EXISTING CONDITIONS

This chapter provides background information on the current conditions of the North Beach Basin, including the existing human, physical, and natural environment.

3.1 HUMAN ENVIRONMENT

The North Beach Basin is located on the shores of Puget Sound in northern Seattle, as shown in Figure 3.1. The North Beach Basin covers approximately 633 acres and drains to the North Beach Pump Station along its northern edge. Its approximate eastern edge is 14th Avenue NW and its southern boundary generally follows NW 85th Street.

3.1.1 Land Use

The North Beach Basin is almost completely developed, predominantly with single-family homes. Neighborhood commercial development and low-rise multi-family housing are primarily located along 15th Avenue NW and Holman Road.

The Basin has numerous neighborhood parks, including Soundview Playfield, 26th Avenue Park, and Blue Ridge Park (privately owned). Several schools are also located there, including North Beach Elementary, Whitman Middle School, and the former Crown Hill Elementary School. A Burlington Northern Santa Fe (BNSF) Railroad line runs along the northern edge of the Basin adjacent to Puget Sound.

Table 3.1 describes the distribution of land uses in the Basin and Figure 3.2 shows the current zoning map.

Table 3.1 Land Use in the North Beach Basin

Land Use Type	Area (acres)[1]	Percent of Total
Single-Family Residential	396.9	62.7%
Multi-Family Residential	19.6	3.1%
Commercial	17.7	2.8%
Institutional	31.0	4.9%
Government/Industrial	0.0	0.0%
Parks	76.6	12.1%
Vacant	91.8	14.5%
Public/Utility	0.0	0.0%
Total	633.0	100.0%

Notes:
1. Source: King County GIS database (2008).

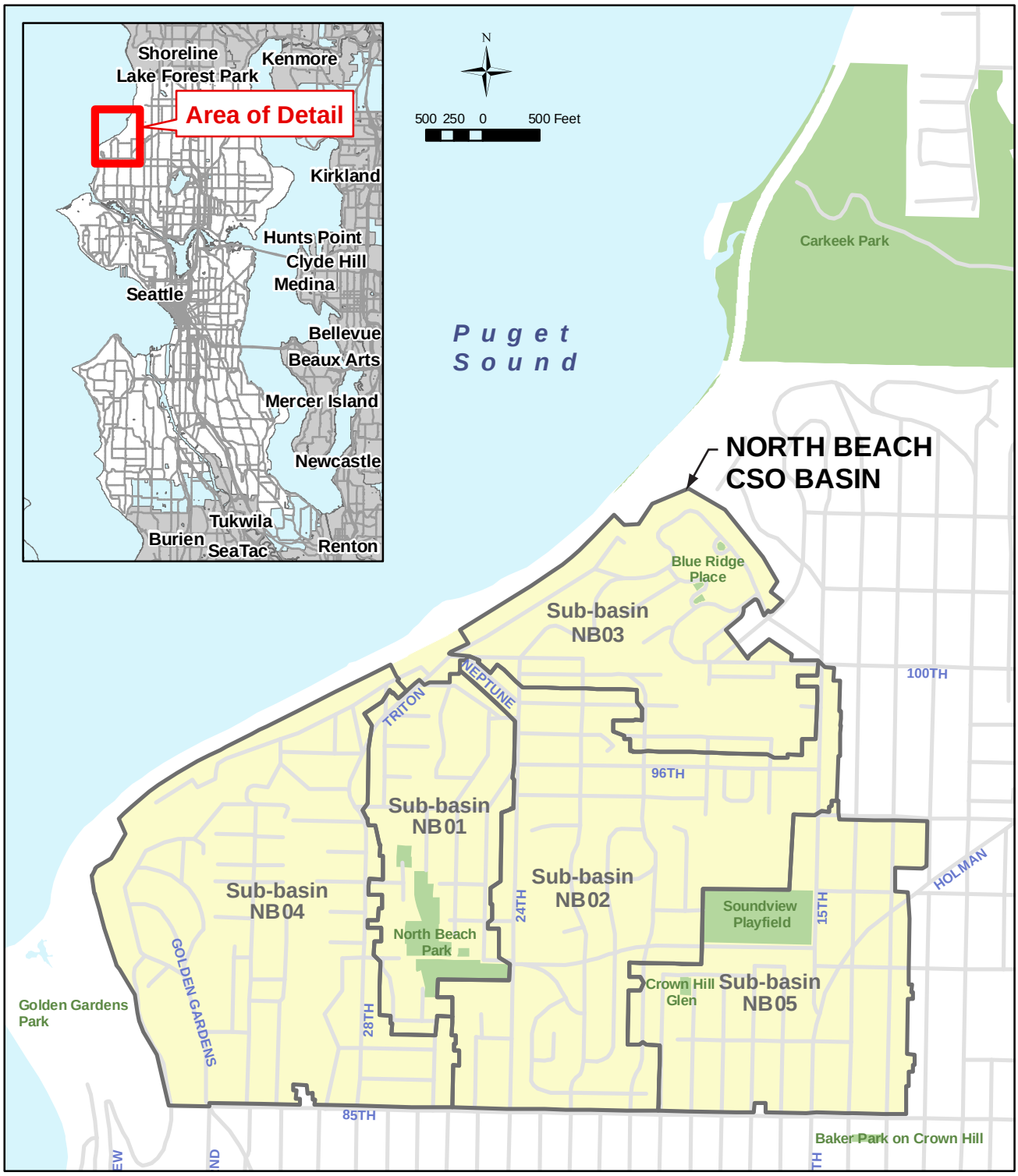


Figure 3.1
NORTH BEACH VICINITY MAP

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

DRAFT – December 2010

Figure 3-1.ai

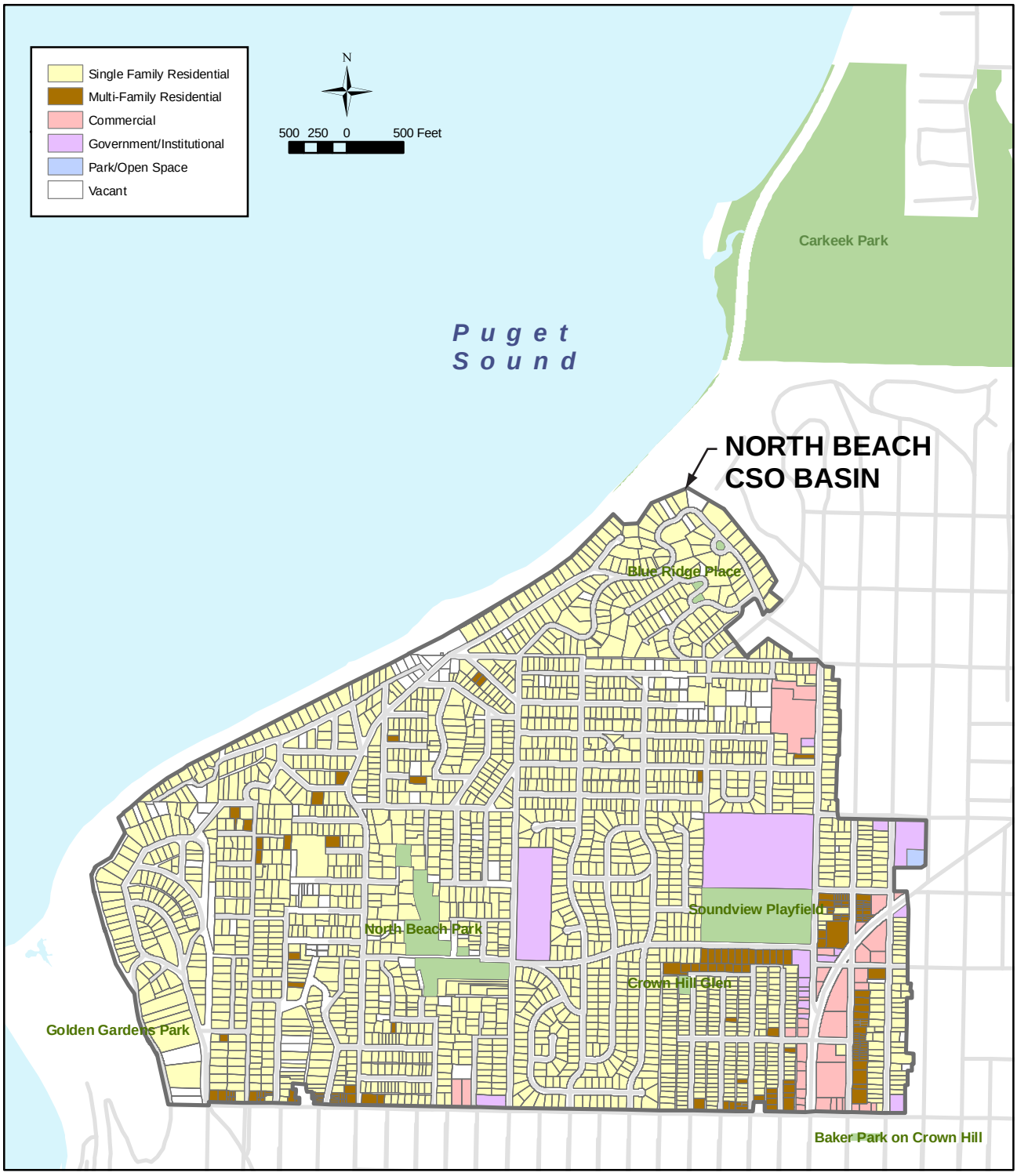


Figure 3.2
NORTH BEACH ZONING MAP

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

Figure 3-2.ai

DRAFT – December 2010

3.1.2 Wastewater System

3.1.2.1 Local Collection System

The local collection system for the North Beach Basin is shown in Figure 3.3. The system upstream of the North Beach Pump Station is owned and maintained by Seattle Public Utilities (SPU). It primarily serves single-family and multi-family residential customers and commercial customers. The North Beach Pump Station is located at the junction between the local collection system and King County's regional conveyance system.

The system consists of 8- to 18-inch-in-diameter gravity sewer pipes and stormwater pipes. As shown in Figure 3.1, the Basin is divided into five sub-basins (NB01 through NB05) based on the configuration of the collection system. Sub-basin NB05 drains to Sub-basin NB02. Sub-basins NB01, NB02, NB03, and NB04 converge at the bottom of the Basin, immediately upstream of the North Beach Pump Station.

A portion of the collection system is "separated" - the stormwater is separated from the sanitary sewer system. In this area (generally Sub-basin NB02), a municipal separated stormwater sewer system (MS4) serves streets and impervious areas of some private properties. A significant portion of the Basin is also considered separated since stormwater is conveyed through a ditch and culvert system in this area, and does not enter the sanitary sewer.

According to a GIS analysis, approximately 13 acres of impervious area, equivalent to about 320 residential properties, are connected to the combined sewer system (CSS) in the North Beach Basin. This includes limited rooftops and impervious private property areas.

3.1.2.2 Regional Conveyance System

Figure 3.4 shows the King County regional conveyance system in northwest Seattle. The North Beach Basin is the headwaters of the system in this area. Wastewater is pumped from the North Beach Pump Station through the North Beach Force Main to the Carkeek Pump Station.

A pump test on November 3, 2009 revealed that the capacity of the pump station is about 3 mgd. This is lower than the design capacity of 3.5 mgd. It is expected that sediment in the force main is limiting the maximum flow to its current tested capacity. There is also a sizable area that drains to the North Beach Pump Station force main and enters the force main by gravity in Carkeek Park. This flow may further limit the North Beach Pump Station force main capacity and will be investigated further during pre-design of the project.

From Carkeek, the wastewater is conveyed to the West Point Treatment Plant through the 8th Avenue Interceptor and Ballard Siphon. During peak wet-weather events, flows in excess of 9.2 mgd, approximately 2.25 times the average wet-weather flow (AWWF) in the entire Carkeek basin, are treated at the Carkeek CSO Plant and discharged through an outfall to Puget Sound.

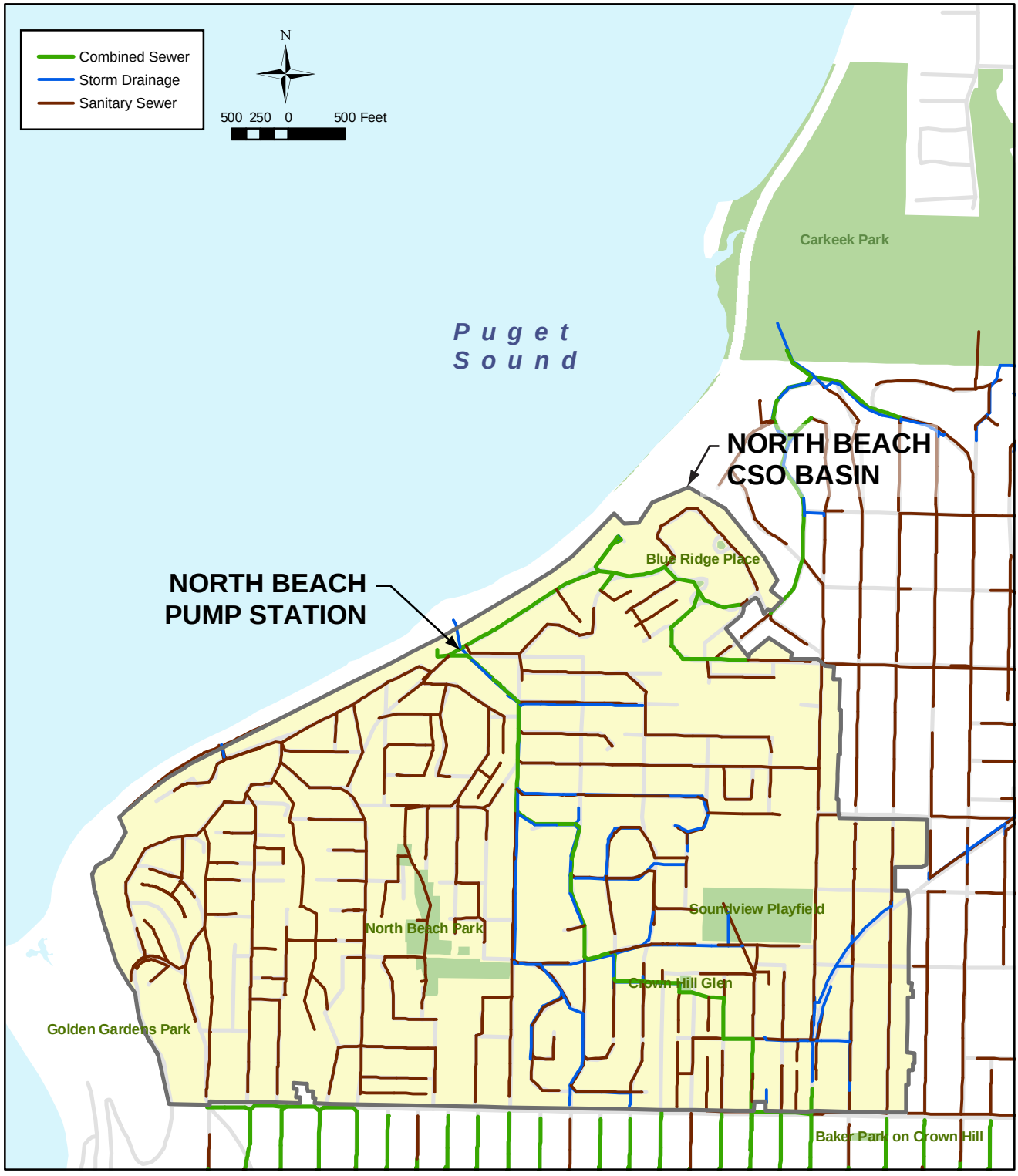


Figure 3.3
NORTH BEACH WASTEWATER COLLECTION SYSTEM

Figure 3-3.ai

DRAFT – December 2010

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

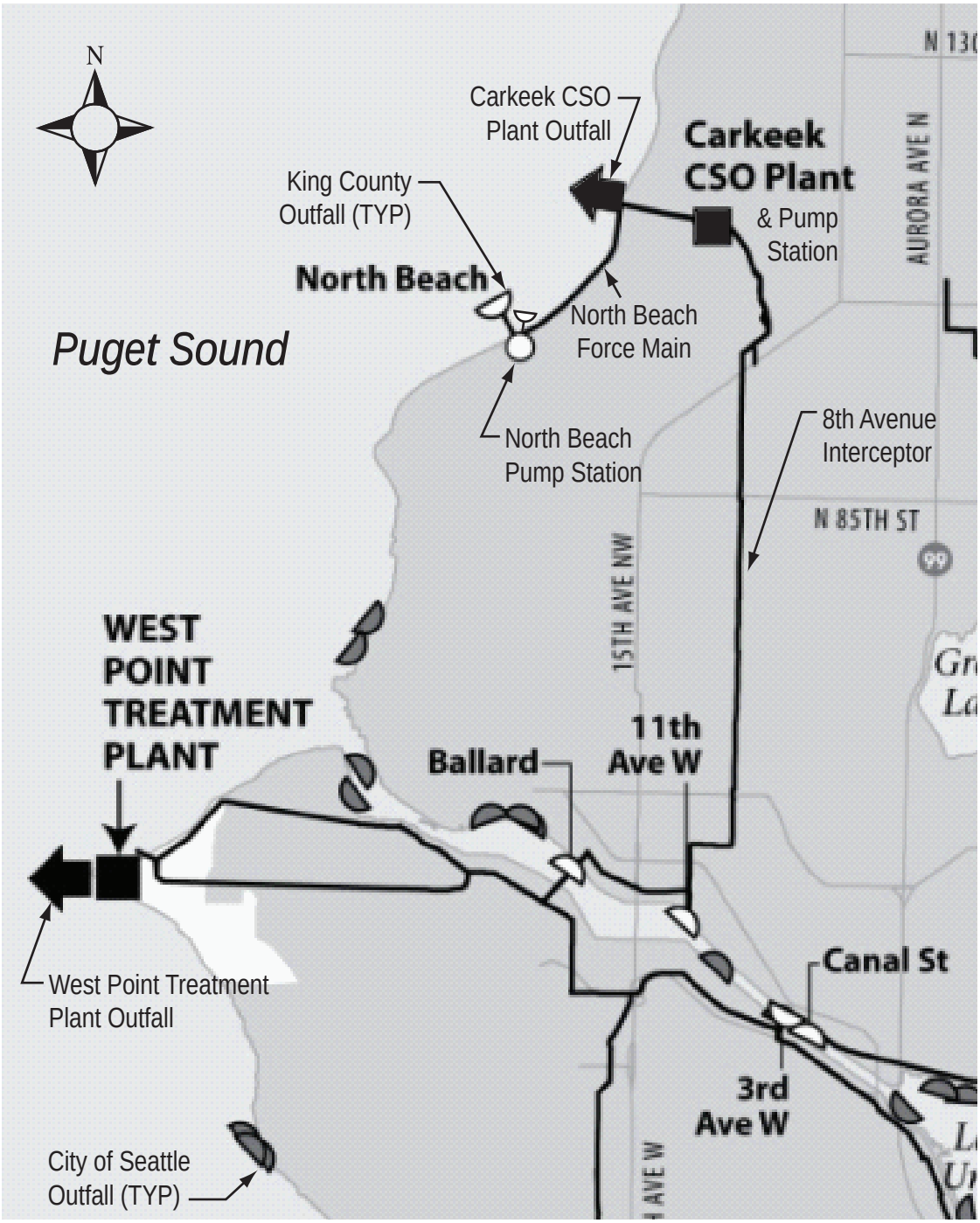


Figure 3.4
KING COUNTY REGIONAL CONVEYANCE SYSTEM IN VICINITY OF NORTH BEACH BASIN

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

Figure 3-4.ai

3.1.2.3 CSO Control Structures and Outfalls

There are two CSO control structures for the North Beach Basin. One of these is an overflow weir in the North Beach Pump Station wet well. If flow into the pump station exceeds the pump station's capacity of 3 mgd, the water elevation in the wet well rises. Once the water elevation exceeds approximately Elevation 122.8 (Metro Datum), the combined sewage overflows the weir and is discharged to Puget Sound through an approximately 1,300 foot-long, 15- and 16-inch-in-diameter CSO outfall.

The second control structure is an overflow weir located in a manhole upstream of the North Beach Pump Station. If the flow exceeds the pump station's capacity of 3 mgd, the water elevation in the upstream collection system rises. Once the water elevation exceeds approximately Elevation 124.9 (Metro Datum), combined sewage overflows the weir and is discharged to Puget Sound through an approximately 400-foot-long, 30- and 54-inch–in-diameter stormwater pipe to the beach north of the BNSF railroad tracks.

3.1.2.4 Flows and Loads

The North Beach Basin averages ten CSO events per year. The average total annual volume of discharge from these events is 2.2 MG, based on historical reported information.

3.1.3 Public Health

CSOs are a public health concern as they carry pollutants, primarily in the form of untreated sewage and stormwater, into the receiving water bodies. These pollutants can pose a threat to aquatic life and the natural environment. CSOs can also pose a threat to human health through direct contact or the consumption of fish/shellfish harvested from areas where CSOs were recently discharged. Regulation of CSOs helps reduce and control these threats.

3.1.4 Cultural Resources

The known and potential (as yet undiscovered) cultural, archaeological, and historic resources in the North Beach Basin were reviewed. Based on the site characteristics and location, the project area has a low probability of containing such artifacts.

3.2 PHYSICAL ENVIRONMENT

3.2.1 Land

3.2.1.1 Soils/Geology

A preliminary investigation of the geologic conditions in the North Beach Basin area was conducted to understand the geotechnical limitations. The preliminary geologic/ geotechnical evaluation findings are provided in Appendix A. A geologic map of the North Beach Basin is provided in Figure 3.5.

Soil conditions near the bottom of the North Beach Basin are Vashon recessional outwash, typically consisting of medium dense, slightly silty to silty, gravelly sand, or sandy gravel.

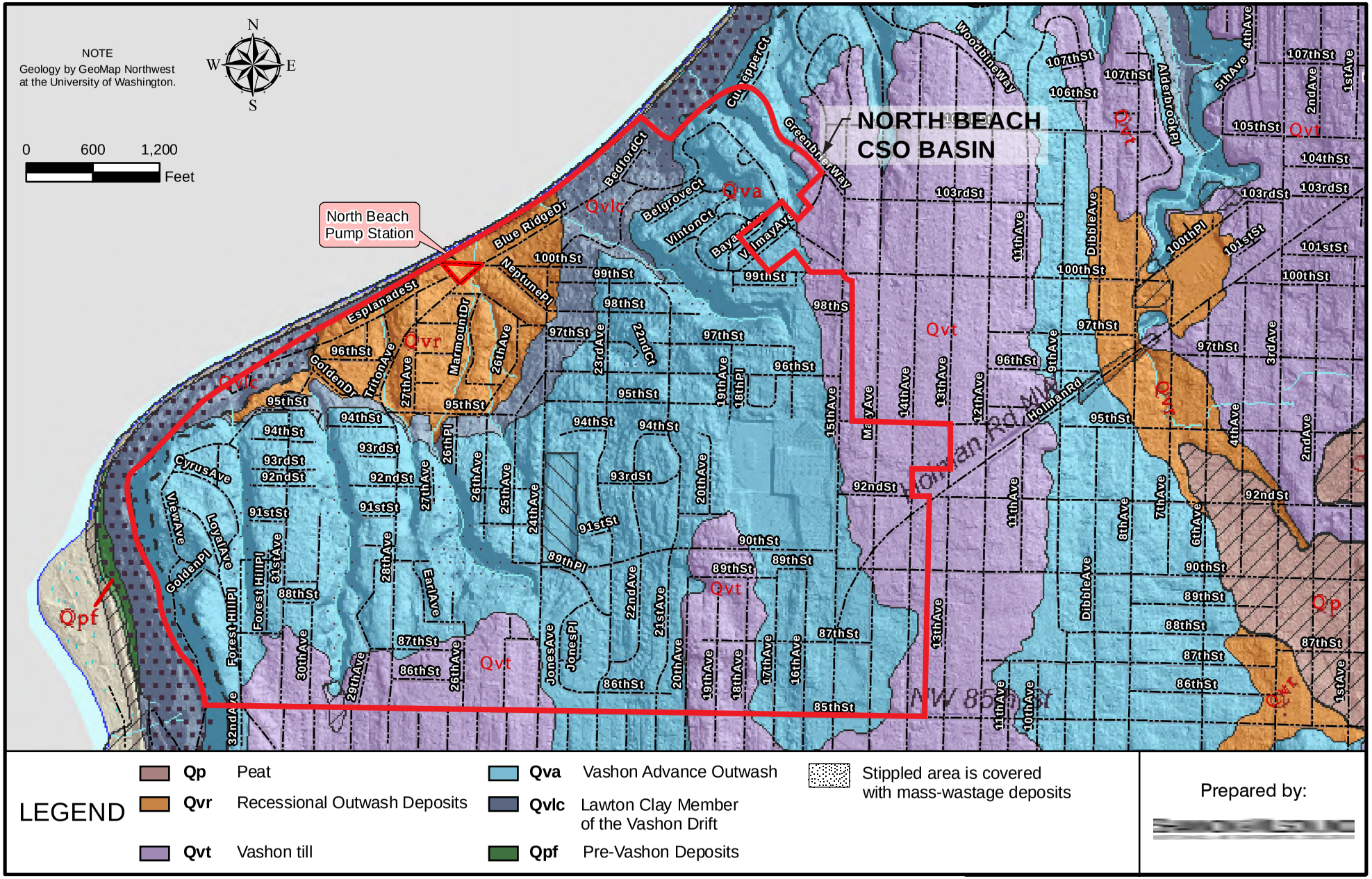


Figure 3-5.ai

Figure 3.5
NORTH BEACH BASIN GEOLOGY

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

DRAFT – December 2010

This deposit appears to be underlain by glaciolacustrine silt and clay, commonly called "Lawton Clay." Typically, Lawton Clay is 50 feet thick or more with interbeds of fine sand.

The slope between the western edge of Blue Ridge Park and the railroad tracks did not appear to contain in situ soil. Because this slope was uneven and contained construction debris, it is likely artificial fill placed to make a level park surface. This fill thickness is unknown and probably overlies a recessional outwash.

3.2.1.2 Topography, Steep Slopes, and Landslides

A topographical map of the North Beach Basin is shown in Figure 3.6. The North Beach Pump Station is located at the lowest point of elevation in a large, semi-circular drainage basin. The top of the Basin is at approximately Elevation 440 (Metro Datum) and the North Beach Pump Station is at approximately Elevation 135 (Metro Datum). Slope inclinations in the Basin range from about 20 to 50 percent. From the North Beach Pump Station and adjacent Blue Ridge Park, the ground surface drops steeply (about 70 percent) to the north (about 10 feet distant) to the BNSF railroad double track alignment. The railroad bench seawall drops nearly vertically down about 8 to 10 feet to the Puget Sound beach.

The North Beach Basin critical areas map, shown in Figure 3.7, indicates that there are steep slopes throughout the Basin and many potential landslide areas. There are several known landslide areas and many more potential landslide regions. The areas of steep slope are primarily ravines adjacent to streams and open space along Puget Sound.

3.2.1.3 Soil and Groundwater Contamination

In general, there are few areas in the Basin that are known to contain soil or groundwater contamination. These are typically associated with commercial land uses along major arterial roads. Ecology maintains databases of contaminated site locations. Figure 3.7 shows the sites that have confirmed or suspected contamination or have leaking underground storage tanks according to Ecology's databases.

3.2.1.4 Liquefaction

There are no areas of potential liquefaction within the Basin.

3.2.2 Surface Water

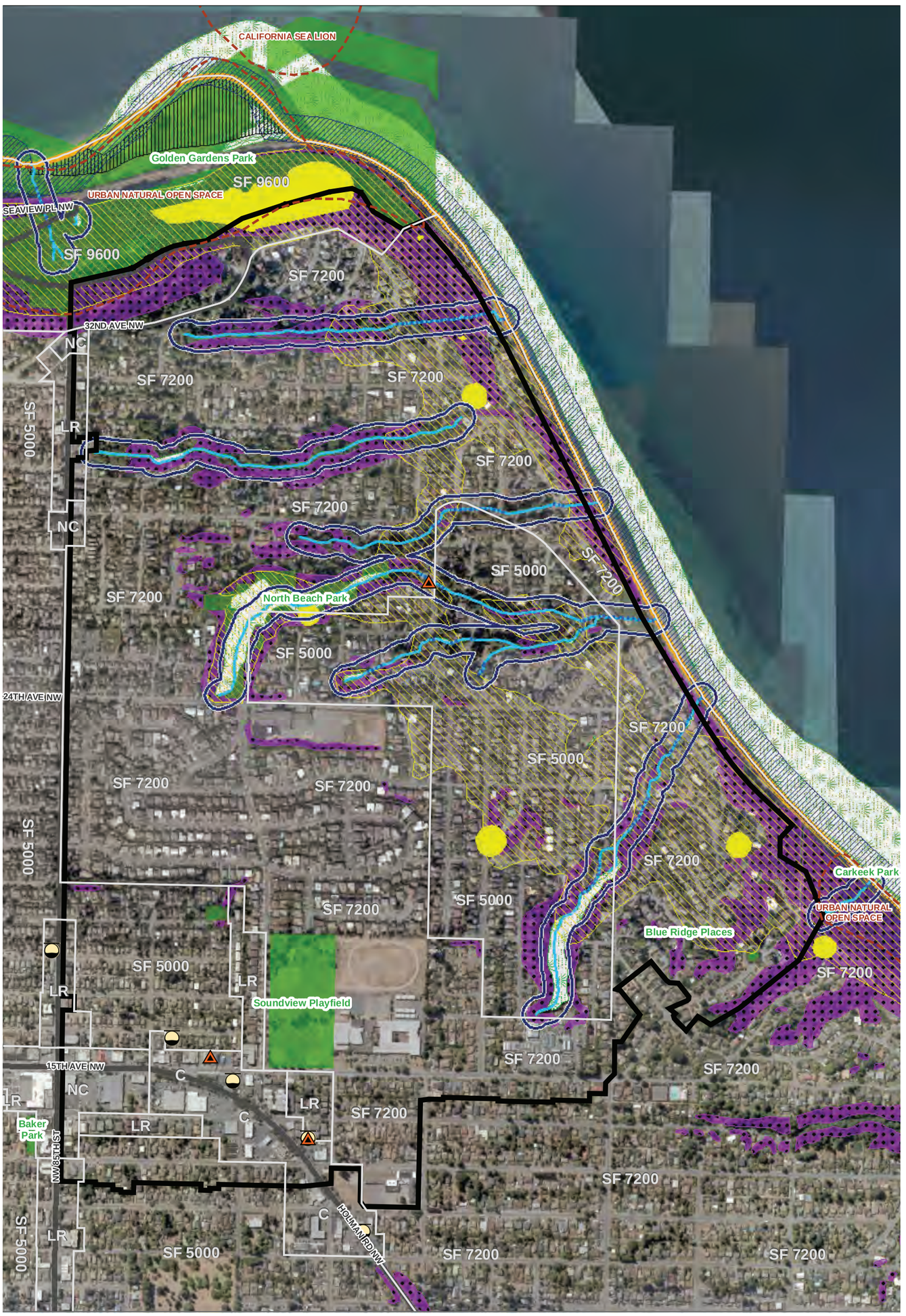
In the North Beach Basin there are several small streams which descend north from the upper ridges of the Basin to the Puget Sound shoreline. The North Beach Basin critical areas map (Figure 3.7) shows that most of the surface streams have been piped near the shoreline to accommodate residential land development. Two streams converge approximately 700 feet southwest of the North Beach Pump Station at the intersection of Marmount Drive and North Beach Drive, and are piped through the pump station site and Blue Ridge Park to an outfall on the shoreline.

Figure 3.6
NORTH BEACH BASIN TOPOGRAPHY

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

DRAFT – December 2010

Figure 3-6.ai



FILE NAME: Fig05_NBeach_CA.ai
CREATED BY: JAB / DATE LAST UPDATED: 04/21/10

Figure 3-7.ai

Figure 3.7
NORTH BEACH BASIN
CRITICAL AREAS MAP

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

This page intentionally left blank

3.2.3 Rainfall

Seattle's average yearly rainfall is 36.2 inches. Heaviest rainfall occurs in the winter months, with November, December, and January averaging 5 to 6 inches per month. In June, July, and August rainfall drops sharply to an average of 1 inch per month.

3.2.4 Air

The Puget Sound region is a unique part of the country. No other region of the United States at this latitude has weather that is as moderate, with mild temperatures and few serious storms. The temperate climate is largely a result of maritime influences and a diverse topography. The jet stream typically supplies the area with a steady supply of cool, fresh air off the ocean. This marine flow not only contributes to the mild climate, but also mixes the air, which helps keep pollution from accumulating.

Air quality within King County and the City of Seattle is monitored and regulated by the Puget Sound Clean Air Agency. According to data published in 2007 by this agency (the most recent published data), the air quality in King County was "good" 78% of the time, and "moderate" 21% of the time.

3.2.5 Sensitive Areas

3.2.5.1 Wetlands and Streams

Figure 3.7 also shows wetlands and streams within the North Beach Basin. Several streams flow through ravines to Puget Sound. No surface channels or wetlands were observed in the bottom of the Basin near the North Beach Pump Station. There are mapped wetlands along the Sound to the north of the Basin boundary. GIS maps indicate a piped stream through the North Beach Pump Station property and Blue Ridge Park.

3.2.5.2 Shorelines

The Puget Sound shoreline lies at the bottom of the North Beach Basin. It is a mix of natural beach, riprap, and bulkhead. Land use along this area is primarily residential. A BNSF railroad line runs along the northern edge of the Basin adjacent to Puget Sound.

3.2.5.3 Floodplains

The City of Seattle has mapped flood prone areas within each basin, including the North Beach Basin. These areas generally correspond to the shoreline of Puget Sound, as shown in Figure 3.7.

3.3 ENDANGERED/THREATENED SPECIES AND HABITATS

Figure 3.7 depicts mapped priority habitat species areas and priority fish migration and/or presence areas. Golden Gardens Park, west of the Basin, and an urban natural open space along Puget Sound northwest of the Basin, are Priority Habitat Species (PHS) areas.

There are no designated critical areas within the vicinity of the North Beach Pump Station. Salmonscape and Priority Habitats and Species mapping by the Washington Department of

Fish and Wildlife (WDFW) indicates the existence of a stream flowing through Blue Ridge Park; however, no listed fish presence is indicated for this stream. The North Beach Basin critical areas map identifies this stream and a riparian corridor through Triton Drive NW and Blue Ridge Park. During the site investigation, no surface flow or riparian habitat was observed. The closest potential riparian habitat for this stream occurs approximately 700 feet to the southwest of the North Beach Pump Station. Although it is unlikely fish will use this piped stream, further investigation would be required to verify whether this assumption is true.

Puget Sound itself contains numerous threatened and endangered species, including Chinook salmon, bull trout, steelhead, canary rockfish, yelloweye rockfish, bocaccio rockfish, green sturgeon, orca whale, Stellar sea lion, and marbled murrelet.