

Appendix H Chapter 5 - Policies and Design Criteria
City of Stanwood Comprehensive Sewer System Plan

Policies and Design Criteria

5-1. INTRODUCTION

The City of Stanwood (City) operates and plans sewer service for the City and associated sewer service area residents and businesses according to the design criteria, laws and policies that originate from the United States Environmental Protection Agency (EPA) and the Washington State Department of Ecology (Ecology).

These laws, design criteria, and policies guide the City's operation and maintenance of the sewer system on a daily basis, as well as the City's plan for growth and improvements. Their overall objective is to ensure that the City provides high quality sewer service at a fair and reasonable cost to its customers. They also set the standards the City must meet to ensure that the sewer system is adequate to meet existing and future flows. The system's ability to handle these flows is detailed in **Chapter 6**, and the recommended improvements are identified in **Chapter 7**.

The Stanwood City Council adopts regulations and policies that cannot be less stringent or in conflict with those established by the federal and state governments. The City's policies take the form of ordinances, memoranda, and operational procedures, many of which are summarized in this chapter.

The policies associated with the following categories are presented in this chapter.

- Regulations
- Customer Service
- Collection Systems
- Lift Stations
- Operational
- Organizational
- Finance

5-2. REGULATIONS

National Pollutant Discharge Elimination System Permit

The State of Washington regulates the federal effluent limitations with the National Pollutant Discharge Elimination System (NPDES) program. Wastewater discharge into the waters of the State shall have an NPDES permit from Ecology. The City's permit allows 1.5 MGD for the average flow during the maximum month. The permit also contains influent and effluent quality standards,

CHAPTER 5

monitoring requirements, pretreatment requirements, and system maintenance requirements; a copy of the NPDES permit is included in **Appendix B**.

Other Regulations and Required Permits

The City also holds permits, is regulated by the Puget Sound Clean Air Agency (Registration No. 10947) and maintains a lab accreditation through Ecology (**Appendix H**).

5-3. CUSTOMER SERVICE POLICIES

Sewer Service and Connection

- The City will strive to provide sewer service to the people within the City's sewer service area, provided all policies related to service can be met.
- All proposed developments within the City's sewer service area shall connect directly to the City's sewer system, unless deemed unfeasible by the City at the time of the request.
- Sewer system extensions required to provide sewer service to proposed developments shall be approved by the Department of Public Works and must conform to the City of Stanwood Comprehensive Sewer System Plan, City of Stanwood *Wastewater Facilities Plan*, Ecology, Snohomish County Health District requirements, and the City's most current, adopted Design and Construction Standards and Specifications. All costs of the extension shall be borne by the developer or applicant. The sanitary sewer section (Chapter 5) from the City's Spring 2006 Design and Construction Standards and Specifications is included in **Appendix G**.
- Sewer service can be extended outside of the City limits and within the Urban Growth Area (UGA) only if the project is in compliance with the City's utility regulations, standards, and policies.
- Sewer service cannot be extended outside of the City's UGA, except for certain exceptions identified in City Code.
- Sewer extensions shall be given based on system capacity using the following priorities.
 1. Extensions shall first be given to applicants within City limits.
 2. Second priority shall be given to those applicants within the UGA.
 3. Extensions may be given higher priority where existing environmental problems make extension necessary.
- For sewer service applications within the City limits, the City will review the availability for sewer service at the time of land use permitting, site development permit review, and building permit. During the land use permitting process, the City will determine if sewer is available for the site. During the site development permit review, the City will address the sizing and location of the sewer extension. The formal sewer service application begins at the time of building permit when service sizing is evaluated.

- For sewer service applications outside of the City limits but within the UGA, the applicant must first obtain a sewer utility service agreement from the City. The City will review the agreement and determine the availability of sewer. ~~Current policy requires annexation~~ Annexation is required before service can be provided outside City limits.
- Sewer collection system, lift station, and treatment plant capacity will be considered when providing sewer availability to applicants.
- Sewer availability shall expire at the time that the associated permit expires (i.e. land use, site development or building permit).
- Time extensions in regards to sewer availability shall be granted in accordance with the associated permit requirements. When extensions are denied, the disputes are handled through the rules guiding the associated permit process. Disputes can be brought to the City Council for discussion.

Septic Systems

- Existing single-family homes with septic systems in good working condition, per the Snohomish County Health Department, may continue to be used. All septic systems in the City shall be monitored per the Snohomish County Health Department's regulations.
- Property owners with a failing septic system, as documented by the Snohomish County Health Department, shall connect to the sewer system.
- Connection to the public sewer system is not required for structures that generate sewage that is located 200 feet or more away from the public sewer.
- Any private residential or commercial development property that is adjacent to a public sewer location is required to connect to the public sewer system regardless of distance from the public sewer.

5-4. COLLECTION SYSTEM POLICIES AND DESIGN CRITERIA

Sanitary Sewer Design Criteria

- All sewer lines within the City shall be designed in accordance with good engineering practice by a professional engineer with the minimum design criteria presented in the *Criteria for Sewerage Works Design*, prepared by Ecology, August 2008, or as superseded by subsequent updates. Chapter C1 of this document includes standards and guidelines for design considerations (minimum pipe sizes, pipe slopes and wastewater velocities), maintenance considerations, estimating wastewater flow rates, manhole locations, leak testing and separation from other underground utilities. These criteria have been established to ensure that the sanitary sewers convey the sewage and protect the public health and environment. The sewer lines shall also conform to the latest regulatory requirements relating to design.

CHAPTER 5

- Sewers shall be designed and constructed in accordance with the City's most current Design and Construction Standards and Specifications.

Gravity Sewer Design Criteria

- All sewers shall be designed as a gravity sewer whenever feasible and buried at a minimum depth of 5 feet.
- Layout of extensions shall provide for the future continuation of the existing system as determined by the City.
- The smallest diameter sewer allowed is 8 inches for submains and mains and 4 inches for laterals. A 6-inch diameter submain lateral is required for all commercial or business owners.
- Manholes shall be 48 inches in diameter and will be spaced at intervals not to exceed 400 feet for 8-to 15-inch sewers and 500 feet intervals for 18-to 30-inch sewers.
- Manholes shall also be located at changes in grade, direction, and sewer size, and at intersections.
- New mains connecting to an existing main shall be made via a new or existing manhole.

Design Flow Rates

- New gravity sewer systems shall be designed on the basis of an average daily per capita flow of sewage of not less than 100 gallons per day (gpd).
- Laterals and submain sewers should be designed to carry not less than 400 gallons daily per capita contribution sewage when running full.
- All sewers will be laid on a grade to produce a mean velocity of at least 2 feet per second (fps) when flowing full.
- Sanitary sewer system flows are composed of residential, institutional, business, commercial, and industrial wastewater, along with infiltration and stormwater inflow. Sanitary sewer systems must be capable of conveying the ultimate peak flows of these sources.
- No overflows will be permitted.

Gravity Pipe Material and Roughness

- Gravity sewer main shall be polyvinyl chloride (PVC). All materials shall be in accordance with the City's most current Design and Construction Standards and Specifications.
- The Manning equation is used to design and analyze wastewater flow characteristics of sanitary sewers. The Manning roughness coefficient "n" varies depending on the pipe material; a "n" value of 0.013 shall be used unless deemed justifiable on the basis of research or field data submitted.

Separation between Sanitary Sewer and Other Utilities

- A minimum horizontal separation of 10 feet is required between sewer and water lines (edge to edge).
- The guidelines provided in Ecology's *Criteria for Sewage Works Design* should be followed for difficult spacing or other situations.

Design Period

- The design period is the length of time that a given facility will provide safe, adequate and reliable service. The design period selected is based on the economic life of a given facility, which is determined by the structural integrity of the facility, the rate of degradation, the replacement cost, the cost of increasing the capacity of the facility and the projected population growth rate serviced by the facility.
- Collection and interceptor sewers are designed for the peak development of a contributing area.
- The life expectancy for new sanitary sewers, using current design practices, is in excess of 50 years.

Force Main Design Criteria

- All force mains within the City shall be designed in accordance with good engineering practice by a professional engineer with the minimum design criteria presented in the *Criteria for Sewerage Works Design*, prepared by Ecology, August 2008, or as superseded by subsequent updates. Chapter C2 of this document contains design considerations for force mains.
- A control method to mitigate hydrogen sulfide odor and the buildup of sulfuric acid shall be used.
- A minimum velocity to maintain solids in suspension is 2 fps at average dry weather flow. A minimum scouring velocity of 3 fps should be maintained and velocities should not exceed 8 fps.
- Allowable force main pipe material shall include ductile iron, polyvinyl chloride (PVC), or high density polyethylene (HDPE) for sizes up to 12 inches. Ductile iron and PVC shall be used for pipe sizes 14-to-24 inches. All materials shall be in accordance with the City's most current Design and Construction Standards and Specifications. Force mains shall have a minimum of 36 inches of cover.
- Extension layouts shall provide for the future continuation of the existing system as determined by the City. Main extensions may be extended to and through the side of the affected property fronting the main.

CHAPTER 5

- Provisions to drain the force main for repair or to temporarily remove the force main from service shall be provided.

Side Sewer Design Criteria

- Side sewers shall provide a single service. Each individual single-family, duplex, and triplex unit shall have its own side sewer. Four-plex and larger multi-family buildings, as well as other non-residential buildings shall have one side sewer per building. The property/building owner shall own and maintain sewer service from the building to the sewer main.
- Side sewers shall be installed in accordance with the City's most current Design and Construction Standards and Specifications.
- A side sewer shall be stubbed to the existing lots at their property line when a new main is installed in front or alongside of existing properties.

5-5. LIFT STATION POLICIES AND DESIGN CRITERIA

- Lift stations shall be designed in accordance with the City's most current Design and Construction Standards and Specifications and Ecology's *Criteria for Sewage Works Design*.
- The design of the lift station, including layout, building, equipment, and control systems, shall be equal to the City's existing Copper Station Lift Station unless otherwise approved by the Public Works Director.
- A lift station emergency bypass connection shall be provided per Standard Details.
- Lift stations shall be designed for peak design flow with the largest pump out of service.
- Lift stations should be designed for a 20-year design life.
- All existing and future lift stations will be modified/constructed to comply with the following minimum standards.
 1. All structures will be non-combustible, where practical.
 2. All buildings will have adequate heating, cooling, ventilation, insulation, lighting, and work spaces necessary for on-site operation and repair.
 3. Sites will be fenced to reduce vandalism and City liability.
 4. Each station will be equipped with a flow meter and all necessary instrumentation to assist personnel in operating and troubleshooting the facility.
 5. Emergency power capability will be provided at all lift stations.
 6. Each station shall be equipped with a bypass to allow manual control.
 7. Each station shall address corrosion control.
 8. Each station shall include an intrusion alarm system.
- Pumps will be operated automatically, with flexibility in pump start/stop settings.

- Pumps shall be a submersible Wemco-Hidrostal Prerostal pre-rotation pumping system unless otherwise approved by the Public Works Director.
- Stations will be operated with the provision for at least two methods of control to minimize system vulnerability.

5-6. OPERATIONAL POLICIES

Maintenance

- Equipment breakdown is given highest maintenance priority, and repairs should be made as soon as possible.
- Equipment should be replaced when it becomes obsolete.
- Worn parts should be repaired, replaced or rebuilt before they represent a high failure probability.
- Equipment that is out of service should be returned to service as soon as possible.
- A preventive maintenance schedule shall be established for all facilities, equipment, and processes.
- Spare parts shall be stocked for all equipment items whose failure will impact the ability to meet other policy standards.
- Tools shall be obtained and maintained to repair all items whose failure will impact the ability to meet other policy standards.
- Dry, heated shop space shall be available to all maintenance personnel to maintain facilities.
- All maintenance personnel shall be trained in the procedures and techniques necessary to efficiently perform their job descriptions.
- Written records and reports will be maintained on each facility and item of equipment showing operation and maintenance history.

Temporary and Emergency Services

- Compliance with construction standards (not quality standards) may be deferred for temporary sewer service.
- Compliance with all standards may be deferred for emergency sewer service.

Reliability

- The City shall ensure that the sewer system is constructed, operated, and maintained to protect against failures of power supply, treatment process, equipment or structure with appropriate backup facilities.

5-7. ORGANIZATIONAL POLICIES

Structure

- The Utilities Department Manager (Public Works Director) is responsible for overall sewer utility financial planning and management.
- The Sewer Utility Superintendent is responsible for the day-to-day operations of the sewer system, including system operation and maintenance, personnel staffing and management, and reporting requirements.
- The sewer utility is responsible for adequate system operation and maintenance.
- Planning, design, operations, maintenance, and construction will be accomplished or overseen by the Public Works Department.

Staffing

- The sewer utility staffing levels are established by the City Council based on the financial resources of the City and needs of the sewer utility.
- Personnel certification and training will comply with State established standards.

Relationship with Other Departments

- The Finance Department works in conjunction with the Utilities Department Manager (Public Works Director). The Utility Manager and Finance Director coordinate all sewer-related financing requirements. The Finance Department is responsible for customer billing and payment collection, and the Finance Department collects connection fees for the Utility and the Utility Division and oversees project cost accounting.
- The Human Resources Department is responsible for employee records, union labor negotiations and salary schedules.
- The Fire Department is responsible for emergency responses to hazardous events at sewer system facilities.
- The Police Department and/or Sewer Department are responsible for enforcing violations of the City's sewer ordinances.
- The Water Department is responsible for shutting off water service if a customer does not pay their sewer bill.
- The Sewer Department will participate in the implementation of the Water Department's Water Use Efficiency and Cross-Connection Control Programs.

5-8. FINANCIAL POLICIES

General

- The City will set rates that comply with State regulations.
- Rates and additional charges established for the City should:
 1. Be cost-based rates that recover historical, current, and future costs associated with the City's sewer system and its services;
 2. Be equitable charges to recover costs from sewer customers commensurate with the benefits they receive;
 3. Be an adequate and stable source of funds to cover the current and future annual cash needs of the sewer utility; and
 4. Not subsidize the operation of other City departments.
- The City's existing customers will pay the direct and indirect costs of operating and maintaining the sewer facilities through user rates. In addition, the user rates will include debt service incurred to finance the capital assets of the utility.
- New customers seeking to connect to the sewer system will be required to pay a connection charge for an equitable share of the cost of the system's capital improvement plan (CIP). This revenue will be used to finance the CIP, in conjunction with rate revenue.
- New and existing customers will be charged for extra services through a separate ancillary charge based on the cost to provide the service. Ancillary charges can increase equitability and operating efficiency by discouraging unnecessary demand for services by the customers. The charges should be reviewed regularly and updated annually based on increases in the Consumer Price Index for the City area. Revenue from ancillary charges will be used to finance annual operations and maintenance.
- The City will maintain information systems that provide sufficient financial and statistical information to ensure conformance with rate-setting policies and objectives.
- The user charges must be sufficient to provide cash for the expenses of operating and maintaining the utility. To ensure the fiscal and physical integrity of the utility, an amount should be set aside each year for capital expenditures from retained earnings. That is, an amount should be set aside to cover some portion of the depreciation of the physical plant. The amount may be transferred from the operating fund to the capital fund for general or specific purposes.
- A working capital reserve will be maintained to cover unanticipated emergencies, bad debts, and fluctuations in cash flow.
- The sewer rates will be based on the cost of providing sewer service. Service requirements relate to the total volume of water used, peak rates of use, and other factors.

CHAPTER 5

- The City's fees and charges should be calculated for the service area as a whole. Rates will be the same regardless of service location for existing customers. Rates charged in annexed areas or outside the City limits shall be assessed a rate consistent with the Stanwood Municipal Code (SMC).

Connection Charges

The owners of properties that have not been assessed, charged or have not borne an equitable share of the cost of the sewer collection and sewer treatment facilities shall pay one or more of the following connection charges prior to connection to a sewer main.

1. **Latecomers Fees:** Latecomers fees are negotiated with the City, developers, and property owners for the reimbursement of a pro rata portion of the original costs of sewer system extensions and facilities and are documented in a Recovery Contract or City resolution, depending on the application.
2. **Connection Charge:** The connection charge shall be assessed against any property connecting to the sewer system. This charge is for the major facilities that deliver the sewage to a treatment facility and for the facilities to treat and dispose of the sewage. This charge reimburses customers who have paid for the facilities described and for building capacity to accommodate growth.
3. **Developer Extension Charges:** These charges are for the administration, review, and inspection of a developer extension project.
4. **Developer Funded Improvements:** These are costs incurred by a developer to upgrade and increase capacity in the sewer system to accommodate the increase in flow from the proposed development.

Table of Contents

5-1. **INTRODUCTION**1

5-2. **REGULATIONS**.....1

 National Pollutant Discharge Elimination System Permit1

 Other Regulations and Required Permits2

5-3. **CUSTOMER SERVICE POLICIES**2

 Sewer Service and Connection2

 Septic Systems.....3

5-4. **COLLECTION SYSTEM POLICIES AND DESIGN CRITERIA**.....3

 Sanitary Sewer Design Criteria.....3

 Gravity Sewer Design Criteria4

 Design Flow Rates4

 Gravity Pipe Material and Roughness4

 Separation between Sanitary Sewer and Other Utilities5

 Design Period5

 Force Main Design Criteria.....5

 Side Sewer Design Criteria6

5-5. **LIFT STATION POLICIES AND DESIGN CRITERIA**6

5-6. **OPERATIONAL POLICIES**7

 Maintenance7

 Temporary and Emergency Services.....7

 Reliability7

5-7. **ORGANIZATIONAL POLICIES**8

 Structure.....8

 Staffing.....8

 Relationship with Other Departments8

5-8. **FINANCIAL POLICIES**9

 General9

 Connection Charges10