment is to reduce the amount of pollution that has the potential of reaching the groundwater. The City is currently in pre-design for retrofitting 34 sumps. To further protect the groundwater, the City of Portland's *Stormwater Management Manual* prohibits the installation of new sumps in the Columbia South Shore and Cascade Station/ Portland International Center Plan Districts. Also, certain development within the well field regulatory boundary must implement other types of water quality retrofits to protect groundwater quality (Figure 4-7).

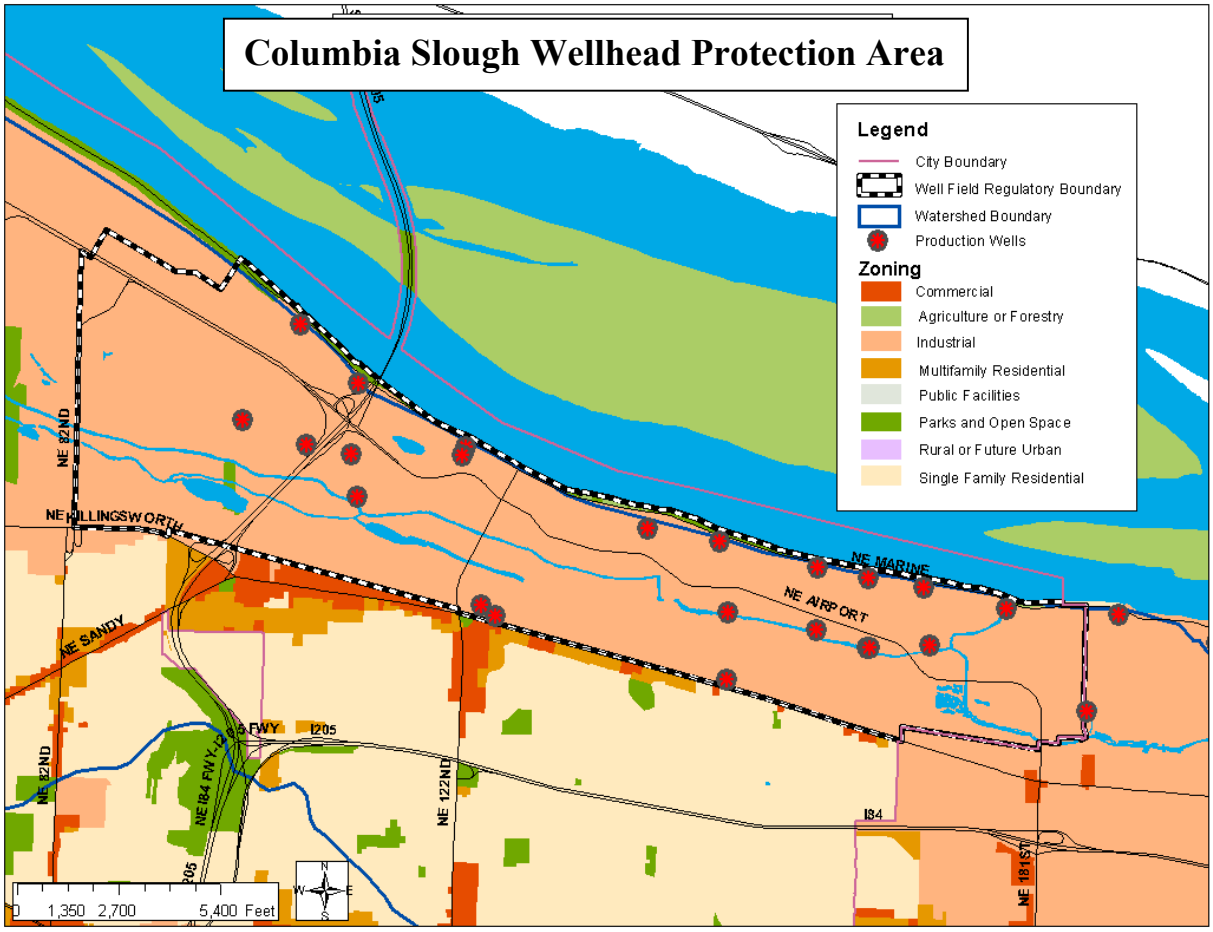
There are numerous businesses and industries located within the well field regulatory boundary. These businesses, which use specified chemicals, must comply with the requirements set forth in the *Columbia South Shore Wellhead Protection Area and Reference Manual*. Some of those requirements include containment areas for chemical loading and unloading, specifications for stormwater management, and best management practices (City of Portland Water Bureau 2003b).

LAND USE IMPACTS ON WATERSHED HEALTH

All of the development, jobs, and people have an effect on the environmental quality in the watershed. As development occurs, the natural topography, hydrology, and vegetation that make up the landscape are altered and replaced with impervious surfaces such as streets, parking lots, and buildings. The impacts of development on the watershed include, but are not limited to:

- Fragmentation and/or loss of habitat
- Increased stormwater runoff, which increase volumes and peak flow to the waterway
- Increased pollutant transport in stormwater to the waterway
- Loss of stormwater filtering by vegetation
- Reduction in shading and cooling of the waterway
- Reduction in rainwater captured by trees and other vegetation
- Loss of wetlands
- Reduction of flood storage capacity
- Displacement of wildlife

Figure 4-7: Columbia South Shore Wellhead Protection Area



Stormwater runoff from streets and parking lots is one of the largest contributors of pollutants to the Columbia Slough. Cars leave behind oil, grease, heavy metals, brake and tire dust, antifreeze, dirt, and garbage as they move on the road. In many areas of the watershed, when it rains, these pollutants are transported to the Slough with little or no treatment. The City recognizes the impacts of stormwater runoff on water quality and has begun to build water quality facilities (WQFs). The WQFs settle out sediments and separate out oil and grease from stormwater before it flows into the Columbia Slough.

Development affects the watershed by encroaching on significant resource areas, such as wetlands, riparian areas, and upland forests. This encroachment decreases the functional values (benefits) of the resources, especially by removing habitat and trees that capture rainwater and shade and cool the Slough. The way development occurs, such as construction practices, can result in sediment and associated pollutants entering the waterway. Opportunities exist to improve how development occurs and reduce impacts to the environment.

The way people use the land is equally important. Fertilizers, pesticides, illegal dumping of trash and hazardous material, removal of vegetation, planting of invasive non-native vegetation, and other activities negatively impact water quality and habitat.

RECREATION

Recreation is one of the long-planned land uses in the watershed. The *Olmsted Parks Plan* of 1903 cited the Columbia Slough as a desirable location for recreational activities, including walking, boating, and horseracing.

The Slough waterway provides excellent canoeing and kayaking, with seven canoe and kayak launch sites. Canoeing from the headwaters to the confluence is possible; however a few portages and paddling through a couple of large culverts are required. (See *A Paddler's Access Guide: Columbia Slough* at http://www.portlandonline.com/ for more canoeing information.)

Numerous trail segments exist within the watershed. The 40-Mile Loop Trail (which will encompass 140 miles of trails throughout Portland when completed) has many sections within the watershed. The Peninsula Crossing Trail, I-205 bike path, Lewis and Clark Greenway Heritage Trail system, and a paved bike path along much of Marine Drive provide hiking and biking opportunities.

Smith and Bybee Lakes Wildlife Area, the Children's Arboretum, Kelley Point Park, six golf courses, and Whitaker Ponds Learning Center provide additional recreational opportunities. Much of the watershed provides excellent wildlife viewing opportunities. Figure 4-8 shows the Smith and Bybee Lakes Wildlife Area, and Figure 4-9 shows the location of the 40-Mile Loop Trail.

Figure 4-8: Smith and Bybee Lakes Wildlife Area

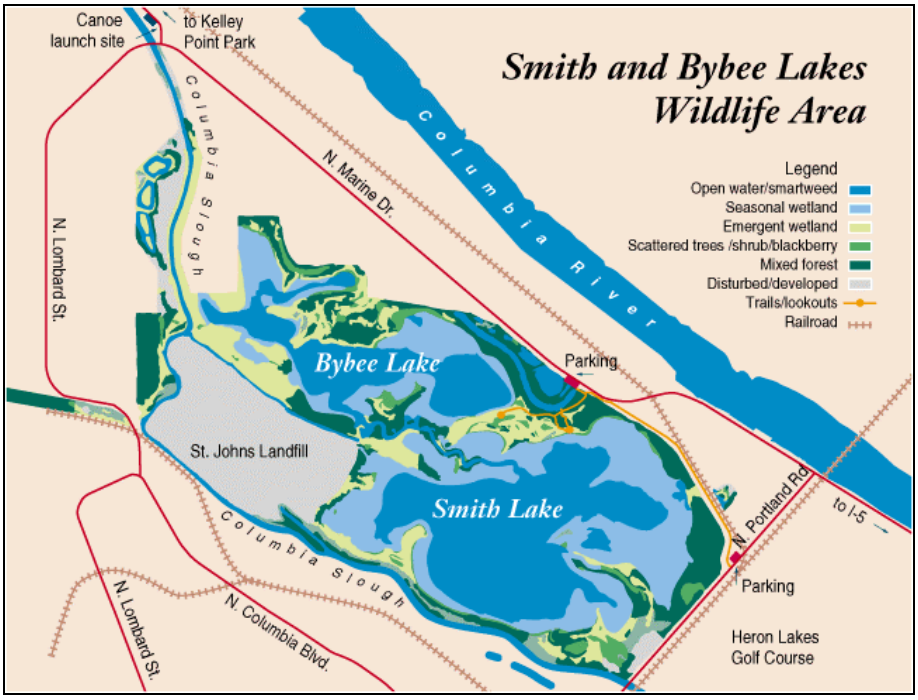
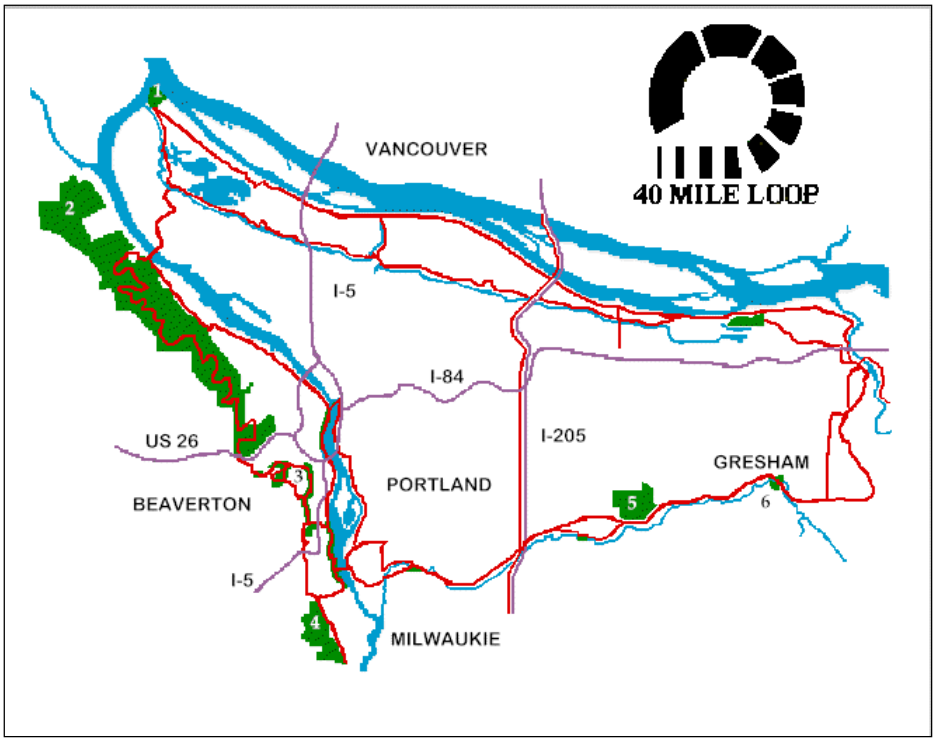


Figure 4-9: 40-Mile Loop Trail



DEMOGRAPHICS

As watershed management alternatives are developed, it is important to understand the watershed's demographics (the characteristics of the people living and working in the area). For example, language and cultural considerations must be recognized in order to provide appropriate opportunities for public involvement in the planning process.

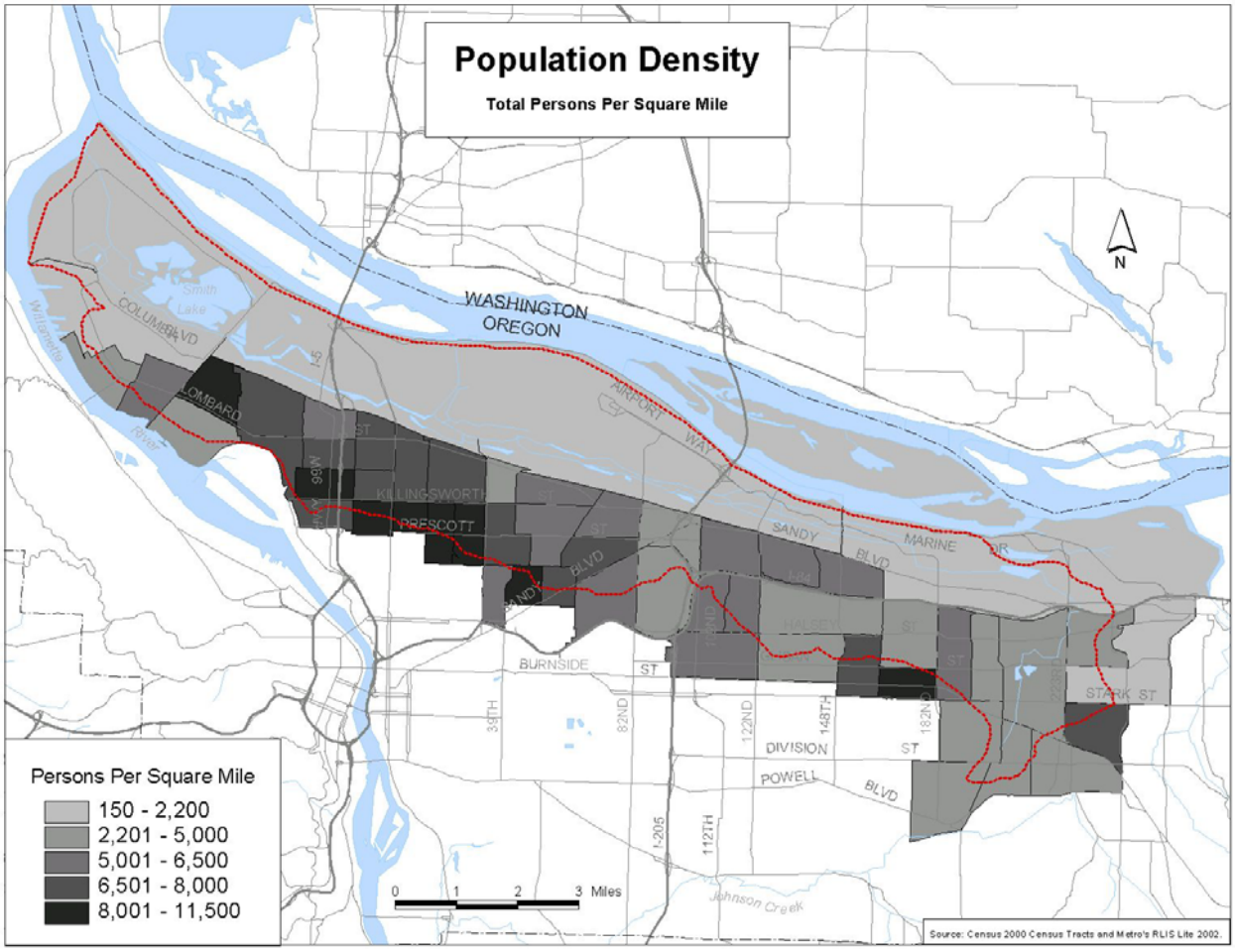
Population and Households

Based on the 2000 U.S. census, the Columbia Slough Watershed has a population of approximately 230,000[2], compared with an overall Portland population of 529,121. The most densely populated area in the watershed is south of Columbia Boulevard between I-205, I-5, and Portland Boulevard (Figure 4-10). The area north of Columbia Boulevard and the Rivergate area are primarily commercial and industrial land and have the lowest densities.

There are 87,781 households in the watershed, with 53 percent of the homes owner-occupied. In Portland as a whole, 56 percent of the homes are owner-occupied.

[2] The census population is based on census blocks that extend beyond the boundary of the watershed. The actual population of the watershed is less.

Figure 4-10: Population Density



Race

The majority of the population in the watershed is white. Other population groups include Hispanic/Latino, African American, Asian, and American Indian (Table 4-3). The watershed is more diverse than Portland as a whole.

Language

English is not the primary language spoken in 18 percent of the homes in the watershed, compared with 17 percent of Portland homes (Table 4-4). Five percent of the homes in the watershed are linguistically isolated, meaning they require an interpreter.

Table 4-3: Population by Race

Race	Columbia Slough	Portland
	Percent	Percent
White	68	77
Hispanic or Latino	11	7
Black or African American	10	7
American Indian and Alaska Native	1	1
Asian	6	6
Native Hawaiian and Pacific Islander	<1	<1
Other	4	1

Source: U.S. Census 2000

Table 4-4: Primary Language Spoken in the Home

Language	Total	Linguistically Isolated
	Percent	Percent
English	82	Not applicable
Spanish	8	3
Other Indo-European	5	1
Asian and Pacific Island	4	1
Other	1	<1

Source: U.S. Census 2000

Place of Birth

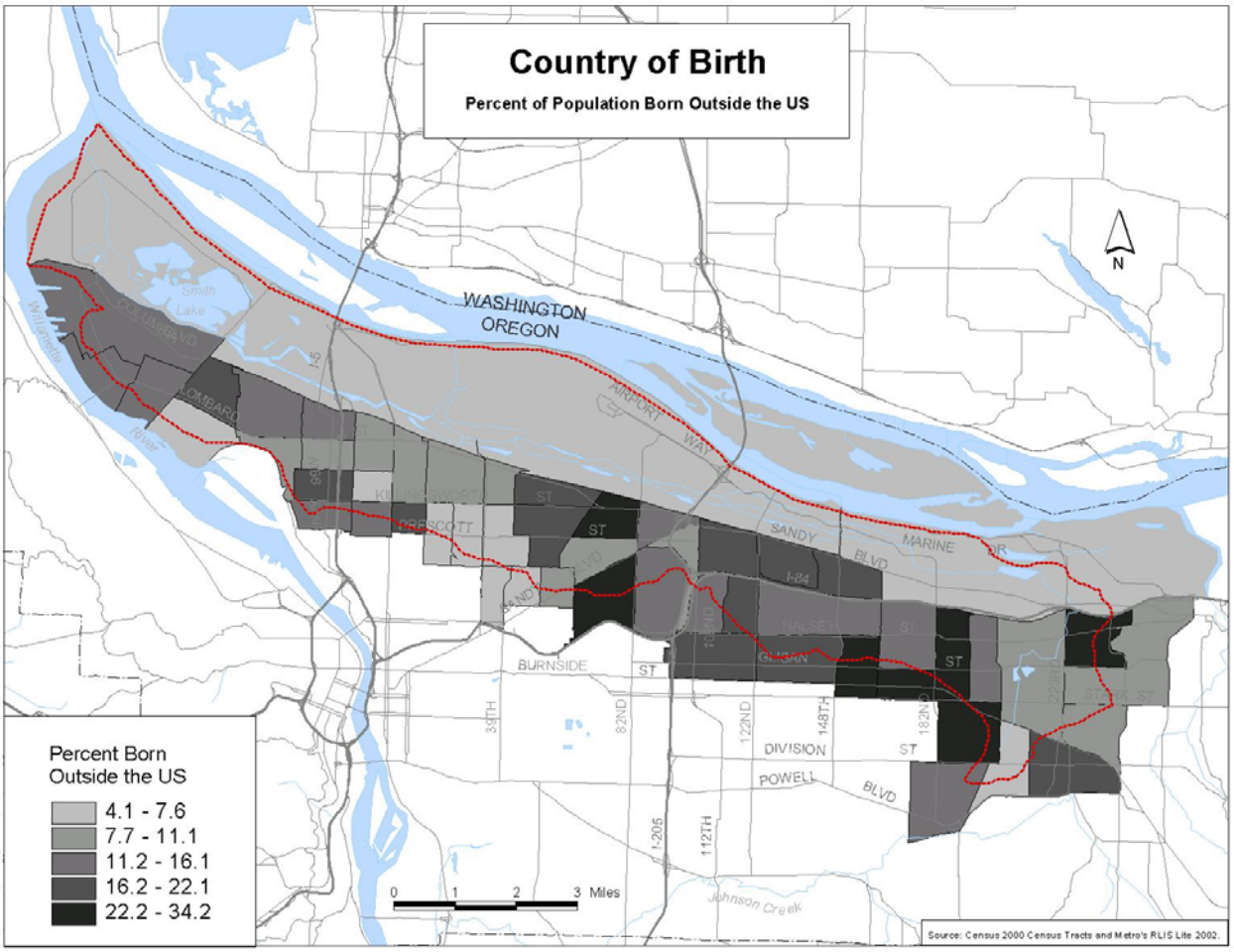
Fifteen percent of the population of the watershed was born outside of the U.S., compared with 13 percent of Portland's population as a whole. The majority of the foreign-born population is from Latin America (Table 4-5), and represents 7 percent of the total population of the watershed. The highest density of foreign-born people is near I-205 and to the east, and in the St. John's neighborhood (Figure 4-11).

Table 4-5: Place of Birth
(as % of total foreign-born population living in the watershed)

Place of Birth	Percent
Latin America	44
Vietnam	12
Africa	5
Laos	4
Romania	3
Russia	3
Ukraine	3
Philippines	3
Oceania	3
Eastern Asia (except Laos)	3
Caribbean	3
United Kingdom	2
Germany	2
Melanesia	2
Southeastern Asia	2
Other European Countries	2
Micronesia	1
Other	4

Source: U.S. Census 2000

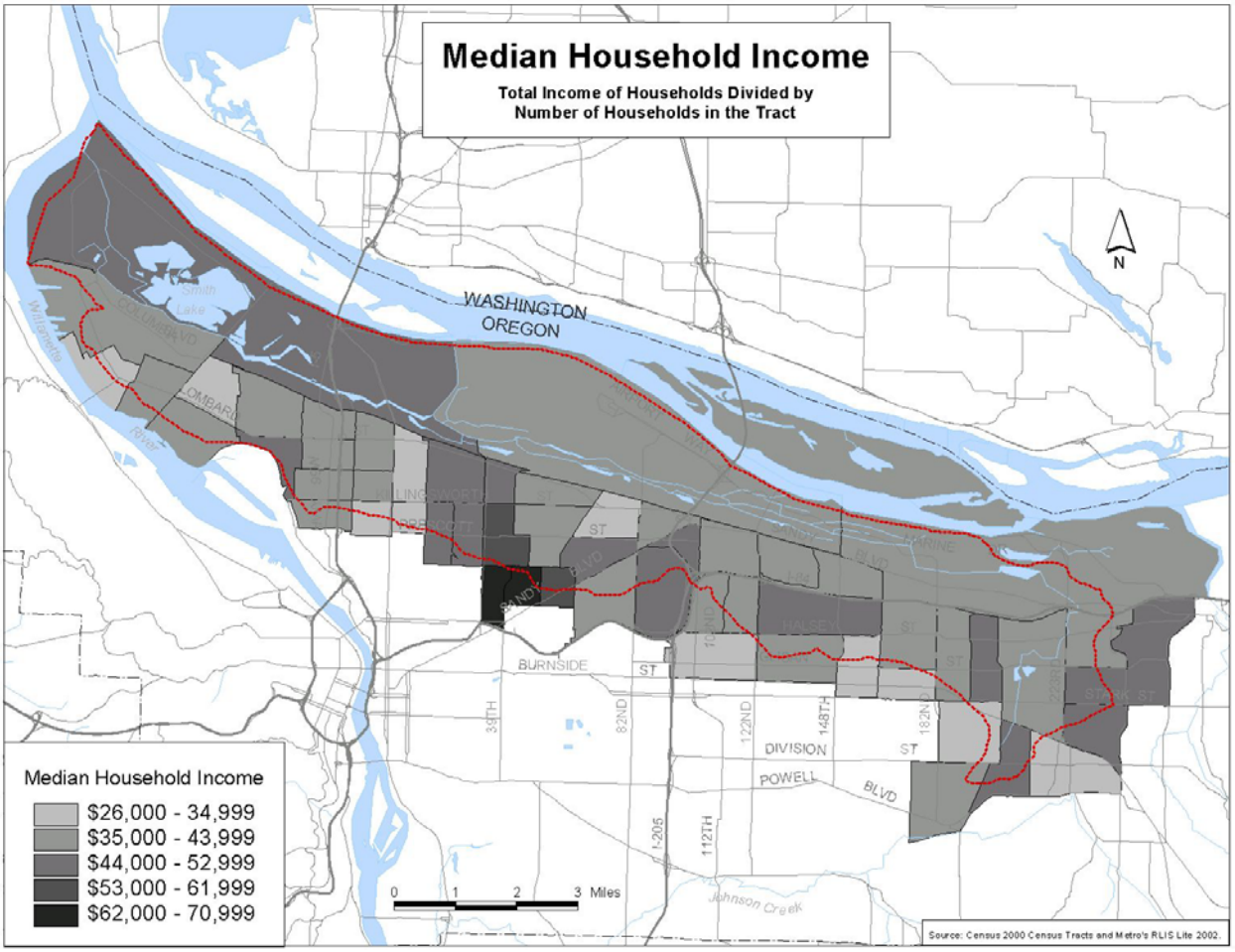
Figure 4-11: Population Born Outside of U.S.



Income

The median household income for the watershed is $40,142, compared with $40,146 for Portland as a whole (Figure 4-12). Median household income is based on the number of houses per census tract. If a large census tract has relatively few households, and many of those households have a high income, the entire census tract will appear to have a high median income.

Figure 4-12: Median Household Income



Employment

Table 4-6 shows types of employment of watershed residents.

Five percent of the watershed population (16 years of age or older) is unemployed, compared with 6.5 percent of the citywide population (Figure 4-13).

The majority (67 percent) of workers in the watershed travel to work in a single-occupancy vehicle. Fourteen percent of workers carpool (Table 4-7), compared with 12 percent citywide.

Table 4-6: Employment by Sector

Sector	Percent of Workers
Manufacturing	15
Health care and social assistance	12
Retail trade	8
Accommodation and food services	8
Construction	6
Wholesale trade	6
Transportation and warehousing	6
Educational services	6
Other services (except public administration)	6
Professional; scientific; and technical services	5
Administrative and support and waste management services	5
Finance and insurance	4
Public administration	3
Arts; entertainment; and recreation	2
Utilities	2
Information	2
Real estate and rental and leasing	2
Agriculture; forestry; fishing and hunting; and mining	1
Management of companies and enterprises	<1

Source: U.S. Census 2000

Figure 4-13: Percent of Labor Force Unemployed

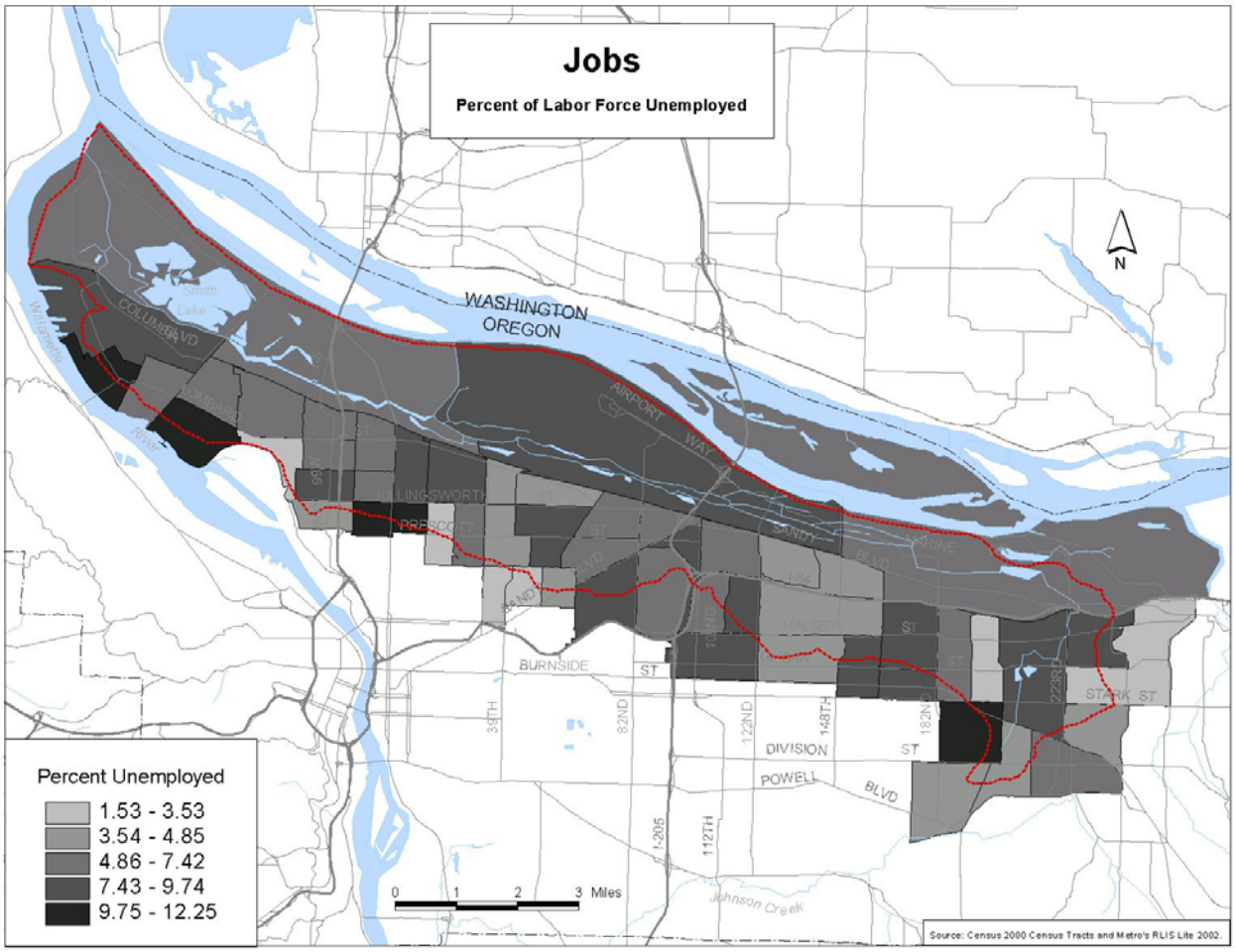


Table 4-7: Means of Transportation to Work

Transportation	Percent
Drive alone	67
Carpool	14
Public transportation	10
Work at home	4
Walk	3
Bicycle	1
Other means	1

Source: U.S. Census 2002

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