SEWER AND STORMWATER UTILITY

AFFECTED ENVIRONMENT

EXISTING SEWER SYSTEM CONDITIONS

The South Downtown study area has one of the older sections of Seattle's sewer system. Approximately 55% of the pipes were built before 1920. Materials used for these older pipes include brick, vitrified clay, and cast iron. Pipes built after 1950 tend to be reinforced concrete. About 75% of the system in the study area is "combined", meaning pipes carry both stormwater and wastewater. Only about 12% of the study area's system consists of separated sewer lines. Seattle is responsible for the collector sewer pipes; these feed into large interceptor lines that are owned and operated by King County Metro, which transports the flows to King County's sewage treatment plant at West Point near Discovery Park.

In the study area, the sewer lines vary widely in size—from 8-inch diameter in limited segments to 48-inch or even 60-inch diameter in some segments, and even larger in the Metro mainline. The King County Metro mainline runs along Occidental Avenue S., S. King Street, and then northward along 2nd Avenue S. and 2nd Avenue. Areas south of S. Royal Brougham Way drain northward. Several sewer lines in Pioneer Square flow westward, while lines in Chinatown typically flow southward toward S. Royal Brougham Way. East of 12th Avenue S. in Little Saigon, sewage flows travel eastward and then southeastward along Rainier Avenue S. and Dearborn Place S. Stormwater outfall points to Elliott Bay include locations at S. Royal Brougham Way and S. Washington Street.

Topography and soils influence sewer system operation in the study area. Fill soils are present in several flatter areas west of I-5, while till soils are more prevalent in higher elevation areas east of I-5. West of I-5, several lower elevation areas have groundwater present at shallow depths, and can be subject to the influences of tidal action in Elliott Bay. This can lead to groundwater infiltrating into older pipes, which can increase the water volumes in the pipes. Shallow groundwater may also create a need for de-watering in some existing buildings to maintain dry conditions in basements, contributing to sewer system volumes.

Many of the pipes have been inspected using cameras and a number of them have some form of defects. This does not necessarily mean that the pipes need to be replaced. A defect can be identified and remain in place for years with virtually no change and no effect on system performance. SPU has found, in fact, that some of the older vitrified clay pipes are exceptionally long-lasting. Spot repairs in many cases are sufficient. In other cases, pipes with a number of defects can be relined to improve their effectiveness.

ENVIRONMENTAL IMPACTS

IMPACTS OF FUTURE GROWTH ON THE SEWER SYSTEM

All Alternatives

Projected growth under any alternative would increase the overall generation of sewage volumes in the study area. Growth would also result in increased coverage of land by new buildings, which would generate additional roof-related stormwater runoff. However, because stormwater control systems are probably non-existent on numerous properties, the inclusion of new on-site stormwater control systems in future development projects would be beneficial in slowing down runoff and reducing the potential for overflows of combined sewer systems during intense storms. In addition, the probable inclusion of additional "green" features into at least some future developments would further help moderate stormwater volumes and peak flows to the combined sewer systems (see discussion below). Also,

expected improvements to the stormwater and plumbing codes would help limit the potential for future system impacts.

SPU is currently modeling the South Downtown sewer system to evaluate the capacity of the current system and its operation, as well as the effects of future growth. At a programmatic level of review, no significant adverse impacts on sewer utilities have been identified due to projected growth under any of the EIS alternatives. This does not rule out the possibility that individual developments might need specific localized improvements to meet service hookup requirements. In such cases, SPU's current policy is that developers provide such improvements.

Under the No Action Alternative (Alt. 4), the expected amount of future growth would be less than predicted for the other alternatives, also with no identified significant adverse impacts on the sewer system.

POSSIBLE DRAINAGE/WASTEWATER SUSTAINABILITY STRATEGIES

SPU has commissioned a study to look at various "demand management" strategies to control stormwater before it enters the wastewater collection system. The performance of several specific strategies is being studied including: green roofs, porous pavement, cisterns (e.g., that provide for "rainwater harvesting"), bioretention swales, tree boxes, infiltration trenches, and other vegetated amenities. The intent of the study is to quantify the potential of these on-site strategies to determine if inclusion in future sewer management decisions is warranted. Environmental benefits might include the potential for reduced combined sewer overflows (CSOs). As noted in the Water Utility section of this chapter, strategies like rainwater harvesting can also be beneficial by providing a source for non-potable water re-use, thereby reducing overall domestic water needs.

The potential inclusion of these types of strategies as incentives or requirements for future development plans in the South Downtown study area could provide for improved performance of the area in its stormwater controls and increase the avoidance of CSOs. The Livable South Downtown planning effort recommends that such strategies be incorporated in future development.

MITIGATION STRATEGIES

Due to a lack of identified significant adverse impacts, no mitigation strategies are proposed. However, please see the strategies listed above relating to environmental sustainability. Completion of the sewer system model may suggest other operational system improvements.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

None are identified.