6.0 Utility Systems

The Waterfront District requires an expansion of utility services to support the anticipated levels of development. Public and private utility suppliers have the capacity to service the full amount of planned development and system upgrades will be made in coordination with the site development schedule. Traditional conveyance lines for water, sewer and stormwater will be included in City rights-of-way. A non-potable, treated raw water conveyance system may also be located in City rights-of-way for irrigation use. These new utility corridors will be pre-excavated and backfilled with clean materials during the initial phase of utility and roadway installation, consistent with site cleanup activities. A utilities master plan, evaluating existing systems and envisioned improvements, has been prepared by the City's Public Works Department to provide a framework for the short-term and long-term improvements. Innovative systems to treat or recycle wastewater or stormwater run-off within buildings or sites will be privately developed and maintained.

Water

The City provides water service to customers in and around the Waterfront District. The City's Capital Facilities Plan, updated in 2006, affirms that improvements to the existing water system can service the full amount of planned development. Potable water mains surround the Waterfront District and extend into the site at a number of locations (Beal Memorial Way in the vicinity of the Oak Street right of way, Pine Street, Laurel Street, C Street, F Street, Hilton Avenue). Additional water system infrastructure will be placed within the site's new roadway network contingent on site development needs and in coordination with other utility system improvements.

Sanitary Sewer

The City provides sanitary sewer utility service to customers in and around the Waterfront District. The City's Capital Facilities Plan, updated in 2006, affirms that improvements to the existing sanitary system can service the full amount of planned development. Sewer pipes surround the Waterfront District and extend into the site at a number of locations (Beal Memorial Way, Pine Street, Laurel Street, C Street, Hilton Avenue). The majority of the site's

existing gravity sewer system, especially in the area south of the Whatcom Waterway, will be reconstructed and relocated within the site's new roadway network contingent on-site development needs and in coordination with other utility system improvements. New on site pump stations will be required to help transport collected wastewater to the Post Point Pollution Control Plant.

Electricity

Puget Sound Energy (PSE) provides electricity to customers in and around the Waterfront District. PSE is expanding its electrical substation system to meet the area's long-term energy demands and will accommodate the planned levels of development in the Waterfront District contingent upon energy demands and site development needs. Most of the site's existing electrical lines will be removed or replaced with below-grade lines within the site's new roadway network in coordination with other utility system improvements.

Natural Gas

Cascade Natural Gas provides natural gas service to customers in and around the Waterfront District. Cascade Natural Gas has sufficient capacity to service the full amount of planned development in the Waterfront District. A 16-inch high-pressure natural gas distribution line traverses the perimeter of the site along Roeder Avenue, Chestnut Street and Cornwall Avenue and gas lines extend into the site at a number of locations. Most gas lines will be removed or replaced within the site's new roadway network contingent on site development needs and in coordination with other utility system improvements.

Stormwater Management

The careful management of stormwater is a high priority for waterfront communities throughout the Puget Sound. Federal, state and local regulatory requirements for stormwater management have become increasingly stringent in an ongoing effort to protect adjacent marine resources. Stormwater is generally managed within the Waterfront District by both the Port of Bellingham and the City of Bellingham under Phase II Municipal Stormwater permits issued by the Department of Ecology. Stormwater management associated with other specific operations, such as construction activity, boatyards and the Aerated Stabilization Basin (ASB), is also regulated by Ecology. Currently most of the stormwater generated in the Downtown Waterfront, Log Pond and Marine Trades areas is routed to the ASB. Stormwater treatment within the ASB will be discontinued prior to cleanup and redevelopment of that facility, requiring the design and permitting of new conveyance and treatment facilities throughout the Waterfront District.

New conveyance and treatment facilities for stormwater typically will be installed in coordination with the phased construction of streets and other infrastructure. The new stormwater systems will be designed in accordance with Ecology stormwater requirements, low-impact development strategies, and MTCA requirements for protecting soil, groundwater, and marine resources. In many locations, the infiltration of stormwater will be avoided in order to prevent contact with contaminated subsoils. However, low-impact development strategies, such as the use of green roofs, pervious surfaces, rain gardens, and bio-swales may be incorporated throughout the site as long as they are designed to be compatible with MTCA site cleanup requirements and meet applicable storm water regulations. Where appropriate and consistent with park goals and plans, these sustainable stormwater features may also be integrated into the new system of waterfront parks, creating a visual and attractive theme of natural water connections between upland areas and newly restored shorelines. New stormwater outfalls will be designed and permitted to ensure that clean stormwater is discharged to Bellingham Bay in locations compatible with comprehensive shoreline restoration projects.

Communication

The Waterfront District is served by telephone, wireless telephone service and cable television. Cable television is available through Comcast Corporation by franchise agreement with the City. Standard telephone service is available through Qwest and wireless telephone service is offered by a number of providers. Communication lines will be extended into the site contingent on site development needs and in coordination with other utility system improvements.

Sustainability

The installation of utility systems provides a unique opportunity to integrate sustainable design principles and functions within the planned infrastructure to help minimize the environmental impacts of development and implement water-neutral and carbon-neutral resource strategies. Utility corridors could include additional piping and infrastructure to support the long-term development of district heating and cooling, on-site energy generation

and wastewater reuse. The vast network of parks and open space could incorporate low- impact development stormwater solutions with significant environmental and economic benefits. As the waterfront develops into an urban village, a coordinated set of sustainable utility system strategies will help improve habitat, minimize the reliance on imported water and demand for water treatment and reduce the demand for nonrenewable energy resources. Innovative district-scale systems that leverage existing waterfront assets – such as district energy, district water, and district stormwater –have tremendous potential to reduce resource consumption and carbon emissions while generating economic benefit to waterfront development partners.

District energy systems save energy and money by using underground pipes to distribute hot water, chilled water or steam from a single source to a network of buildings which do not need boilers, furnaces, or cooling systems. The Port is installing district heating and cooling pipes under the roads to allow for the heating and cooling of buildings from a centralized source. District energy is more efficient with less carbon emissions than localized boilers, and supports a wide range of sustainable strategies such as the recapture and reuse of waste heat from Puget Sound Energy's Encogen Station.

On-site power generation is an energy efficiency strategy which reduces transmission losses from regional power stations and responds directly to the site's energy needs. These systems can be large or small and surplus power can be fed back into the regional power grid. Potential on-site renewable sources of power include solar, wind, tidal, or hydropower. Hydropower could be generated from a surplus industrial pipeline extending from Lake Whatcom to the site which has a hydraulic capacity of 50 million gallons of water per day and historically supplied process water to GP.

District water systems utilize district-scale infrastructure to provide non-potable water to multiple buildings thereby reducing the amount of potable water use consumed by the district. Non-potable water could be supplied from Lake Whatcom via existing industrial water conduits that were previously used to serve the GP facility. Wastewater reuse systems significantly reduce water usage by using advanced treatment to recycle water to support landscape features, toilet flushing, and other building operations. On-site wastewater treatment could be phased with development and might be a cost-effective opportunity to expand treatment capacity and reduce loading to the Post Point Pollution Control Plant.

The Waterfront District presents a unique opportunity to implement a district stormwater system that meets regulatory requirements while maximizing ecological value in a cost effective manner. Relatively clean water from roofs and open spaces could be conveyed in a naturalized creek and pond system which would also serve as an aesthetically pleasing, signature "green" infrastructure resource. Polluted stormwater from traffic areas could be treated in properly designed oil separators and underground settling

tanks. Special consideration is needed for implementing low- impact development stormwater solutions in areas where contaminated soils may be isolated and capped or blended with clean soils to meet state standards for public health and safety. Engineering solutions might include impermeable, rainwater-harvesting structures which act as subsurface "caps" for deeper contaminated materials but allow for near-surface water movement and infiltration for collection.

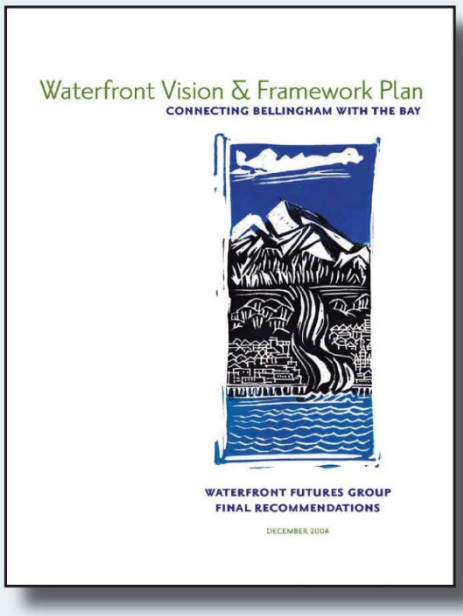
A proactive approach towards sustainable utility systems and infrastructure will help minimize the long-term demand for water and energy, improve habitat, provide aesthetic and recreational value, and reduce long-term capital and maintenance costs.

6.1 Utility System Policies

1. Provide utility facilities that are sufficient to support the planned levels of development.
2. Wherever practicable, place utility distribution lines underground in corridors that are pre-excavated and backfilled with clean materials during the initial phase of utility and roadway installation.
3. Where above ground utility infrastructure and facilities are installed, all efforts should be made to minimize environmental, visual, and aesthetic impacts. Street lights should be shielded to avoid off-site light impacts.
4. Locate transmission lines, pipelines, and other utilities in the same infrastructure corridors whenever possible.
5. Encourage energy conservation, on-site energy generation and the use of on-site renewable energy sources.
6. Reduce the unnecessary or wasteful consumption of water.
7. Encourage low-impact development practices for stormwater management which are compatible with MTCA site cleanup requirements, stormwater regulations, and demonstrate the integration of natural system connections between shoreline restoration projects and appropriate waterfront park designs.

Waterfront District Guiding Principles and Implementation Strategies

The Waterfront Advisory Group sponsored a public involvement process during 2005 and 2006, which led to City and Port adoption of "Guiding Principles and Implementation Strategies" in 2006. The following Implementation Strategies provide guidance related to Utility Systems:



- *Where feasible, use bioswales, rain gardens and other appropriate low-impact development techniques to treat stormwater.*

6.2 Utility Systems Implementation Strategies

1. Coordinate new road construction and the maintenance of existing roads with utility trenching activities.
2. Wherever practicable, install utility infrastructure that supports the long-term implementation of district heating and cooling, wastewater reuse and on-site energy generation.
3. Extend utility services to the site in accordance with the requirements of the utility companies.
4. Coordinate with utility providers for consistency between the comprehensive plans of each utility and development plans in the Waterfront District.
5. Provide timely notice of new construction, maintenance, and repair of existing roads to utility providers.
6. Encourage the use of water conserving design and techniques in required landscaping.
7. Whenever practicable, install utility infrastructure which is compatible with or allows the future conversion to on-site energy production.
8. Wherever practicable, manage and treat stormwater with low impact development techniques that support natural hydrology and ecosystem functions while meeting MTCA site cleanup requirements for protective confinement of contaminated subsoils.
9. Where appropriate, incorporate clean stormwater as an integral resource in the design and construction of parks, open space, landscaping, and shoreline restoration projects in a way that encourages public interaction and awareness of the natural system connections between uplands, shorelines and Bellingham Bay.

LEED ND
Credit Opportunities

Note: LEED ND, developed by the US Green Building Council, is one of many different voluntary rating systems to address and achieve sustainability goals, The above plan features provide potential credit toward LEED ND certification.

Design or purchase traffic lights, street lights, water, wastewater pumps and treatment systems that achieve a 15% annual energy reduction beyond an estimated baseline energy use for this infrastructure.

Incorporate the use of shared on-site, non-polluting renewable energy generation technologies such as solar, wind geothermal, small scale/micro hydro electric and biomass with peak generating capacity at least 5% of the total electrical service load.