EXISTING CONDITIONS

The Barton and Murray CSO basins are adjacent to one another along the shore of Puget Sound in West Seattle (see Figure 2.1). The approximate eastern edge of the Barton CSO basin is 30th Avenue SW; the southern boundary extends from about SW 106th Street on the west side of the basin to SW Roxbury Street on the east side. The Murray CSO basin is immediately north of the Barton CSO basin. Its eastern boundary is near 34th and 35th Avenues SW. On the north, the basin boundary follows a diagonal from about SW Raymond Street on the west side to about SW Hudson on the east side. The Barton CSO basin is 1,112 acres and the Murray CSO basin is 992 acres.

3.1 HUMAN ENVIRONMENT

3.1.1 Land Use

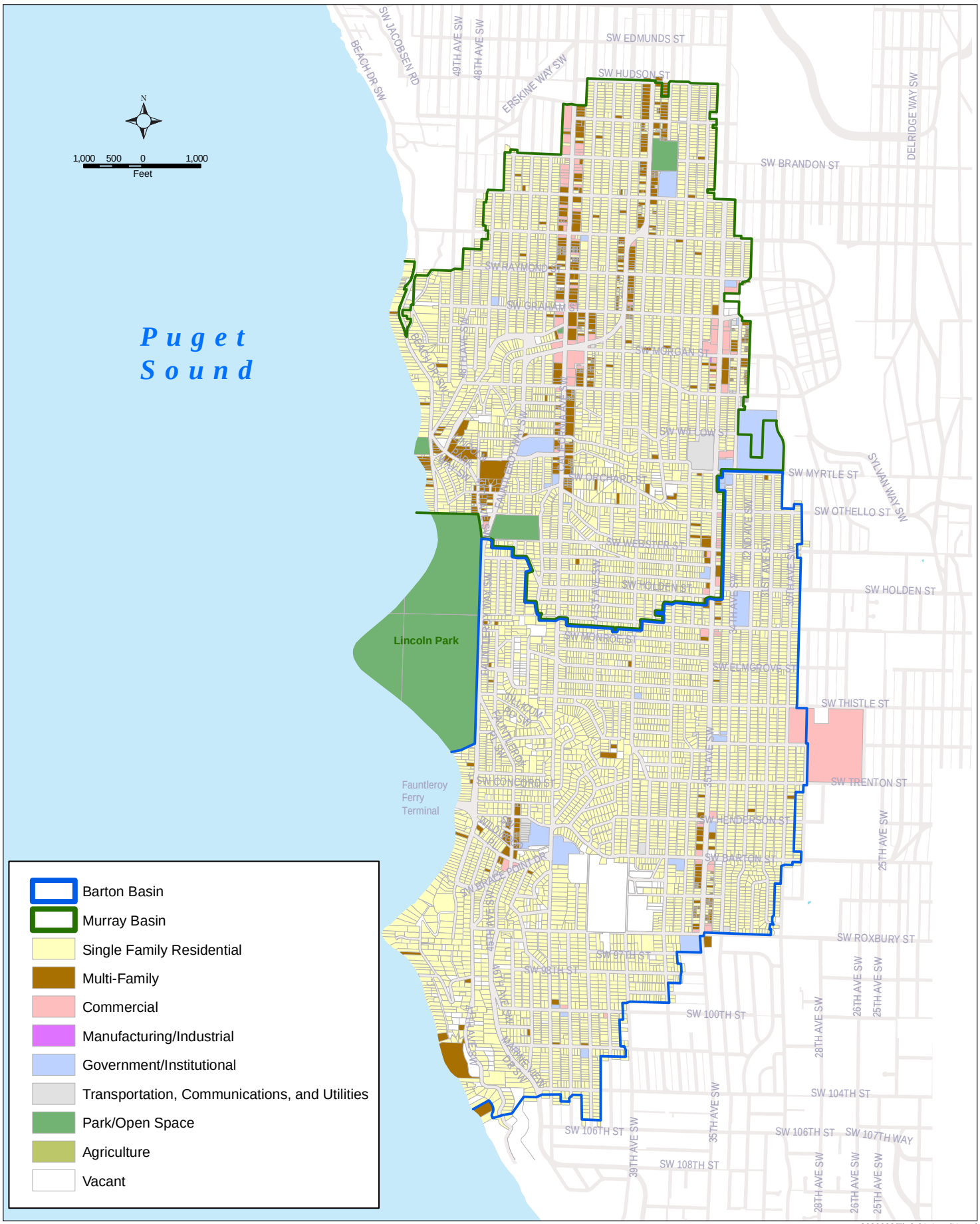
The Barton and Murray CSO basins are almost completely developed, predominantly with single-family residential homes. One of Seattle's largest parks, Lincoln Park (135 acres), is located on Puget Sound at the west edge of the two basins.

In the Barton CSO basin, the Fauntleroy Ferry Terminal is located just south of Lincoln Park. In the Murray CSO basin, the Pelly Creek ravine extends from nearly California Avenue SW down to the shoreline at Lowman Beach Park. California Avenue SW is a major north-south arterial that bisects the Murray CSO basin. Neighborhood commercial development and low-rise multifamily housing are located along California Avenue SW. Table 3-1 lists land uses in the two basins and Figure 3.1 shows the current zoning.

Table 3.1 Land Use in Barton and Murray CSO Basins

	Barton CSO Basin		Murray CSO Basin	
Land Use	Area (acres)	Percent of Total	Area (acres)	Percent of Total
Single-Family Residential	641.27	57.7%	562.36	59.1%
Multi-Family Residential	20.60	1.9%	66.24	7.3%
Commercial	2.57	0.2%	21.13	2.2%
Institutional	13.58	1.2%	22.20	3.0%
Manufacturing/Industrial	0	0%	1.66	0.2%
Parks/Open Space	0	0	25.53	2.5%
Vacant	144.45	13.0%	17.60	3.4%
Public/Utility	1.70	0.2%	5.63	0.6%
ROW	287	25.8%	284.14	28.2%
Total	**1,111**	**100%**	**1,006**	**100%**

a. Source: 2009 King County Zoning Data.



3630023/Fig3-01_LandUse.ai

BARTON AND MURRAY COMBINED SEWER OVERFLOW CONTROL FACILITIES PLAN

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Figure 3.1.
BARTON AND MURRAY CSO BASINS LAND USE

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

3.1.2 Wastewater System

King County conveyance facilities convey wastewater north from the Barton and Murray CSO basins to King County's 63rd Avenue Pump Station. From there, flows are conveyed through the West Seattle Tunnel to the Duwamish conveyance system. They then continue north through the Elliott Bay Interceptor to the West Point Treatment Plant in Magnolia. When conveyance capacity is limited through the West Seattle Tunnel, flows are diverted to the Alki Wet Weather Treatment Plant, where excess volumes are treated and discharged to Puget Sound.

3.1.2.1 Local Collection System

The local collection systems in the Barton and Murray CSO basins (see Figure 3.2) are owned and maintained by Seattle Public Utilities (SPU) and serve primarily residential (single-family and multi-family) and commercial customers. The systems consist of 8- to 42-inch-diameter gravity sewer pipes and SPU-operated pump stations (three in the Barton CSO basin and one in the Murray CSO basin).

In the Barton CSO basin, a majority of the collection system has been partially separated: municipal separated stormwater sewer systems (MS4) serve streets and some private properties, but a portion of rooftops and private property impervious areas are still connected to the combined sewer system (CSS). Approximately 1,500 residential properties and 80 non-residential properties are connected to the CSS in the Barton CSO basin. Additionally, most of Subbasin 416 (see Figure 2.1) is fully connected (i.e., all impervious area—residential and roads—is connected to the CSS). There are approximately 35 blocks in Subbasin 416.

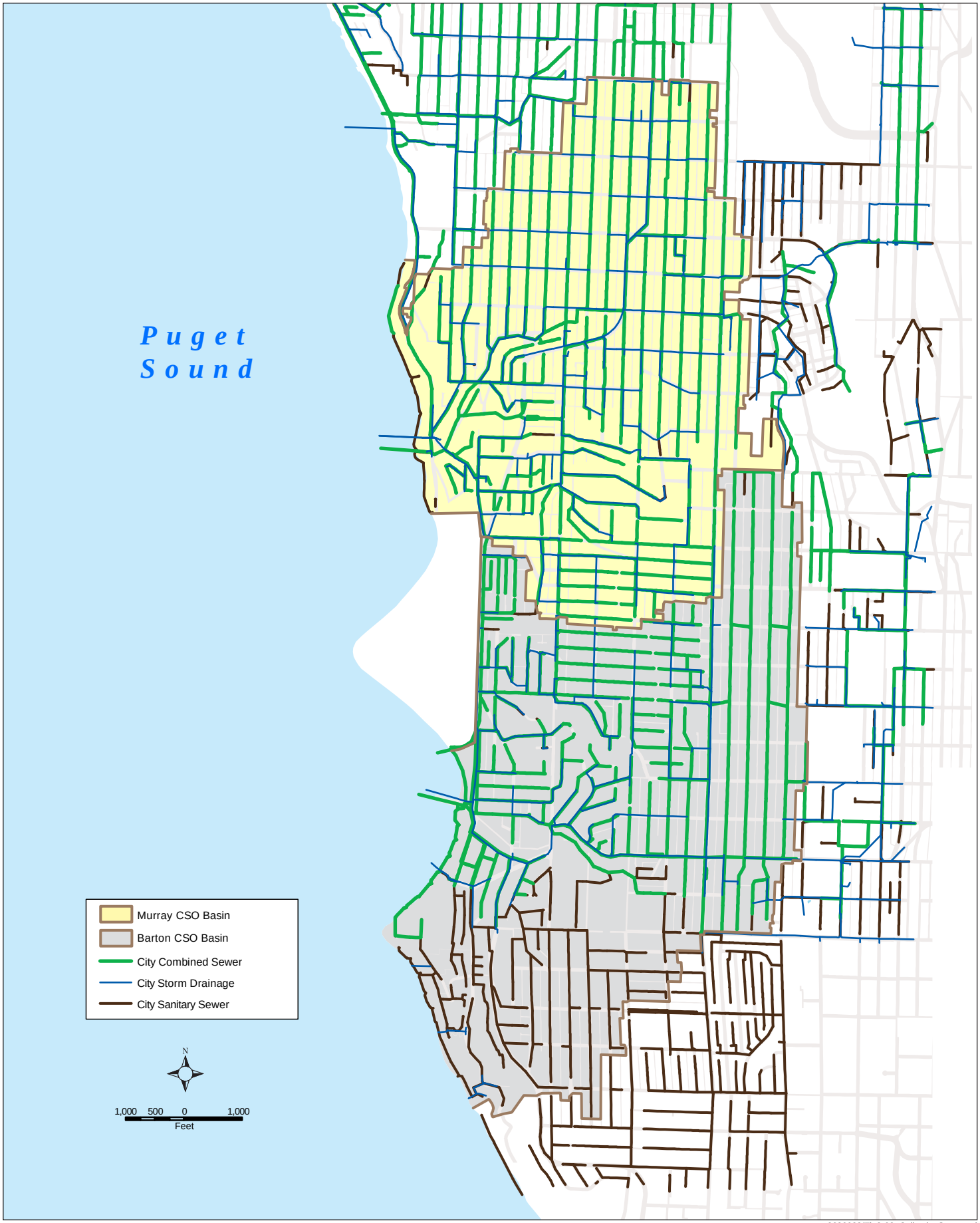
In the Murray CSO basin, an area of approximately eight blocks is fully connected to the CSS (i.e., all impervious area – residential and roads – is connected to the CSS). The remainder of the basin is partially separated, with an MS4 system serving streets and private property impervious area connected to the CSS. Approximately 1,200 residential and 230 non-residential properties are connected to the CSS in the Murray CSO basin.

3.1.2.2 King County Pump Stations in the Barton and Murray CSO Basins

King County's Barton and Murray Pump Stations are the connection points of the local collection system to King County's regional conveyance system.

In the Barton CSO basin, flows are collected at the Barton Pump Station. Currently, the Barton Pump Station has a peak rated capacity of 26 million gallons per day (mgd) (pump tests in 2009 indicated actual peak capacity of 22 mgd). The pump station discharges flows through two 24-inch-diameter force mains and a gravity sewer section (30-inch to 42-inch diameter) to the Murray Pump Station.

At the Barton Pump Station, improvements are scheduled to be implemented in 2012. The improvement project was initially conceived only to bring aging structures and equipment into compliance with current electrical, mechanical and structural codes; however, the final design also includes an increase in pumping capacity to help control CSOs.



3630023/Fig3-02_CollectionSystem.ai

BARTON AND MURRAY COMBINED SEWER OVERFLOW CONTROL FACILITIES PLAN

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Figure 3.2.
LOCAL SEWER COLLECTION SYSTEM

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

The increased pumping capacity for the Barton Pump Station upgrade was selected to meet several criteria: no significant increase in cost, no additional building space required, and no capacity significantly above that of the downstream Murray Pump Station. Based on these criteria, the selected new capacity for the upgraded pump station is 33 mgd. All analyses of CSO control requirements for this facilities plan assume that the Barton Pump Station will have the increased pumping capacity.

At the Murray Pump Station, flows from the Murray CSO basin are combined with the Barton flows to be conveyed to the 63rd Avenue Pump Station. The Murray Pump Station has a peak capacity of 31.5 mgd. The conveyance system between the Murray and 63rd Avenue Pump Stations consists of dual 27-inch-diameter force mains and 36-inch to 54-inch-diameter gravity pipeline.

3.1.2.3 CSO Control Structures and Outfalls

The CSO control structure for the Barton CSO basin is a fixed overflow weir and channel in the Barton Pump Station wet well, as shown in Figure 3.3. If flow into the pump station exceeds the pump station's capacity, the water elevation in the wet well rises. Once the water elevation exceeds 11.4 feet (1988 North American Vertical Datum (NAVD 88)), combined sewage overtops the weir and excess flows are discharged to Puget Sound through a 60-inch diameter CSO outfall. The outfall is approximately 620 feet long and discharges at an elevation of -15.3 feet (NAVD88) (approximately 24 feet deep).

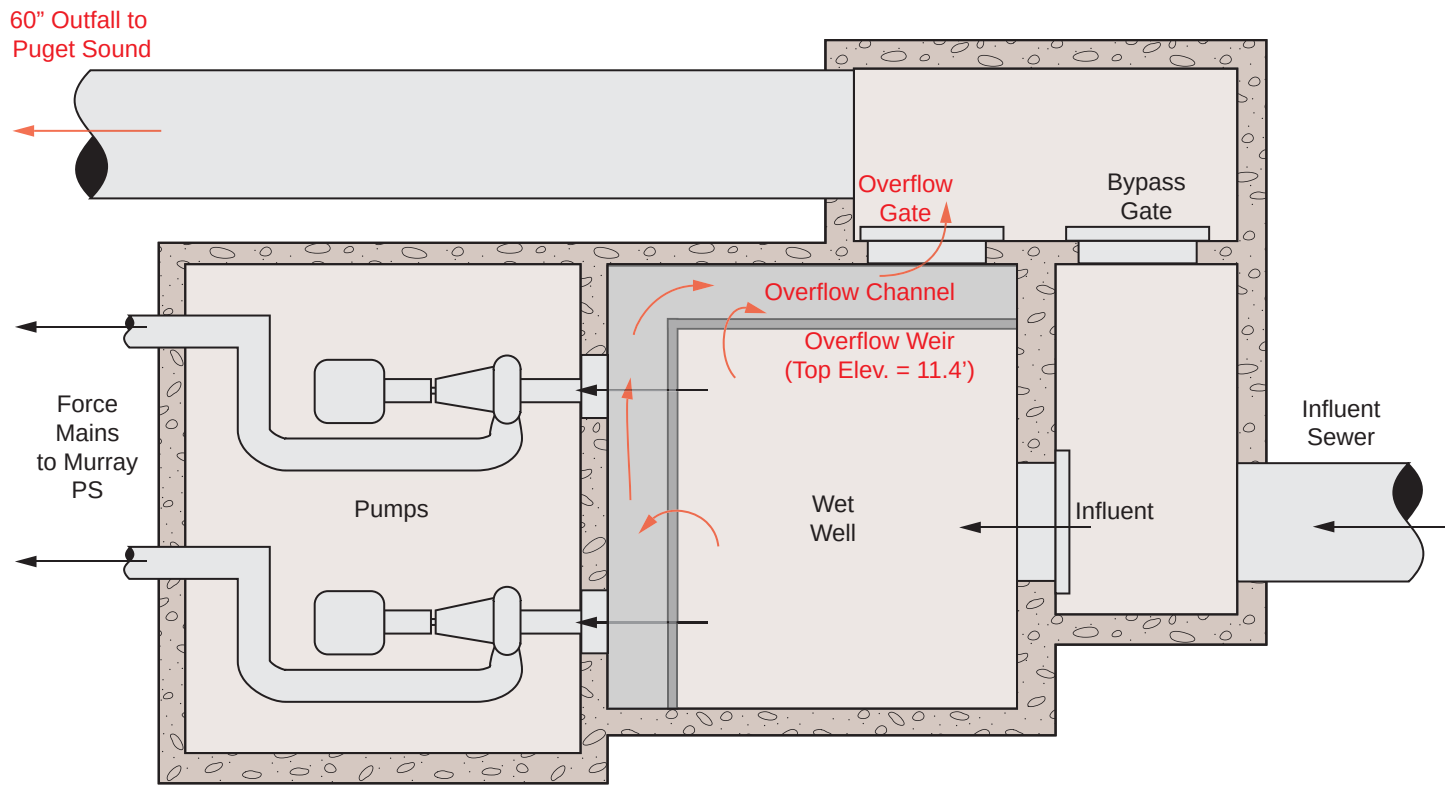
The Murray Pump Station's CSO control structure is a fixed overflow weir and channel in the Murray Pump Station wet well, as shown in Figure 3.4. When flow into the Murray Pump Station exceeds the pump station's capacity, the level in the wet well rises and combined sewage overtops the weir, discharging excess flow through two 48-inch pipelines. The weir elevation is at 11.65 feet (NAVD 88). The two pipelines converge shortly downstream of the pump station at a junction chamber with a 72-inch outfall discharging to Puget Sound. The outfall is approximately 800 feet long and discharges at an elevation of -15.4 feet (NAVD88) (approximately 24 feet deep).

Another CSO control structure is in place downstream of the Murray Pump Station at SW Alaska Street. Flows from the Murray conveyance system must be limited in order to maintain control at this CSO. The Murray Pump Station's peak rated capacity of 31.5 mgd is near the maximum flow that can be discharged from the pump station without exceeding overflow limits at SW Alaska Street CSO structures; which are currently under control.

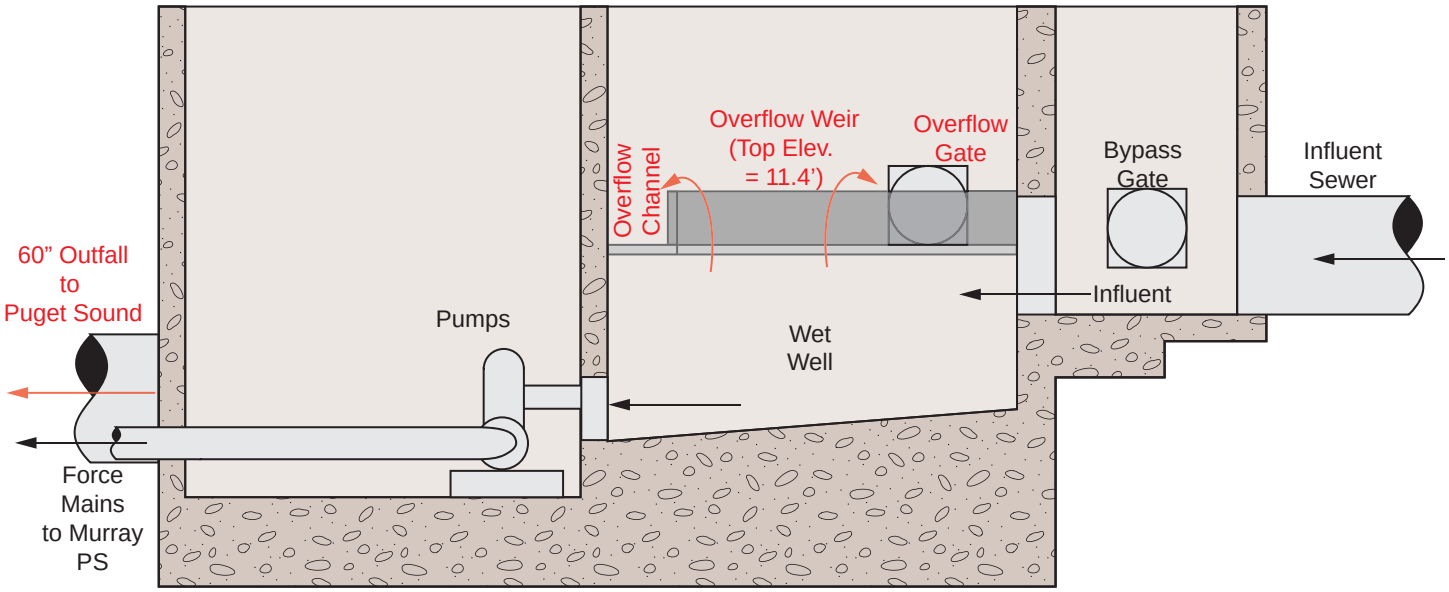
Figure 3.5 shows the CSO and regional conveyance facilities in the Barton and Murray CSO basins and vicinity.

3.1.2.4 Flow and Loads

Flow to the Barton Pump Station varies from an average dry-weather flow of 2 mgd to a peak wet-weather flow of over 93 mgd (King County modeling). The Barton Pump Station averages four untreated CSO events per year. The total annual volume of discharge from these events averages 4 MG per year.



PLAN VIEW



SECTION VIEW

3630023/Fig3-03_BartonCSOControlStructure.ai

BARTON AND MURRAY COMBINED SEWER OVERFLOW CONTROL FACILITIES PLAN

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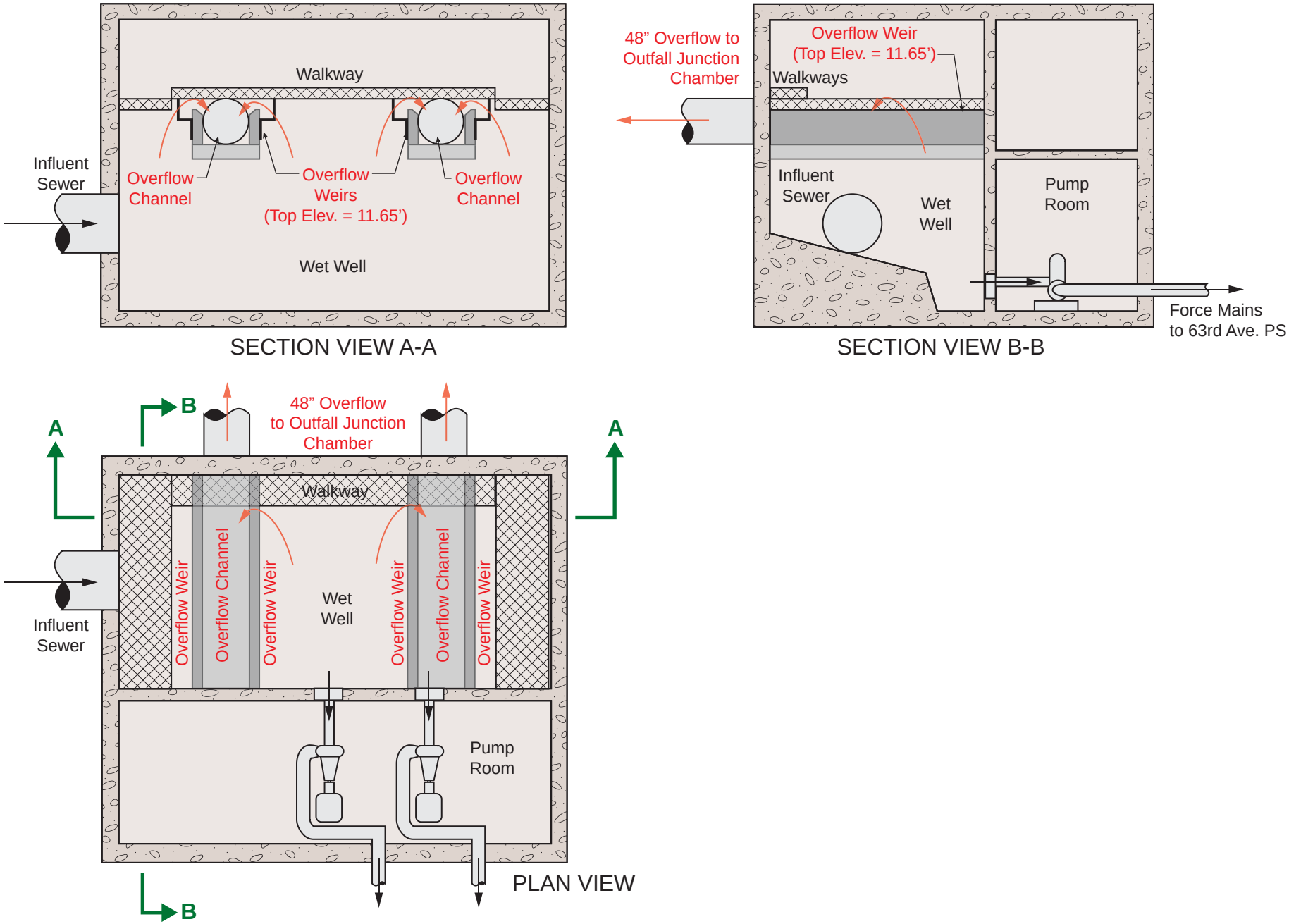
Figure 3.3.
EXISTING CSO CONTROL STRUCTURE
AT BARTON PUMP STATION

King County
Department of Natural Resources and Parks
Wastewater Treatment Division



3630023/Fig3-04_MurrayCSOControlStructure.ai

BARTON AND MURRAY COMBINED SEWER OVERFLOW CONTROL FACILITIES PLAN

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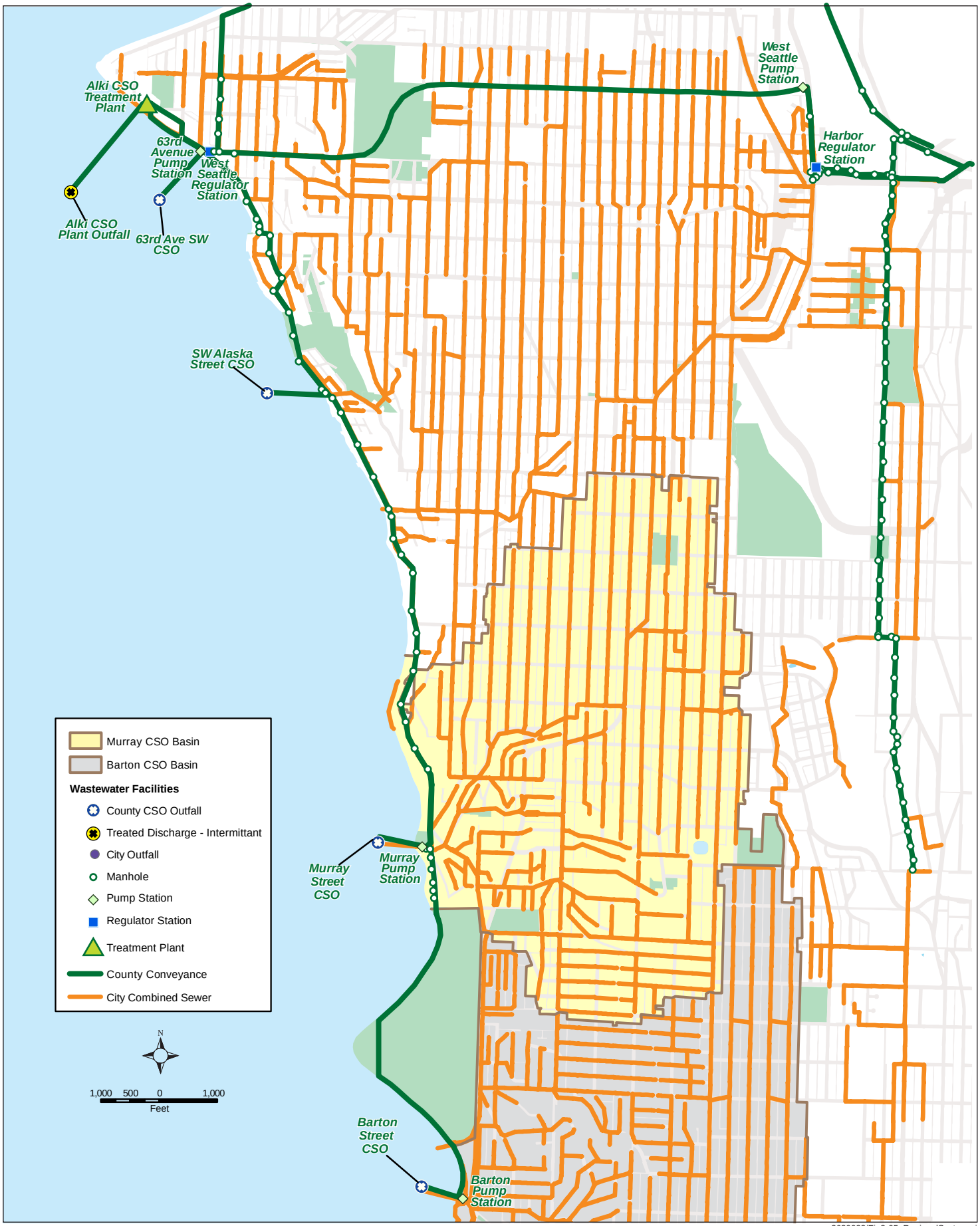
Figure 3.4.
EXISTING CSO CONTROL STRUCTURE AT MURRAY PUMP STATION

King County
Department of Natural Resources and Parks
Wastewater Treatment Division



3630023/Fig3-05_RegionalSystem.ai

BARTON AND MURRAY COMBINED SEWER OVERFLOW CONTROL FACILITIES PLAN

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Figure 3.5.
CSO AND REGIONAL CONVEYANCE SYSTEM

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

Flow to the Murray Pump Station varies from an average dry-weather flow of 3 mgd to a peak wet-weather flow of over 105 mgd (King County modeling). The Murray Pump Station averages five untreated CSO events per year. The total annual volume of discharge from these events averages 5 MG per year.

3.1.3 Public Health

CSOs are a public health concern since they carry pollutants into water bodies, primarily in the form of untreated sewage and stormwater. These pose a threat to aquatic life and the natural environment. CSOs also pose a threat to human health through potential contact with water or the consumption of fish/shellfish harvested from areas of recent CSO discharge. Regulation of CSOs can reduce and control these threats.

3.1.4 Cultural Resources

A review of known and potential cultural, archaeological, and historic resources in the Barton and Murray CSO basins was conducted in 2009 by Cascadia Archaeology. The review found the following:

- Numerous historic properties exist throughout the Barton and Murray CSO basins.
- The area of Upper Fauntleroy Way, east of the Fauntleroy Ferry Terminal, has a high probability of containing archaeological resources. Significant archaeological resources have been uncovered in this area in the past.
- The former Fauntleroy School may be nominated as a Seattle landmark.
- No other known archaeological sites were identified in the Barton CSO basin.
- No known archaeological sites or historic structures have been identified in the vicinity of Lowman Beach Park. However, based on site characteristics and location, this area has a high probability of containing archaeological resources.

3.2 PHYSICAL ENVIRONMENT

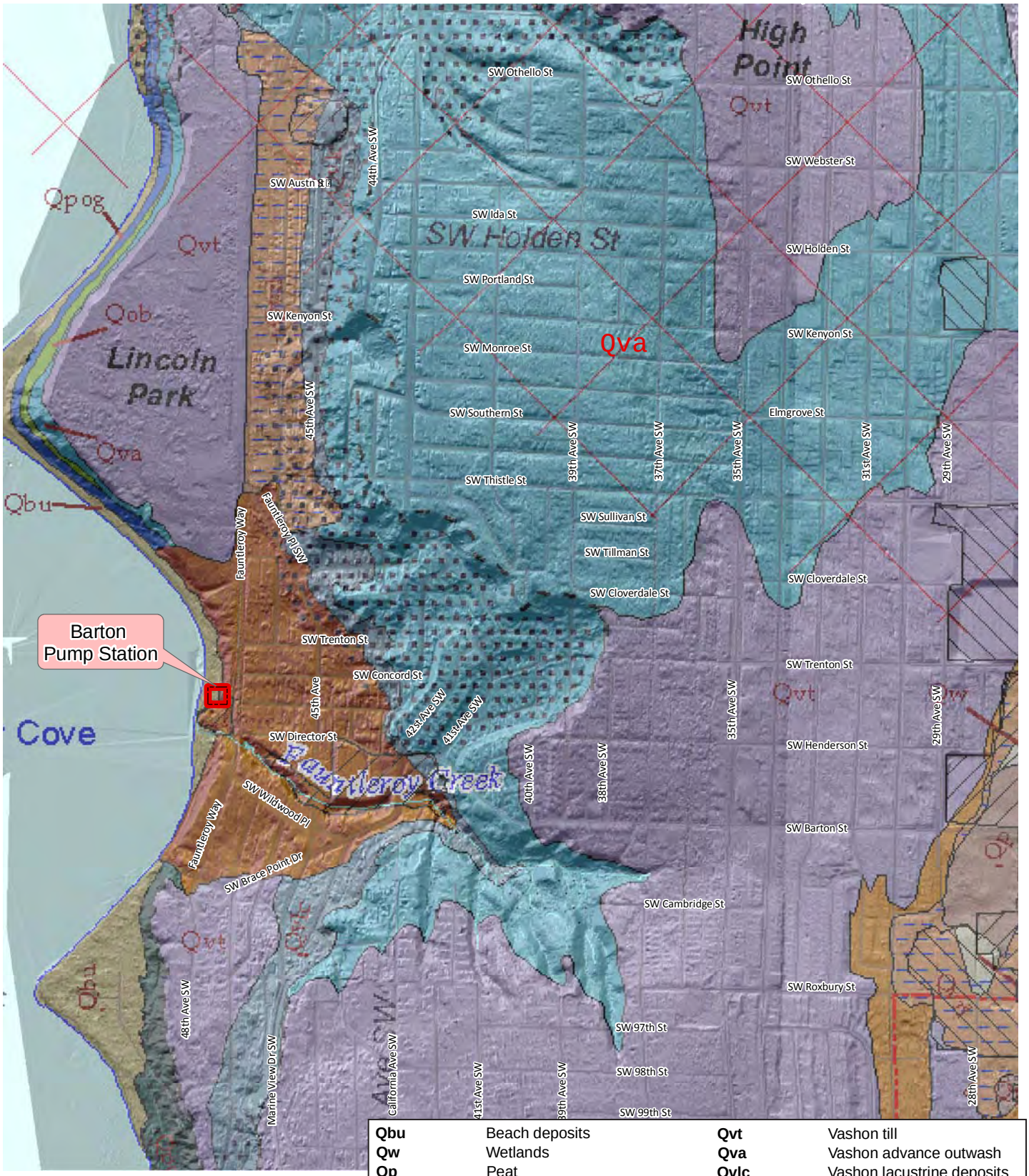
3.2.1 Land

3.2.1.1 <u>Soils/Geology</u>

Geologic maps of the Barton and Murray CSO basins are shown in Figures 3.6 and 3.7. Details are provided below.

3.2.1.1.1 Barton CSO Basin

Soil conditions in the Barton CSO basin are the result of nonglacial and glacial processes during the Pleistocene, post-glacial geological processes, and human modification of the ground surface. The ridge on the eastern end of the Barton CSO basin is underlain by Vashon Till and Vashon Advance Outwash deposited during the last glaciation in the Puget Lowland. Locally, these very dense soils are overlain by a relatively thin layer of recessional outwash and weathered topsoil zones.



Qbu	Beach deposits	**Qvt**	Vashon till
Qw	Wetlands	**Qva**	Vashon advance outwash
Qp	Peat	**Qvlc**	Vashon lacustrine deposits
Qvr	Recessional outwash deposits	**Qob**	Olympia beds
Qvrl	Recessional lacustrine deposits	**Qpog**	Pre-Frasher gravel
Qvi	Ice-contact deposits		Stippled area is covered with mass-wastage deposits

Geology by GeoMap Northwest at the University of Washington.

N

1,000 500 0 1,000

Feet

3630023/Fig3-06_GeologyBarton.ai

BARTON AND MURRAY COMBINED SEWER OVERFLOW CONTROL FACILITIES PLAN

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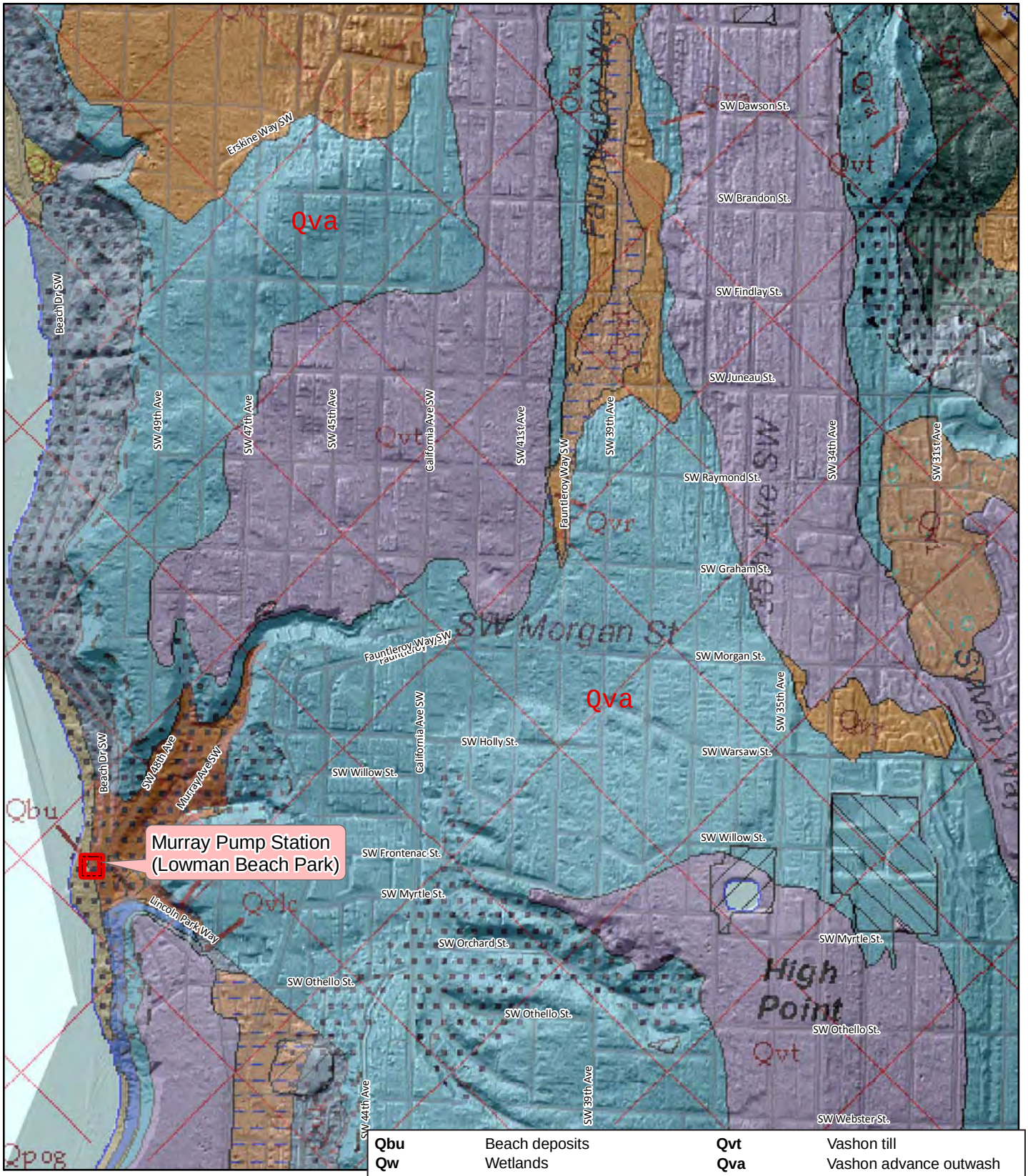
Figure 3.6.
BARTON CSO BASIN GEOLOGY

King County
Department of Natural Resources and Parks
Wastewater Treatment Division



Qbu	Beach deposits	**Qvt**	Vashon till
Qw	Wetlands	**Qva**	Vashon advance outwash
Qp	Peat	**Qvlc**	Vashon lacustrine deposits
Qvr	Recessional outwash deposits	**Qob**	Olympia beds
Qvrl	Recessional lacustrine deposits	**Qpog**	Pre-Frasher gravel
Qvi	Ice-contact deposits		Stippled area is covered with mass-wastage deposits

Geology by GeoMap Northwest at the University of Washington.

N

1,000 500 0 1,000

Feet

3630023/Fig3-07_GeologyMurray.ai

BARTON AND MURRAY COMBINED SEWER OVERFLOW CONTROL FACILITIES PLAN

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Figure 3.7.
MURRAY CSO BASIN GEOLOGY

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

Based upon boring logs obtained for this area, this relatively thin layer is loose to medium dense and is typically 0 to 2 feet thick; however, locally, it may be 5 to 10 feet thick and may have as much as 25 feet of fill material placed over it. Near SW Barton Street and 29th Avenue SW, post-glacial depression deposits consist of a mixture of soft peat and loose to medium dense silt and sand. Both the advance and recessional outwash deposits are relatively pervious, whereas the Vashon Till is relatively impervious. Permeability of the post-glacial depression deposits is highly variable.

In the lower, western part of the Barton CSO basin, the surficial deposit is primarily recessional outwash sand and gravel. This loose to medium dense soil covers glacial clay and till deposits from the early and late Pleistocene. Holocene beach deposits dominate the shoreline area. All of the steep slope areas in the basin are covered with colluvium to depths of 3 to 10 or more feet. This deposit is the result of past landslide and erosional events on the slopes.

3.2.1.1.2 Murray CSO Basin

The surface of the upper, eastern portion of the Murray CSO basin is primarily covered with Vashon Till or Vashon Advance Outwash. The north-oriented swale that follows approximately 39th Avenue SW and 40th Avenue SW is filled with glacial recessional outwash and pond deposits.

The lower part of the ravine system is covered with recessional outwash to the west of 46th Avenue SW, and, in general, the steep slopes of the ravines are covered with 10 or more feet of colluvium. The centers of the ravines contain sand and gravel alluvium, deposited by the small creeks that ran in the bottoms of the declivities. The strip along the shoreline is underlain by beach deposits. Underlying these natural deposits near the shoreline are older glacial deposits of clay, sand, and gravel.

The ground has been modified significantly for the construction of roads, residences, and the existing pump station. In and east of Lowman Beach Park, the original ground has been filled to depths ranging from 7 to 12 feet. The fill consists mostly of loose to dense, silty, slightly sandy gravel and gravelly sand; however, one boring encountered clayey soils. Many of these fill soils contain some organics, wood, boulders and foreign debris.

Underlying the fill are about 10 to 30 feet of very loose to medium dense alluvium (sand and gravel) with organic materials in their matrices, and soft peat layers that were deposited after the disappearance of the last glacial ice. In two recently completed borings, a 2- to 3- foot-thick layer of soft to medium stiff, organic silt was encountered at about sea level. The recent soils are underlain at depths of 21 to 40 feet by medium dense to very dense recessional outwash, consisting of slight silty to silty, gravelly sand and sandy gravel. In a boring in the middle of Lowman Beach Park, hard glacial clay was encountered at a depth of about 34 feet; however, in other adjacent borings, recessional outwash continued down to the bottoms of the borings at 46.5 and 54 feet. Glacially overridden soil was not encountered in these borings. Along Beach Drive SW, the centerline is all in a cut. Adjacent borings to the western side of the road indicate that 5 to 10 feet of fill are underlain by glacially overridden lake silt. The ground surface may also be covered by a thin layer of colluvium, the result of past landslide activity.

3.2.1.2 Topography, Steep Slopes and Landslides

Topography basins is shown in Figure 3.8. Details are provided below.

3.2.1.2.1 Barton CSO Basin

Ground surface elevations in the Barton CSO basin range from roughly 500 feet in the area near High Point Park to 10 to 12 feet at the shoreline near the Barton Pump Station and along the beach near Lincoln Park. The head of the drainage system in the Barton CSO basin is at about 38th Avenue SW, between SW Henderson Street and SW Cloverdale Street. The slopes are steep and covered with vegetation or retaining walls. No landslides are recorded in this area in the Seattle landslide database. The drainage divide in this area is 38th Avenue SW.

The most extensive and deepest ravines in the Barton CSO basin are located west of 37th Avenue SW between approximately SW Barton Street and SW Roxbury Street. The slopes of this ravine are steep and exhibit characteristics of unstable slopes. Many residences are built close to the top-of-slope around the perimeter of this ravine system. Two landslides are reported in the Seattle Landslide database on the northern edge of the ravine system, to the south of SW Barton Street.

The City of Seattle critical area map folio indicates areas of steep slopes at the west edge of Upper Fauntleroy Way (refer to Figure 3.9). The northern portion of the parking lot at the former Fauntleroy School is designated as a potential landslide area. However, observations of the parking lot and surrounding area in the immediate vicinity did not reveal any steep slope areas. Steep slopes and landslide hazard areas are mapped on Figure 3.9.

3.2.1.2.2 Murray CSO Basin

The topography of the Murray CSO basin rises fairly steeply east from the water, and a steep slope/potential landslide band parallels the shoreline above Beach Drive. Ground surface elevations in the Murray CSO basin range from over 500 feet in the area near High Point Park to 10 to 12 feet in the area of Lowman Beach Park. Drainage in the basin terminates at Lowman Beach Park and originates to the southeast, east, northeast, and north. The basin was originally a three-prong drainage system that originated between about 34th Avenue SW and 35th Avenue SW. Much of the system has been modified by street and residential development, particularly in the middle of the basin:

- Lowman Beach Park is the low point of the ravine system prior to its reaching the beach of Puget Sound. The modest fan offshore of the park was built by the streams that formerly flowed in the ravines and emptied into the Sound at the park location. Lowman Beach Park is now relatively level, having been filled in many years ago.
- From the park, the ground rises gently to the north along Beach Drive SW. Beach Drive SW is a relatively gently sloping surface because of the cuts and fills that were made for the road grade. Because of the steep topography to the north, the cuts range from about 10 to 34 feet. Much of the western side of the road is cut, but two small swales were filled to depths of 2 to 6 feet.

3630023/Fig3-08_Topography.ai

BARTON AND MURRAY COMBINED SEWER OVERFLOW CONTROL FACILITIES PLAN

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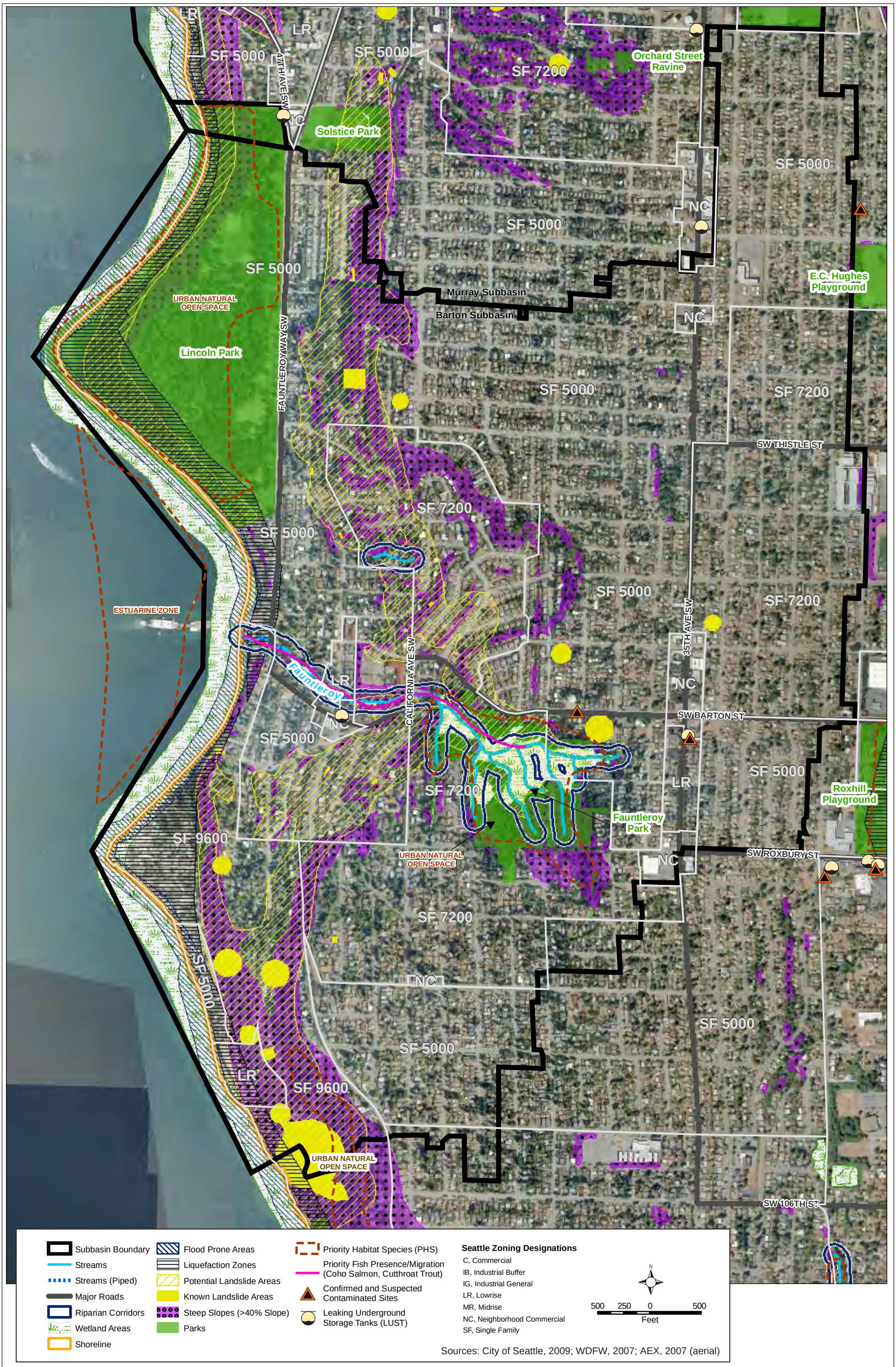
Figure 3.8.
BARTON AND MURRAY CSO BASINS TOPOGRAPHY

King County
Department of Natural Resources and Parks
Wastewater Treatment Division



3630023/Fig3-09_SensitiveAreasBarton.ai

BARTON AND MURRAY COMBINED SEWER OVERFLOW CONTROL FACILITIES PLAN

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Figure 3.9.
BARTON CSO BASIN SENSITIVE AREAS

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

- Northeast from Lowman Beach Park at the bottom of the basin, 48th Avenue SW is built on the western side slope of a major ravine. Cuts 5 to 15 feet high on the western side and fills 0 to 5 feet deep on the eastern side were used to build this road as it climbs the side of the ravine.
- Murray Avenue SW is located on the eastern side of the same ravine, and appears to have been mostly filled for its subgrade.
- Lincoln Park Way SW rises at a relatively steep gradient to the southeast between its intersection with Murray Avenue SW and its intersection with 47th Avenue SW, the result of a fill embankment as high as about 20 to 25 feet on its western side.

The Sunrise Heights neighborhood is on a ridge that is bounded on the west by steep slopes in three areas. The 30- to 40- foot-high head of a west-facing drainage system is located at SW Othello Street and 36th Avenue SW. One landslide is recorded in this area in the Seattle landslide database. Eleven additional landslides are located on the steep slopes of the ravine system, according to the landslide database. One landslide in the database in the 6700 block of Beach Drive SW occurred in 1932. Steep slopes and landslide hazard areas are mapped on Figure 3.10.

3.2.1.3 Soil or Groundwater Contamination

In general, there are few areas in the basins that are known to contain soil or groundwater contamination. These are typically associated with commercial land uses along major arterials. The Washington Department of Ecology maintains databases of contaminated sites. Figures 3.9 and 3.10 depict the sites that have confirmed or suspected contamination or have leaking underground storage tanks according to the Ecology databases. Phase 1 Environmental Site Assessments have been conducted as part of both the Barton and Murray Pump Station Upgrade projects.

3.2.1.4 Liquefaction

Areas of potential liquefaction within each subbasin are depicted on Figures 3.9 and 3.10. In general, this corresponds with the shoreline area of each basin.

3.2.2 Surface Water

In the Barton CSO basin there is one major stream, Fauntleroy Creek, which descends west from headwaters in Fauntleroy Park to the shoreline near the midpoint of the basin at the Fauntleroy Ferry Terminal (see Figure 3.9). The creek is piped for a segment in the lower reaches where it crosses Fauntleroy Way SW and daylights on the south side of the Fauntleroy Ferry terminal. Surface water in the upper basin drains east to Longfellow Creek.

In the Murray CSO basin, most of the surface streams no longer exist. A former widespread system of small creeks has been filled or culverted over the 100 years or more of land development. Surface water in the upper basin drains east to Longfellow Creek.

Pelly Creek in the Murray CSO basin is not indicated as a stream or shown as containing listed fish species by Salmonscape mapping (WDFW, 2009). Priority Habitats and Species

mapping indicates Pelly Creek as a stream (see Figure 3.10) but does not indicate any listed fish species (WDFW, 2010). The lower portions of Pelly Creek have been contained in a pipe. Fish access appeared to be unavailable to the piped outlet of Pelly Creek along the Puget Sound shoreline within Lowman Beach Park.

It was observed that surface flow originated from the Pelly Creek Natural Area to the east of Murray Avenue SW. Immediately east of the roadway, the flow spread out into a small (approximately 400 square foot) wetland area before entering a culvert that conveys it south along the east side of Murray Avenue SW. After about 450 feet, the culvert appeared to pass under Murray Avenue SW and discharge into a surface channel that flows generally west across a vacant lot. Wetland areas were observed adjacent to the stream on this lot. Surface water flow was observed entering a culvert on the west edge of this property. A piped outflow with flowing water was observed in the seawall at Lowman Beach Park, at approximately the same location as indicated by Seattle Critical Areas mapping.

3.2.3 Rainfall

Average rainfall in Seattle is between 36 and 37 inches per year. Heaviest rainfall occurs in the winter months, with November, December and January averaging 5 to 6 inches per month. June, July, and August each average 1 inch per month.

3.2.4 Air

Puget Sound weather is largely a result of maritime influences and 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 building up.

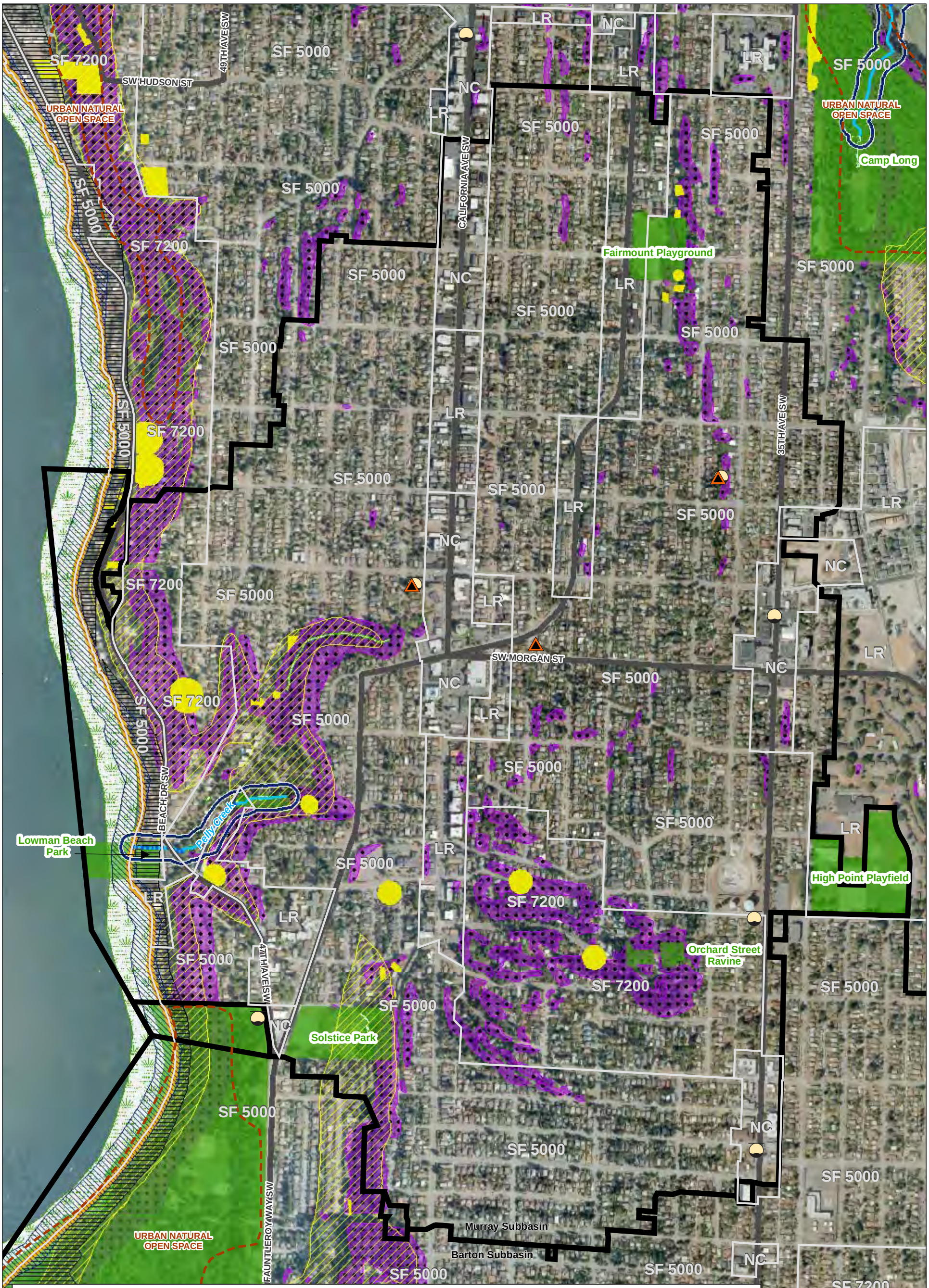
Air quality in King County and the City of Seattle is monitored and regulated by the Puget Sound Clean Air Agency. According to data published in 2007 by the Clean Air Agency (the most recent published data), the air quality in King County was good 78 percent of the time and moderate 21 percent of the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

3.2.5 Sensitive Areas

3.2.5.1 Wetlands and Streams

Wetlands and streams in the Barton CSO basin are shown on Figure 3.9. Mapped areas include the headwaters of Fauntleroy Creek and adjacent to the shoreline. Fauntleroy Creek is the main stream, located in the central portion of the basin (Figure 3.9). Headwaters of the stream are located in Fauntleroy Park. The stream flow west toward Puget Sound. A section of the stream is piped where it crosses Fauntleroy Way SW and then daylights south of the ferry terminal.

In the Murray CSO basin, Pelly Creek is generally conveyed via pipe down the hillside from the upper basin. It emerges from a pipe on the west side of Murray Avenue, traverses a vacant site, and is again directed into a pipe through Lowman Beach Park to Puget Sound. There are wetlands associated with the open portion of the stream through this vacant lot (refer to Figure 3.10).



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BARTON AND MURRAY COMBINED SEWER OVERFLOW CONTROL FACILITIES PLAN

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Figure 3.10.
MURRAY CSO BASIN SENSITIVE AREAS

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

3.2.5.2 Shorelines

The Puget Sound shoreline lies at the bottom of the Barton and Murray CSO basins. Land use along the shoreline is primarily residential. Lincoln Park provides a natural cobble beach area along the northern shoreline of the Barton CSO basin. Immediately south of Lincoln Park is the Fauntleroy Ferry Terminal, operated by Washington State Ferries. The shoreline along both basins is a mix of natural beach, managed beachfront supplemented with sand by the U.S. Army Corp of Engineers, riprap, and bulkhead.

3.2.5.3 Floodplains

The City of Seattle has mapped flood-prone areas in each basin (refer to Figures 3.9 and 3-10). These areas generally correspond to the shoreline of Puget Sound.

3.3 ENDANGERED/THREATENED SPECIES AND HABITATS

Figures 3.9 and 3.10 depict mapped priority habitat species areas and priority fish migration and/or presence areas. In the Barton CSO basin, Lincoln Park and an area in the southern part of the basin are mapped as priority habitat species areas. Fauntleroy Creek contains priority habitat for coho salmon and cutthroat trout. In the Murray CSO basin, Lincoln Park is mapped as a priority habitat species area. Puget Sound contains numerous threatened and endangered species, including Chinook salmon, bull trout, steelhead, canary rockfish, yelloweye rockfish, Bocaccio rockfish, green sturgeon, orca whale, Steller sea lion, and marbled murrelet.

Critical habitat for Chinook salmon, bull trout, and killer whale occurs within the project vicinity. Critical habitat for steelhead, canary rockfish, yelloweye rockfish, bocaccio rockfish, green sturgeon, Steller sea lion, and marbled murrelet is not present in the project vicinity. Designated essential fish habitat for the Pacific salmon fishery and groundfish occurs in the vicinity of the proposed project. A biological evaluation will be prepared for the project in accordance with the requirements of the Endangered Species Act.

REFERENCES:

WDFW. 2010. Priority Habitats and Species GIS. Washington Department of Fish and Wildlife Habitat Program. Olympia, Washington. 2010.
WDFW. 2009. Data on occurrence of listed threatened and endangered fish species and designated critical habitat; searched from http://wdfw.wa.gov/mapping/salmonscape.