LAKE WHATCOM WATER AND SEWER DISTRICT

1220 Lakeway Drive
Bellingham, Washington 98229

COMPREHENSIVE SEWER PLAN
2014 UPDATE

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TABLE OF CONTENTS

TABLE OF CONTENTS

GLOSSARY OF TERMS, ACRONYMS AND ABBREVIATIONS

Average dry weather flow	The average non-storm flow over 24 hours during the dry months of the year (May through September). It is composed of the average sewage flow and the average dry weather inflow/infiltration.
Average wet weather flow	The average flow over 24 hours during the wet months of the year (October through April) on days when no rainfall occurred on that or the preceding day.
BBWARM	Birch Bay Watershed Aquatic Resources Management District
BMPs	Best management practices
BOD (Biochemical Oxygen Demand)	A measure of the quantity of oxygen used by microorganisms that consume organic substances. The test measures uptake during oxidation of the carbon and nitrogen based substances and is commonly reported as a "five-day" value reflecting the test period.
CAOs	Critical Areas Ordinances
CIP	Capital improvement program
City	City of Bellingham
Clean Water Act (CWA)	Also known as the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.).
Collection main	In collection systems, this is a larger pipe in which smaller branch and submain sewers are connected. The collection main may also be called a main or trunk sewer.
Collection system	In a wastewater system, a collection system is a system of pipes which receives and conveys sewage and/or storm water.
County	Whatcom County
Dissolved Oxygen (DO)	The oxygen dissolved in water or wastewater. Its concentration is typically measured in milligrams per liter (mg/l) or in percent saturation.
District	Lake Whatcom Water and Sewer District
DOE	Washington State Department of Ecology.
DOH	Washington State Department of Health.
Domestic wastewater	Human-generated sewage that flows from homes and businesses.
DNR	Washington Department of Natural Resources

Ecology (DOE)	Washington State Department of Ecology
EPA	United States Environmental Protection Agency.
ESA	Endangered Species Act
Fecal coliform bacteria	A group of organisms common to the intestinal tracts of humans and animals. The presence of fecal coliform bacteria in water, wastewater, or biosolids is an indicator of pollution and possible contamination by pathogens.
Force main	A pipeline leading from a pumping station that transports wastewater under pressure.
GMA	Growth Management Act
GPD	A measurement of flow rate expressed in gallons per day.
HDPE	High-density polyethylene pipe
HOA	home owner's association
HPA	Hydraulic Project Approval
I & I	Infiltration and inflow
Infiltration	The penetration of water from the land surface into the soil, or the penetration of water from the soil into a sewer system by such means as defective pipes, pipe joints or connections, or manhole walls.
Inflow	Flows of extraneous water into a wastewater conveyance system from sources other than sanitary sewer connections, such as roof leaders, basement drains, manhole covers, and cross-connections from storm sewers.
Interceptor sewers	The portion of a collection system that connects main and trunk sewers with the wastewater treatment plant, thereby controlling the flow into the plant.
JMUSA	Joint Municipal Utility Service Authority/Agreement
LAMIRD	Limited Area of More Intense Rural Development
Large On-site sewage treatment system (LOSS)	A DOH permitted facility receiving less than 100,000 gpd of sewage from residential sources.
Lateral sewers	Pipes that receive sewage from homes and businesses and transport that sewage to trunks and mains.
LMD	Lake Management District
LLRI	Lake Louise Road Interceptor
LWBI	Lake Whatcom Boulevard Interceptor
LWMP	Lake Whatcom Management Program
Main sewer	This is a larger pipe in which smaller branch and submain

	sewers are connected. It may also be called a trunk sewer.
MG	Million gallons, a measure of liquid volume.
MGD	A measurement of flow rate expressed in millions of gallons per day.
mg/L	A measurement of concentration in milligrams per liter sometimes expressed as parts per million (ppm).
National Pollutant Discharge Elimination System (NPDES)	Section 402 of the U.S. Clean Water Act, which prohibits discharge of pollutants into navigable waters of the United States unless a special permit is issued by EPA, a state, or (where delegated) a tribal government on an Indian reservation.
NPDES Permit	Permit issued under the National Pollution Discharge Elimination System, which establishes reporting requirements and other conditions for discharge of pollutants to receiving waters.
OSS	Residential on-site sewage treatment system
O&M	operation and maintenance
Pathogens	Microorganisms that can cause disease in other organisms or humans, animals, and plants. Pathogens include bacteria, viruses, fungi, or parasites found in sewage, in runoff from farms or city streets, and in water used for swimming. Pathogens can be present in municipal, industrial, and nonpoint source discharges.
Peak flow	The maximum flow expected to enter a facility.
Phase II Permit	Western Washington Phase II Municipal Stormwater Permit
Pump station	A pump station is used when sewer trunk lines have conveyed flows to a low-lying area. The pump station lifts the wastewater up to a point where it can flow by gravity to a wastewater treatment plant or another pump station
PVC	polyvinyl chloride pipe
Raw sewage	Untreated wastewater.
RCW	Revised Code of Washington
Sewer Basin / Zone	The land area tributary to a collection system point that includes all sources of the wastewater at issue.
Side sewer	A privately owned and maintained sewer which connects the plumbing system of the building to the public sewer pipes.
SSWU	Storm and Surface Water Utility (City)
State Environmental Policy Act (SEPA)	A state law (Chapter 43.21C RCW) that requires state agencies and local governments to consider environmental

	impacts when making decisions about certain activities, such as development proposals over a certain size, and comprehensive plans. As part of this process, environmental impacts are documented and opportunities for public comment are provided.
Stormwater	Water that is generated by rainfall and is often routed into drain systems in order to prevent flooding.
SVCA	Sudden Valley Community Association
Telemeter	To transmit to a distant receiving station by radio or other electronic means.
TMDL	total maximum daily load
Treatment	Chemical, biological, or mechanical procedures applied to industrial or municipal wastewater or to other sources of contamination to remove, reduce, or neutralize contaminants.
Trunk sewer	This is a larger pipe in which smaller branch and submain sewers are connected. It may also be called a main sewer.
TSS (Total Suspended Solids)	Small particles that either float on the surface or are suspended in water.
UGA	Urban Growth Area
ULID	Utility Local Improvement District
WAC	Washington Administrative Code
Wastewater collection system	The piping and pumping system used for the collection and conveyance of domestic, commercial, and industrial wastewater.
Water quality criteria	Standards used to protect of water for drinking, swimming, raising fish, farming or industrial use.
Watershed	Lake Whatcom Watershed
Wastewater Treatment Plant (WWTP)	A DOE permitted water pollution control facility intended to remove pollutants from wastewater and provide disinfection before discharge.
WCC	Whatcom County Code
WDFW	Washington Department of Fish and Wildlife

I. BACKGROUND

A. Scope and Objective of Update

1. General

This updated Comprehensive Sewer Plan for Lake Whatcom Water and Sewer District (District) has been prepared at the request of the District Board of Commissioners and in accordance with the Washington State Department of Ecology (DOE) guidelines as presented in WAC 173-240-50.

2. Scope and Objective

The purpose of this report is to provide a comprehensive overview of the existing sewage installations and treatment facilities operated and maintained by Lake Whatcom Water and Sewer District. In addition, this report addresses potential future facilities development and projected population growth.

This report will cover the following topics:

- system owner/operator information,
- sewer system layout including a description of the existing system boundaries,
- description of existing collection facilities including recently completed improvements,
- discussion of development trends within sewer district boundaries,
- discussion of existing and future collection and treatment issues such as existing and future sewer flows, and infiltration/inflow (I&I),
- discussion of sewer rate structure and revenue planning,
- discussion of present and future development alternatives within the district boundaries,
- outline of future improvement projects within the District.

3. Overview of Growth Management Implications on this Comprehensive Sewer Plan Update

This update of the Comprehensive Sewer Plan for Lake Whatcom Water and Sewer District seeks to comply with the Whatcom County Comprehensive Plan and the requirements of the Growth Management Act (GMA). The primary reasons for Lake Whatcom Water and Sewer District to update its plan at this time are:

- to ensure compliance with RCW requiring regular updates,
- to incorporate capital improvements made in the last several years,
- to outline and update the District's Capital Improvement Plan, and
- to ensure the District's ability to set and collect appropriate General Facilities Charges (i.e. connection charges) and sewer service charges for all District facilities.

Lake Whatcom Water and Sewer District owns and operates wastewater facilities in unincorporated Whatcom County. The District boundary includes the area around Lake Whatcom that is not part of the City of Bellingham. The District operates collection systems on both the north and south shore of Lake Whatcom and now has twenty-seven sewer pump stations, all located in Whatcom County.

Although not presently permitted under GMA or by its current comprehensive plan, Whatcom County previously approved development and lot creation at urban densities around Lake Whatcom, both inside and outside of what are now designated as UGAs and LAMIRDs. This Plan is based on the District's judgment that, where such residential development already exists or is permitted under previous Whatcom County subdivision and development approvals, connection to public sewer should be required and use of on-site septic systems (OSS) should not be permitted these urban-density properties should be connected to public sewers and on-site septic systems (OSS) should not be allowed.

Whatcom County is the land-use planning and permitting authority for the District area. This Comprehensive Sewer Plan endeavors to be consistent with the provisions contained in the Whatcom County Comprehensive Plan.

B. System Owner/Operator Information

1. District Office Location and Governing Information

The sewer collection facilities covered in this report are owned and operated by:

Lake Whatcom Water and Sewer District (formerly Whatcom County Water District 10)
1220 Lakeway Drive
Bellingham, Washington 98229
(360) 734-9224 – Office Telephone
(360) 738-8250 – Office Fax

The District is administered by a five-person Board of Commissioners (Board) who are each elected to six (6) year terms. This Board meets twice monthly and holds special sessions as the need arises.

2. District Operations Information

The District is responsible for planning, construction, operation and maintenance of all public sewer facilities within the District's boundaries around Lake Whatcom, Washington. In addition, the District is responsible for operation and maintenance of a 10-inch force main and a 12-inch force main operating between the District's existing collection system and the City of Bellingham's collection system for transport to the City's Wastewater Treatment Plant. The operations and maintenance of the District's facilities is overseen by the General Manager who works with a support staff consisting of an Assistant General Manager/Engineer, Finance Manager, Administrative Assistant and five other office administrative staff members. The field crew consists of an additional nine employees. The District contracts for legal counsel, consulting engineers, and auditors. The District operates out of their office at 1220 Lakeway Drive, and their maintenance facility at 1010 Lakeview Street, Bellingham, Washington.

C. Existing District Boundaries and Sewer System Locations

1. General District Boundary Information

Lake Whatcom Water and Sewer District (formerly Whatcom County Water District No. 10) was originally formed in November 1968 to provide sewer service to the residences around Lake Whatcom that were not already served by the City of Bellingham. In 1971 a sewer interceptor between Sudden Valley and Geneva was constructed to transport sewage to the City of Bellingham for treatment. At the same time, a series of utility local improvement districts (ULIDs 1-5) were established in Geneva and Edgewater Lane (on North Shore) for the construction of branch collector sewers. Collector sewers and pump stations were installed in Sudden Valley as each Division was developed. Subsequent to formation, the District assumed control and operation of the Sudden Valley Development water and sewer system on January 1, 1977, and of the Geneva Water Corporation July 1, 1977.

In the late 1970s, the District helped establish two utility local improvement districts (ULID No. 11 and ULID No. 16) and constructed the majority of the North Shore Sewer System. These two ULIDs financed the main interceptor and pump stations. Developer extension agreements have expanded the sewer collection system to include the Eagleridge, Agate Heights, and Edgewood subdivisions.

The District boundary includes areas in southwestern Whatcom County which are situated around and/or in the immediate vicinity of Lake Whatcom. The extent of the District's existing boundaries is detailed on Exhibit A.

Lake Whatcom Water and Sewer District can be divided into the following three main components for the purpose of analyzing its wastewater systems:

a. Sudden Valley - Geneva Collection System – The District owns and operates a wastewater collection and force main transport system on the south-west shore of Lake Whatcom serving the Geneva area, the Sudden Valley Divisions and adjacent areas.
b. North Shore Collection System – The District owns and operates a wastewater collection and force main transport system on the north-west shore of Lake Whatcom serving those not served by the City of Bellingham.
c. South Lake Study Area – This area is included within the District's official boundary and encompasses the area adjacent to the south-east tip of Lake Whatcom. The District does not provide water or sewer service to the existing developed properties in the South Lake Study Area, so all rely on septic systems and wells or lake draws for drinking water. In late 2006, the District was approached by a Developer interested in sewer service in this Study Area, and a feasibility study was completed. The study was incorporated in the District's 2008 Comprehensive Sewer Plan because it includes an area-wide analysis with comprehensive planning information. The District is not actively pursuing extending service to the South Lake Study Area, which is not designated as a UGA or LAMIRD at this time. However, extending sewer service to already-built areas in the Lake Whatcom watershed is one approach to reducing phosphorus and/or bacteria loading and would support the Lake Whatcom TMDL reduction goals.

More information on the topography, geology, hydrology and soils of each area can be found in Section VII, Exhibit N - Study Area Characteristics.

2. Public Water System Information

The District owns and operates public water systems within its boundaries in Whatcom County. The District's Water System Comprehensive Plan was approved by DOH on March 15, 2011 and by Whatcom County Health Department October 2009.

There are several small Group A and Group B water systems that also operate within the District's boundaries which are shown in Exhibit H.

The District operates sewer collection and transmission facilities only. The District does not have existing domestic wastewater treatment facilities, nor is it proposing any new domestic wastewater treatment facilities. Therefore, it is not necessary to include a discussion or map of the relationship between the location of existing private and public wells, other sources of water supply, and water distribution structures and domestic wastewater treatment facilities in this sewer plan.

II. EXISTING FACILITIES

A. Wastewater Collection and Delivery System

This section describes and analyzes the existing District facilities which are divided into two service areas:

- Sudden Valley - Geneva Collection System;
- North Shore Collection System.

Analysis of the existing and future projected wastewater flows for the system, as well as a discussion of the system inflow and infiltration, is included. Hydraulic modeling of both service areas was also performed and discussion is included.

1. Sudden Valley – Geneva Collection System

a) System Description

Originally put into service between 1970 and 1975, the Sudden Valley sewer collection system consists of 6-inch to 10-inch gravity lateral sewers feeding either the interceptor system along Lake Whatcom Boulevard (LWB) or the Lake Louise Road (LLR) interceptor with lift stations and force mains. This system provides sewage collection for all service connections inside the Sudden Valley subdivisions and delivers this wastewater via either the LWB interceptor or the LLR interceptor to the City of Bellingham for treatment. The Geneva sewer collection system consists of 6-inch to 10-inch gravity lateral sewers feeding the LWB interceptor. Each lift station installation is comprised of a wet well, dry-pit or top-mounted pumping equipment,

local pump station controls and telemetry communication system. In addition, eight lift stations are connected to emergency backup generators to insure normal pump station operation in the event of a power outage. The remaining lift stations are equipped with onsite generator receptacle outlets for connection to the District's portable generators in the event of a power outage.

Table 1 summarizes the collection and delivery system components for the Sudden Valley - Geneva Collection System. Reference Exhibits B-1 to B-3 for additional information and mapping for this system.

Table 1: Sudden Valley - Geneva Collection System - Component Listing

System Component	Approximate Quantity
Sewer Manholes	1,782
4-inch Force Main	4,920 LF
6-inch Force Main	4,665 LF
8-inch Force Main	6,625 LF
10-inch Force Main	20,380 LF
12-inch Force Main	28,135 LF
15-inch Force Main	160 LF
6-inch Gravity Branch Sewer	13,275 LF
8-inch Gravity Branch Sewer	297,110 LF
10-inch Gravity Branch/Interceptor Sewer	8,620 LF
12-inch Gravity Sewer Interceptor	4,810 LF
14-inch Gravity Sewer Interceptor	5,090 LF
Sewer Lift Stations	24
SV Sewer Detention Basin	1 @ 700,000 gallon capacity

The District has completed several improvement projects included in the previous Comprehensive Plan. These included smoke testing and video inspection to find leaks or illicit connections, spot repairs of leaking gravity mains, and grouting of leaking manholes. Over the past several years the District has installed manhole inserts (dishes) in areas with a high risk of flooding or surface water flow to reduce inflow into the collection system.

Additionally, the District has an ongoing program to upgrade its aging sewer lift stations. Some pump stations have been replaced; others have been upgraded with new pump impellers and refurbished motors. Table 2 lists the pump stations that have been upgraded since 2007.

Table 2: Sudden Valley-Geneva Collection System – Sewer Lift Station Upgrades Completed

Sewer Lift Station	Upgrade Description
Cable Street Pump Station	New triplex pump station, controls, new generator.
North Point Pump Station	New submersible duplex pump station with new controls, increased capacity, new telemetry, new standby generator.
Plum Pump Station	New submersible duplex pump station with new controls with VFD, new telemetry, increased capacity.
Ranch House Pump Station	New submersible duplex pump station with new controls, increased capacity, new telemetry, new standby generator
Strawberry Canyon Lift Station	New submersible duplex pump station with new controls with VFD, new telemetry, increased capacity.
The Tomb Lift Station	New top-mount package pump station with new telemetry, controls, 480V power service.
Afternoon Beach Lift Station	New submersible duplex pump station with new controls with VFD, new telemetry, increased capacity.
All remaining Pump Stations	New telemetry panels

The District has also completed several other projects that add to the operational flexibility of the sewer system. Table 3 lists the projects that have been completed since 2007.

Table 3: Sudden Valley-Geneva Collection System –Sewer System Projects Completed

	Upgrade Description
Sewer Pump Station Bypass Port Project	Install tee and valves to allow portable pump to discharge into PS force main (bypassing station pumps in case of station failure) at eight pump stations. Will also enable pump station to pump directly into tanker truck.
Lake Louise Road Fiber Optic Cable	Installed conduit and fiber cable to complete communication connection from Sudden Valley Pump Station to District Operations Facility
Back-up Emergency Containment Berm	This project is a graded bermed area by the Ranch House Pump Station to be used as short-term, emergency wastewater spill containment area, employing a temporary inflatable coffer dam to hold wastewater during emergencies.
Tanker Truck Purchase	The District purchased a sewage tanker truck since using a tanker truck is an integral part of the District's emergency

	back-up procedures. A tanker truck provides flexibility in responding to emergencies across the District's wide geographic area.
Portable Engine-driven Pump	The District purchased a portable engine-driven pump to provide additional capability in its emergency response procedures.
Vactor Truck	The District purchased a better Vactor Truck to replace the existing rig.
Camera Van	The District purchased new and improved cameras to use in sewer main inspections.

b) Inflow and Infiltration

As stated previously, the Sudden Valley- Geneva sewer collection system consists of 6-inch to 10-inch gravity lateral sewers feeding either of two interceptor systems with lift stations and force mains. The District regularly conducts video inspections of the gravity sewers to determine locations and severity of inflow and infiltration, and schedule repairs. The District has also completed projects in the South Shore collection system to reduce I&I including installing manhole dishes in areas of high surface inflow, and smoke testing to look for areas of likely I&I and illegal drain connections.

To analyze the impact of I&I on the District's collection systems, sewer flows and rain data from May 2011 through November 2012 were reviewed in an extensive I&I study. An Engineer's Brief Sheet detailing and summarizing the study is attached as Exhibit C. The evaluation criteria of the District's I&I were based on those outlined in the Sewer System Infrastructure Analysis and Rehabilitation Handbook (EPA/625/6-91/030) for construction grant applicants:

> "No further I/I analysis will be necessary if domestic wastewater plus non-excessive infiltration does not exceed 120 gallons per capita per day (gpcd) during periods of high groundwater. The total daily flow during a storm should not exceed 275 gpcd, and there should be no operational problems such as surcharges, bypasses or poor treatment performance resulting from hydraulic overloading of the treatment works during storm events."

The study analyzed representative examples of different season-weather scenarios, which were used to determine the District's I&I levels for periods of high ground water. To evaluate infiltration, the study looked at representative examples of the scenario Winter Weather without a Major Storm Day-Presumed High Groundwater. The calculated average daily flow per capita ranged from 69-73 gpcd. Since these values are less than 120 gpcd, the South Shore system does not have excessive I&I due to high groundwater. The calculated flows were also less than those from the previous analyses done for years 2002-2004, which indicates progress in reducing infiltration.

To evaluate flows during a storm, the study looked at representative examples of the scenario Peak Wet Weather Day and Antecedent Rainfall, which represents potential worst-case examples of rain influenced infiltration (RII). Under these worst case conditions, the calculated peak flow per capita ranged from 121-169 gpcd. An additional scenario was analyzed to look at this criteria; Peak Wet Weather Day with Rainfall on Successive Days. The calculated peak daily flows per capita ranged from 169-174 gpcd. In both scenarios, these values are less than 275 gpcd and thus, the South Shore system does not have excessive I&I during storm events. In the previous analysis of years 2002-2004, these values exceeded the 275 gpcd criteria. The District's efforts to reduce inflow by installing manhole dishes clearly were successful in reducing storm event I&I.

Also included in the study were examples for Dry Weather-No Rain. The calculated average daily flow per capita ranged from 56-60 gpcd for the dry conditions. The estimated "peaking factor" relating the peak wet weather flow to the peak dry weather flow for South Shore is 2.77.

As noted previously, refer to Exhibit C for more details on the I&I study and all accompanying study figures and calculations.

c) Existing Wastewater Flows

As of November 2012, the District provides sewer service to approximately 3,436 properties within the Sudden Valley-Geneva Collection System. All residential service connections are un-metered and based upon a usage assessment of one (1) equivalent residential unit (ERU) per connection. The non-residential connections (schools, camps, strip mall, etc.) are charged based on the number of equivalent residential units the facility represents, as determined by the Uniform Plumbing Code fixture count method. The number of ERUs served by the District within the Sudden Valley-Geneva Collection System is 3,842 (November 2012). Based on data from June 2011 – November 2012, monthly influent flows through the meters from the Sudden Valley-Geneva Collection System have averaged 21 million gallons per month, or about 750,000 gallons per day. Based upon a 28-day month, this means that the average daily flow per existing ERU is approximately 195 gallons per day including inflow and infiltration, or 75 gpdc (at 2.6 residents per ERU). The same data set yields a minimum average daily flow per existing ERU of approximately 116 gallons per day, or 45 gpdc, and a maximum average daily flow per existing ERU of approximately 344 gallons per day, or 132 gpdc. See Table 4 below.

The District's contract with the City of Bellingham specifies a maximum flow rate which is discussed in detail in Section D City of Bellingham Wastewater Treatment Plant - 1. Wastewater Treatment Agreement. The District operates within those contract limits.

d) Future Projected Wastewater Flows

To finance the construction of the Lake Louise Road Interceptor project, the District formed Utility Local Improvement District (ULID) 18. All vacant properties within the Geneva and Sudden Valley Urban Growth Areas (UGAs) were included in the benefit area unless the property owner "opted out" and restricted the property from

development for twenty-five years (ending in 2028). Properties not included in the UGAs but abutting the benefit area and the project improvements were allowed to "opt-in". Of the 1,100 parcels originally restricted, approximately 915 are "vacant" per recent Whatcom County assessor data. This reduction is likely due to lot consolidations. Of the 915, 697 are owned by Sudden Valley Community Association (SVCA) and 629 have been permanently restricted and/or converted to green space. That leaves a pool of 286 vested properties that could potentially be developed starting in 2028. However, we estimate that a number of these restrictions are "permanent" (e.g. shorelands, or conversion to open space). These numbers should be revisited and possibly adjusted as the restriction period draws to an end in 2028. See Table 4 below.

We estimate that there are approximately 800 ULID 18 - assessments on vacant parcels within the Sudden Valley-Geneva Collection System boundaries. Based on the annual average metered wastewater flows, design standards and a peak wastewater flow calculated using a peaking factor, Sudden Valley-Geneva Collection System is projected to have the following average and peak daily flows within the District boundaries:

Table 4: Sudden Valley-Geneva Study Area – Population / Flow Projections

Study Area: Sudden Valley / Geneva	LWWSD Existing (2012)	Whatcom County Projections Year-2029	LWWSD Projections 20 years – 2032 (@7 ERU/year*)	LWWSD Projections Full build-out **
Equivalent Residential Units ERUs* (Service connections)	3,842 (3,541)	3,664 (households)	3982 (3681)	4810 (4509)
Population Estimate (2.6 residents per service)	9,207	9,742 (@ 2.66 persons /household)	9,571	11,724
Projected Average Daily Flow based on: (a) Flow Meter Average - 195 GPD per ERU (b) Design Standard - 100 GPD per person (260 GPD per ERU)	 749,190 GPD 920,700 GPD	 714,480 GPD 974,200 GPD	 776,490 GPD 957,100 GPD	 937,950 GPD 1,172,380 GPD
Projected Peak Daily Flow based on: (a) Flow Meter Average x 2.5 Peaking Factor (b) Design Standard x 2.5 Peaking Factor	 1,301 gpm 1,598 gpm	 1,241 gpm 1,691 gpm	 1,348 gpm 1,662 gpm	 1,628 gpm 2,035 gpm

* assumed that all future growth; 1 connection = 1 ERU. No large user growth anticipated.
** reduction includes only permanently restricted lots.

It should be noted that the population and connection projections used for this report will not exactly match projections made by the City of Bellingham or Whatcom County, primarily because the sewer service area boundaries are different than the sum of the UGA and Sudden Valley areas. In addition, sewer planning analyses typically "round up" when determining

potential connections to avoid future capacity issues, while the City's Annual Build-out Analysis always "rounds down".

e) Hydraulic Modeling

Hydraulic modeling of the Lake Whatcom Boulevard Interceptor (LWBI) trunk main portion of the South Shore system was performed for this report to evaluate capacity for multiple operational scenarios during peak hourly wet weather flow conditions. The physical model network consisted of the Sudden Valley Pump Station, LWBI force main, LWBI gravity main, and Cable Street Pump Station. The South Shore was used to simulate the following scenarios the District has typically used to operate the South Shore collection system;

- Low Energy (formerly Dry Season) – Sudden Valley Pump Station to LWBI,
- High Energy (formerly Wet Season) – Sudden Valley Pump Station to Lake Louise Road Interceptor,
- Sudden Valley Detention Basin – emergency storage of Ranch House, Louise Park, and Afternoon Beach sewage basins (upstream of Sudden Valley Pump Station).

The District operates using the "High Energy" scenario at all times because of the lack of capacity in LWBI. However, model simulations were run to evaluate, or confirm, the expected capacity limitations using all operating scenarios. More details regarding the hydraulic modeling are included in the attached Hydraulic Analysis Technical Memorandum (Exhibit D).

The average daily sewer loads for existing conditions were calculated based on District connection/ERU data, 2010 U.S. Census Bureau household size data for Sudden Valley (2.52) and Geneva (2.67) areas, and an assumed standard design sewer loading of 100 gallons per capita day. Peak hourly flows were then estimated by applying assumed peaking factor criteria based on the number of ERU as follows:

- # ERU < 500; Peaking Factor = 4
- 500 < # ERU < 2000; Peaking Factor = 3
- 2000 < # ERU; Peaking Factor = 2.5

Calculated peak flows were checked against hourly meter data at Cable Street Pump Station for the time periods February 2012 - June 2012 and October 2012 - February 2013. Based on this data, the calculated flows were lower than observed, and thus the calculated flows were globally increased to better match observed conditions.

The following is a summary of the results of the modeling simulations of the South Shore LWBI for different operational scenarios;

- Sudden Valley PS to LWBI ('Low Energy'; Exhibit E-1);
    - Existing conditions – modeling confirms that LWBI does not have capacity for this scenario (flooding manholes),
    - Existing conditions with Sudden Valley Detention Basin in use – LWBI does not have capacity for this scenario (flooding manholes).

- Sudden Valley PS to Lake Louise Road Interceptor (LLRI) ('High Energy'; Exhibit E-2);
    - Existing conditions – no flooding manholes, but several pipes theoretically flowing near or above capacity,
    - Future (build-out) conditions – LWBI does not have capacity for this scenario (flooding manholes and many pipes at or above capacity). Further simulations indicate that manhole flooding occurs at 1,190 gpm, or 1,700 ERU, which is 138 ERU additional from 2013 conditions. At this point, flows from North Point PS will need to be re-routed to flow to Sudden Valley PS (see Exhibit E-3).

2. North Shore Collection System

a) System Description

Originally put into service between 1975 and 1977, the North Shore sewer collection system consists of 6-inch to 10-inch gravity lateral sewers feeding the North Shore Road interceptor system with lift stations and force mains. This system provides sewage collection for service connections along North Shore Road and in the Eagleridge, Dellesta Park, Agate Heights, Edgewood and Georgia Point subdivisions. This wastewater is delivered to the City of Bellingham for treatment. Each lift station installation is comprised of a wet well, dry-pit or top-mounted pumping equipment, local pump station controls and telemetry communication system. One lift stations is connected to an emergency backup generator to insure normal pump station operation in the event of a power outage. The other two lift stations are equipped with onsite generator receptacle outlets for connection to the District's portable generators in the event of a power outage.

Table 5 summarizes the collection and delivery system components for the North Shore Collection System. Reference Exhibit B-4 for additional information and mapping for this system.

Table 5: North Shore Collection System - Component Listing

System Component	Approximate Quantity
Sewer Manholes	152
4-inch Force Main	1,053 LF
8-inch Force Main	5,781 LF
6-inch Gravity Branch Sewer	402 LF
8-inch Gravity Branch /Interceptor Sewer	16,610 LF
10-inch Gravity Branch/Interceptor Sewer	7,292 LF
12-inch Gravity Sewer Interceptor	2,059 LF
15-inch Gravity Sewer Interceptor	5,838 LF
16-inch Gravity Sewer Interceptor	1,087 LF
Sewer Lift Stations	3

The District has also completed several other projects that add to the operational flexibility of the sewer system. Table 6 lists the projects that have been completed

since 2007. The improvement projects in the North Shore area also included small developer extensions for gravity sewer mains.

Table 6: North Shore Collection System –Sewer System Projects Completed

Modifications	Upgrade Description
Sewer Pump Station Bypass Port Project	Install tee and valves to allow portable pump to discharge into PS force main (bypassing station pumps in case of station failure) at three pump stations. Will also enable pump station to pump directly into tanker truck.
Agate Bay Pump Station Generator	Replaced failed underground generator with new above-grade diesel generator.
All North Shore Pump Stations	New telemetry panels

b) Inflow and Infiltration

As stated previously, the North Shore sewer collection system consists of 8-inch-10-inch gravity lateral sewers feeding an interceptor system with lift stations and force mains. The District regularly conducts video inspections of the gravity sewers to determine locations and severity of inflow and infiltration.

To analyze the impact of I&I on the District's collection systems, sewer flows and rain data from May 2011 through November 2012 were reviewed and compared to EPA criteria in an extensive I&I study as described for the South Shore system previously in Section II.A.b. The Engineer's Brief Sheet detailing and summarizing the study is attached as Exhibit C.

The analysis of the North Shore system for scenario Winter Weather without a Major Storm Day-Presumed High Groundwater calculated average daily flow per capita ranging from 58-86 gpcd. Since these values are much less than 120 gpcd, the North Shore system does not have excessive I&I due to high groundwater.

The analysis of North Shore sewer flows during storm events did not show as much of an impact of rain-influenced infiltration (RII) as seen in the South Shore collection system. For the analyses including storm events, the peak daily flow per capita was 102-145 gpcd, which is much less than the 275 gpcd EPA criteria for daily flow defining excessive I&I during a storm event.

Also included in the study were examples for Dry Weather-No Rain. The calculated average daily flow per capita ranged from 57-66 gpcd for the dry conditions. These values are approximately 6% higher than that seen in the South Shore collection system, but it likely more indicative of the different water use patterns between North Shore and South Shore than the condition of the sewer collection system. The estimated "peaking factor" relating the peak wet weather flow to the peak dry weather flow for North Shore is 1.93.

As noted previously, refer to Exhibit C for more details on the I&I study and all accompanying study figures and calculations.

c) Existing Wastewater Flows

As of November 2012, the District provides sewer service to approximately 340 properties within the North Shore Collection System. All residential service connections are un-metered and based upon a usage assessment of one (1) equivalent residential unit (ERU) per connection. The non-residential connections (residential treatment center) are charged based on the number of equivalent residential units the facility represents, as determined by the Uniform Plumbing Code fixture count method. The number of ERUs served by the District within the North Shore Collection System is 359 (November 2012). Based on data from June 2011 – November 2012, monthly influent flows through the meters from the North Shore Collection System have averaged 2.2 million gallons per month, or about 78,500 gallons per day. Based upon a 28-day month, this means that the average daily flow per existing ERU is approximately 219 gallons per day including inflow and infiltration, or 88 gpdc (at 2.5 residents per ERU). The same data set yields an average minimum daily flow per existing ERU of approximately 93 gallons per day, or 37 gpdc, and an average maximum daily flow per existing ERU of approximately 308 gallons per day, or 123 gpdc. See Table 7 below.

The District's contract with the City of Bellingham specifies a maximum flow rate which is discussed in detail in Section D City of Bellingham Wastewater Treatment Plant - 1. Wastewater Treatment Agreement. The District operates within those contract limits.

d) Future Projected Wastewater Flows

Continuing efforts by Whatcom County and the City of Bellingham have substantially reduced the potential density and developable land in the North Shore service area from what had been envisioned when the sewer collector system was designed. The County has down-zoned the area to a 5-acre minimum parcel size for any new subdivision of property. The City previously purchased and permanently restricted about 190 acres previously zoned as R2A from future development, eliminating 95 units. Additionally, a vested subdivision (North Shore Estates) most recently proposed at 28 lots was recently purchased and restricted by the City. There have also been other land purchases and restrictions by the City and others in the North Shore service area.

We estimate that there are approximately 150-200 potential additional connections to the North Shore Collection System for an estimated 509 connections (545 ERUs) at build-out. These potential additional connections largely consist of existing residential development served by on-site septic systems and previously created lots suitable for residential development under current land use regulations.

We calculated the projected wastewater flows two ways – using the North Shore flow meter data and using industry-standard rates. These numbers are presented below as a range of projected flows for the North Shore Collection System. The lower number is based on the metered data and assumes an average daily wastewater flow per ERU of 219 gallons and a peak daily wastewater flow per ERU of 548 gallons (2.5 times average daily flow). The upper number assumes 100 gallons

per day per person, and 2.5 persons per ERU for an average daily wastewater flow of 250 gallons per connection. A peaking factor of 2.5 was also used for this calculation. The twenty-year projection is based on a growth rate of 3 ERU/year, which is conservative based on the actual growth of recent years. See Table 7 below.

Table 7: North Shore Study Area – Population / Flow Projections

Study Area: North Shore	LWWSD Existing (2012)	Whatcom County Projections Year-2029	LWWSD Projections 20 years – 2032 (@3 ERU/year*)	LWWSD Projections Full build-out
Equivalent Residential Units ERUs* (Service connections)	359 (334)	387 (households)	3982 (3681)	4810 (4509)
Population Estimate (2.5 residents per service)	835	970 (@ 2.5 persons /household)	985	1,300
Projected Average Daily Flow based on: (a) Flow Meter Average - 195 GPD per ERU (b) Design Standard - 100 GPD per person (260 GPD per ERU)	 78,621 GPD 83,500 GPD	 84,753 GPD 97,000 GPD	 91,761 GPD 98,500 GPD	 119,355 GPD 130,000 GPD
Projected Peak Daily Flow based on: (a) Flow Meter Average x 2.5 Peaking Factor (b) Design Standard x 2.5 Peaking Factor	 137 gpm 145 gpm	 147 gpm 168 gpm	 160 gpm 171 gpm	 207 gpm 226 gpm

* assumed that all future growth; 1 connection = 1 ERU. No large user growth anticipated.

It should be noted that the population and connection projections used for this report will not exactly match projections made by the City of Bellingham or Whatcom County, primarily because the North Shore sewer service area boundaries are very different than the rural watershed area. In addition, sewer planning analyses typically "round up" when determining potential connections to avoid future capacity issues, while the City's Annual Build-out Analysis always "rounds down".

e) Hydraulic Modeling

Hydraulic modeling of the North Shore collection system trunk main was performed to evaluate capacity during peak hourly wet weather flow conditions. The physical model network consisted of the Agate Bay Pump Station, North Shore force main and gravity main trunks to the North Shore meter. More details regarding the hydraulic modeling are included in the attached Hydraulic Analysis Technical Memorandum (Exhibit D).

Existing conditions average daily sewer loads were calculated based on District connection/ERU data, 2010 U.S. Census Bureau household size data for Whatcom

County (2.43) area, and an assumed standard design sewer loading of 100 gallons per capita day. Peak hourly flows were then estimated by applying assumed peaking factor criteria based on the number of ERU as follows:

- # ERU < 500; Peaking Factor = 4
- 500 < # ERU < 2000; Peaking Factor = 3
- 2000 < # ERU; Peaking Factor = 2.5

Calculated peak flows were checked against hourly meter data at the North Shore meter for the time periods February 2012-June 2012 and October 2012-Februry 2013. Based on this data, the calculated flows matched observed flows very closely, and thus no adjustments were made to the calculated model loading.

The following is a summary of the results of the modeling simulations of the North Shore collection system trunk main;

- Existing conditions – modeling indicates adequate capacity,
- Future (build-out) conditions – adequate capacity. However, the existing 4-inch meter and line could become enough of a restriction at high flows (350 gpm) to back up water and cause flooding at two shallow manholes upstream of the meter.

B. Pumping Facilities

1. Sudden Valley – Geneva Collection System

The Sudden Valley – Geneva Collection System is equipped with twenty-four (24) sewer pump stations which lift and transport wastewater collected out of Sudden Valley and around Lake Whatcom to the City of Bellingham. Reference Exhibit E-1 through E-3 for flow schematics and system layout of pump stations. District pump stations located in the Sudden Valley – Geneva Collection System are as follows:

- Afternoon Beach
- Airport
- Austin Creek
- Beaver
- Boulevard
- Cable St.
- Camp Firwood
- Country Club
- Euclid St
- Flat Car 2
- Geneva
- Lakewood
- Louise Park
- Lowe St
- Marina Circle
- North Point
- Par
- Plum
- Ranch House
- Rocky Ridge
- Strawberry Canyon
- Strawberry Point
- Sudden Valley
- The Tomb

2. North Shore Collection System

The North Shore is equipped with three (3) sewer pump stations which lift and transport wastewater collected around Lake Whatcom to the City of Bellingham. Reference for flow schematics Reference Exhibit F for flow schematic and system layout of pump stations. District pump stations located in the North Shore Collection System are as follows:

- Agate Bay
- Dellesta Park
- Edgewater

C. City of Bellingham Wastewater Treatment Plant

1. Wastewater Treatment Agreement

Since 1974, the District has contracted with the City of Bellingham to provide treatment and disposal of all wastewater originating from the District's collection facilities. The District and the City have been negotiating an update to this contract at the request of the State Auditors' office. A copy of the Agreement is included in Exhibit G. Wastewater originating in the Sudden Valley- Geneva Collection System and the North Shore Collection System flow to the City of Bellingham's Silver Beach Trunk and then to its Post Point Wastewater Treatment Plant in Bellingham, Washington. The Agreement lists five points of connection to the City sewer system which include the following:

- Whatcom Falls Park (from Lake Louise Road Interceptor)
- Electric Avenue at Flynn Street (from Cable Street and Euclid force mains)
- Euclid Avenue (from Euclid gravity main)
- Flynn Street (gravity flow from the Mill Wheel Park main)
- Northshore Road Meter (from Northshore Interceptor**)**

In 1999, the District constructed a 700,000 gallon detention basin adjacent to Sudden Valley Pump Station. Prior to the completion of the Lake Louise Road Interceptor and a general lifting of the sewer connection moratorium, the capacity of the detention basin allowed the District to issue 770 sewer connections in select areas. With the LLRI in service, the detention basin has rarely been used for storing excess flows, even during peak storm events. The detention basin may be of use to provide flow equalization on the south shore during heavy storm events to assist the City of Bellingham in mitigating overflows from their sewer system. The detention basin would then be considered a regional facility and the District would not be required to contribute financially to any detention facility constructed by the City. This option has the advantage of most efficiently managing the District's existing facilities and resources.

2. Projected 20-Year Wastewater Flows

With the current building trends around Lake Whatcom and the density reduction efforts reducing build-out levels, the projection for 20-year growth is approximately 90% of the build-out values on the south shore and 80% on the north shore. The build-out levels should be revisited prior to 2028. Referencing the wastewater flow projections already

outlined for the Sudden Valley - Geneva Collection System and the North Shore Collection System, the 20-year average daily and peak wastewater flows to the City of Bellingham WWTP are projected as follows:

District Wastewater Flows to the Bellingham WWTP - Projected 20-Year Flows

Average Daily Flow:	0.8-1.2 million gallons per day,
Peak Daily Flow:	2.1-2.9 million gallons per day.

District Wastewater Flows to the Bellingham WWTP - Projected Full Build-out Flows

Average Daily Flow:	1.0-1.4 million gallons per day,
Peak Daily Flow:	2.6-3.5 million gallons per day.

D. Industrial Wastewater-Producing Facilities within the District System

There are no existing industrial wastewater-producing facilities within the District's boundaries. At this time, the District's contract with the City prohibits the connection of any industrial wastewater-producing facilities.

III. FUTURE SEWER SERVICE REQUIREMENTS

While the current trend is towards density reduction, it is difficult to predict the rate at which new services will be requested, including how many of the properties restricted for 25 years under ULID 18 will be developed in the future. At this point, though, the District does not anticipate needing additional capacity from the City.

Potential developer extension/ULID facilities are not included in the Capital Improvement Plan (Exhibit K), because their occurrence is more speculative than the infrastructure improvement projects outlined in the future improvements section. Potential projects that the District is aware of are listed below. The District may only provide sewer service where it is legally possible to do so considering applicable County zoning and development regulations.

A. Potential Sewer Service in the Sudden Valley- Geneva Collection System

The District will consider extensions to the existing Sudden Valley-Geneva sewer collection system only on an "as-needed" basis in those areas within the District boundaries not presently served by the gravity sewer collection system (reference Exhibit A). At this time, there are two known potential areas for sewer main extensions within this service area (Reference Exhibits J-1 to J-3 for a map of these potential extensions).

1. Lakewood Lane South (Former Roy Jones Developer Extension)

The Lakewood Lane South Developer Extension was an active project during the previous planning cycle. The Developer Extension planned to extend public water and sewer approximately 660 feet each to serve five existing lots. These properties are located inside the District boundaries and inside the designated Urban Growth Area boundary. The

extension was comprised of a branch gravity sewer line to service the existing vacant lots that will discharge into the existing Geneva gravity sewer collection system. At the time of development, the property owners will enter into a developer extension agreement with the District whereby the owner becomes responsible for all design, construction, and inspection costs associated with the new branch sewer line (and water line). At the time the new line goes into operation, the District will be granted ownership of, and operation and maintenance responsibilities for all new sewer facilities associated with the development.

2. Other Developer Extensions / Local Improvement Districts

The area south of the District office was developed with septic systems and a common community drainfield. This area has about 25 properties and could potentially be connected to the District's public sewer. The homeowners would either need to petition for a Local Improvement District or request approval for a Developer Extension Agreement.

There are very few properties remaining in this service area that could be subdivided or grouped to create a development. For any new development requiring extension of sewer mains, the property owners will need to enter into a developer extension agreement with the District whereby the owner becomes responsible for all design, construction, and inspection costs associated with the new branch sewer line. At the time the new line goes into operation, the District will be granted ownership of, and operation and maintenance responsibilities for all new sewer facilities associated with the development.

B. Potential Sewer Service in the North Shore Collection System

The District will consider extensions to the existing North Shore sewer collection system only on an "as-needed" basis in those areas within the District boundaries not presently served by the gravity sewer collection system. At this time, there are no active developer extension projects within this service area. The District has identified one area that has already been developed with on-site septic systems that may be a candidate in the future for a sewer extension (Reference Exhibit J-4 for a map of this extension).

1. North Shore Road ULID

There are approximately 80 existing homes on North Shore Road beyond the east end of the District's sewer service area. These homes have on-site septic systems and many are close to Lake Whatcom. These homes are not currently in a UGA or LAMIRD, however providing public sewers to these residences may be a cost-effective means of reducing the phosphorous and bacterial loading to Lake Whatcom should the septic systems start failing. In addition to the normal process of petitioning for a Utility Local Improvement District, a project to extend sewer here would require the area to be included in a LAMIRD, or meet the criteria stated in RCW 36.70A.110 (4).

There are very few properties remaining in the area that could be subdivided, or grouped to create a development. For any new development that would require extension of sewer mains, the property owners will be required to enter into a developer extension agreement with the District whereby the owner becomes responsible for all design, construction, and inspection costs associated with the new branch sewer line. At the time the new line goes into operation,

the District will be granted ownership of, and operation and maintenance responsibilities for all new sewer facilities associated with the development.

C. Potential Sewer Service in the South Shore Study Area

The District has no existing sewer facilities in the South Shore Study Area. The District will consider extending public sewer on an "as-needed" basis in those areas within the District boundaries. Extensions would be funded by developers requesting such extensions, or by LID/ULID should a petition of the affected population be submitted to the District. A feasibility study was prepared in 2006 that included the South Shore Study Area. The feasibility study was incorporated in the District's 2008 Comprehensive Sewer Plan because it included an area-wide analysis with comprehensive planning information. However, since the details for the implementation of serving the South Shore area are not yet defined, facilities to service this area will be addressed in the future. A project to extend sewer here would require the area to be included in a LAMIRD, or meet the criteria stated in RCW 36.70A.110 (4). Should a project proceed, additional analyses will be prepared and a facility plan / engineering report will be submitted for the requisite approvals.

IV. SEWER RATE STRUCTURE AND REVENUE PLANNING

A. Requirements for Connection to the District System

Sewer and/or water connections are available on a first come, first served basis where capacity exists. There is overall system capacity when the system as a whole has the capability to serve additional service connections. There may be localized areas in the system that are insufficient in size or are in too poor condition to allow local connections, but the system can still be considered to have overall system capacity.

The District has adopted a detailed policy regarding the requirements for connection to the District system for any new sewer customer or developer extension. This policy is defined in Resolution 757, attached here in Exhibit L. Properties connecting to the District's sewer system must also comply with all applicable County and State regulations including but not limited to building codes and stormwater regulations.

Properties which lie within the District's boundaries are required to connect to the sewer if the property lies within 200 feet of the public sewer and is inside of a UGA or LAMIRD.

Properties developed with on-site septic systems that subsequently have public sewer available, have five years to connect to the public sewer from the date when sewer service is available.

Additional sewer connection and service requirements can be found in the District's Administrative Code.

B. Revenue Planning

The District performs a review of the sewer rate schedule regularly to determine that these charges are sufficient to generate revenue to offset the cost of all necessary operation and maintenance of the District. In the event that this review indicates a necessary revision of user charges, the District promptly amends the rates by formal resolution of the board of commissioners.

In 2010, the District commissioned a water and sewer rate study to examine the District's rate structures. The purpose of the study was to provide recommendations regarding water and sewer rate adjustments aimed at bringing revenues in line with annual operating and capital obligations while utilizing surplus cash reserved in the District's general and capital funds. The sewer rate study recommended increases of 3% per year implemented over 5 years (starting in 2011).

Additionally, recommendations regarding the general facilities charge (GFC) to be charged to customers connecting to the system were prepared and adopted by the Board for implementation in January 2011.

Recommendations from this 2010 rate study were implemented by the District and are reflected in the sewer rate information presented in the next section. The District is in the process of updating the Rate Study.

C. Sewer Rate Structure

The District sewer service rates and charges outlined below shall be subject to change by resolution of the board of directors as conditions warrant.

1. Sewer Service Rates

The District bills bi-monthly for sewer service. The calculation of bi-monthly sewer charges is based on the assigned number of equivalent residential units (ERUs) for a particular customer.

Reference Exhibit I for a tabulation of the sewer rates in the current Master Fees and Charges Schedule for the District. Also included in this resolution are the rate adjustment schedules, through the year 2015, as recommended in the 2010 sewer rate study commissioned by the District.

2. General Facilities Connection Fee (GFC)

The District assesses $5,201 per ERU for the General Facilities Connection Fee as listed in Item 42 of the Master Fees and Charges Schedule. Additional fees such as Latecomer fees may also apply. The District also charges fees for permit processing and inspection in accordance with the current Master Fees and Charges Schedule.

The Master Fees and Charges Schedule is incorporated here by reference. The current schedule is included in Exhibit I.

3. Cost per Service

The District's cost for sewer service is projected to be $2,788,000 per year (2014 Rate Study, in progress). This cost includes $2,381,000 per year in operation and maintenance costs and debt service costs of $407,000 per year. Dividing these costs over the District's sewer Equivalent Residential Units (4211 ERUs for 2013) yields the yearly cost per service listed in Table 8 below.

Table 8. Yearly Cost Per Sewer Service

Yearly Cost Per Equivalent Residential Unit	
Debt Service	$96.65
O & M	$565.42
Total	$662.07

V. FUTURE IMPROVEMENT PROJECTS

A. Future Maintenance and Operational Improvements

1. Sewer Flushing Program

The District has a systematic sewer flushing program that enables them to cycle through the gravity mains at risk for build-up typically every three years. As a part of the ongoing maintenance program for their facilities, the District will continue to flush portions of the collector system annually to maintain operational capacity.

The District has also instituted a program to flush the gravity sections of the Lake Whatcom Boulevard Interceptor to remove accumulated debris. The availability of the Sudden Valley Detention basin and the bypass connection allow the District to reverse the flow in the pressure section of the LWBI and send the majority of the flows to the Sudden Valley PS and then to the LLRI. With the reduced flows the District is able to flush the gravity sections without taking the LWBI off-line.

2. Sewer Videoing Program

The District has an ongoing sewer videoing program, and recently purchased a new sewer camera. As a part of the regular maintenance program for their facilities, the District will continue to video portions of the collector system annually in an effort to identify possible points of inflow and infiltration into the system. Areas to video are targeted based on pump run times (as an indication of I&I severity) and the majority of the video work is performed during the wet season in order to see active leaks. The District is also able to inspect manholes with the camera as they pass through them. If repair work is deemed necessary, the District will perform said work as part of their regular maintenance improvement program.

3. Smoke Testing Program

The District has embarked on a systematic smoke testing program within its collection systems to aid in identifying potential sources of inflow and infiltration within the system. As a part of the ongoing maintenance program for their facilities, the District has smoke tested the Geneva area (see Exhibit C for results) and will continue with portions of the Sudden Valley collection system annually in an effort to identify possible points of inflow and infiltration into the system. In the event that a significant, potential I&I source is identified through the smoke testing program, the District will follow-up with a CCTV camera inspection of the subject area to determine if repair work is required. If repair work is deemed necessary, the District will perform said work as part of their regular maintenance improvement program.

B. Future Administrative, Financial and Planning Improvements

1. Hazard Mitigation Plan For District Wastewater Facilities

Since 2000, the Federal government has required local communities to have an approved mitigation plan in place to be eligible for the Hazard Mitigation Grant Program (HMGP)

funds (44CFR201.6). Jurisdictions without an approved plan will not be eligible for future mitigation financial assistance. One strategy for the plan development is for local communities to work together to create a Multi-jurisdictional Hazard Mitigation Plan. This approach is advantageous and efficient in that a single, comprehensive plan would then address the concerns of all jurisdictions with the same countywide hazards. To that end, the District will work, in conjunction with Whatcom County Division of Emergency Management to develop hazard mitigation plan in compliance with federal requirements.

Preparation and adoption of this hazard mitigation plan will ensure compliance with federal regulations. In addition, the development and adoption of an approved hazard mitigation plan will ensure that the District is eligible for future mitigation financial assistance under the Hazard Mitigation Grant Program.

2. Update Existing Emergency Response Plan

Currently, the District has an existing Emergency Response Plan which outlines District priorities and activities in response to an emergency event such as; natural disasters, vandalism, catastrophic equipment failures, etc. As a part of this activity, the District will update the existing Emergency Response Plan, as necessary, to ensure compliance with applicable federal regulations and the requirements of the Department of Homeland Security. The District will continue to conduct emergency response training exercises and drills with staff to enhance emergency preparedness.

3. Maintenance Management Program Development

In 2002, the District began developing a system-wide Maintenance Management Program to move from reactive maintenance to preventative maintenance, better manage work flow processes, and aid in planning, administration, and operation and maintenance record keeping for the District's facilities. To date, the database and maps includes information regarding pipe size, material and lengths for water and sewer mains; schematic locations of District facilities including mains, manholes, pump stations, PRVs and reservoirs (water). Since 2002, maintenance activities have been logged in to the system as they are completed.

The District has completed adding the watershed boundary, customer billing information, and facility specifications. All sewer assets have installation dates and the District has completed inspections, mapping and overall condition index (OCI) determinations for most facilities in the Geneva and North Shore areas. As a part of this ongoing development program, the District will continue to augment and update the Maintenance Management program to include the following:

a. parcel maps (working with Whatcom County),
b. updated aerial photo layers (from Whatcom County),
c. archival operation and maintenance record information, 80%complete
d. link sewer main video inspections
e. facility inspections (manholes, sewer pump stations) - Sudden Valley
f. mapping-grade GPS facility locations - Sudden Valley
g. facility overall condition index (OCI) for manholes, mains, pump stations - Sudden Valley

4. Lake Whatcom Watershed Committee (WRIA 1)

As a part of this planning project, the District's Manager will participate in a steering and planning committee to look at watershed-wide issues affecting water quality for people and fish. The Committee will plan cooperative actions which will address the watershed water quality. This group process will result in more collaborative planning approach to water issues, including drinking water sources, and storm water runoff.

As of this time, there is no adopted water quality management plan under the Federal Water Pollution Control Act as amended for this area. The District will comply with such a plan once it is developed and adopted.

5. Sewer Service Rate Increases

In 2013, the District contracted with a financial consultant to prepare a rate study update, and will implement the recommended incremental rate increases. The rate increases will assure that the District is adequately recovering the true costs of running the system, including paying back of all existing and anticipated loan funds. By adequately recovering the true costs for system operation and maintenance, the District staff will be able to perform adequate, routine maintenance activities which will add to the service life of the system. Additionally, implementing the recommended rate increases outlined in the rate study will allow the District to maintain the appropriate reserves required for emergencies, if revenues meet regular expenses.

C. Future Capital Improvement Projects

1. Pump Station Upgrades – Ongoing

As mentioned above, the District has completed several pump station replacements and upgrades in the last six years (see Table 2). The District plans to continue replacing and/or upgrading one or two pump station per year as needed. The proposed schedule for these replacements or upgrades are included in the District's Capital Improvement Plan (see Exhibit K).

Replacement of the aged control, telemetry and pump equipment will result in increased reliability, reduced emergency operator call-outs, reduced equipment operation costs and prevention of sewage overflows into Lake Whatcom. Each pump station will be evaluated to determine the specific upgrades required but at least will normally include new pumps, new controls and new telemetry equipment.

2. Miscellaneous Sewer Line Replacement and Repair

The original District collection and force main systems are almost thirty years old and approaching the end of their expected design life. As a part of ongoing regular maintenance on the system, the District monitors the existing underground sewer lines for signs of leakage and/or failure. As a part of this project, the District will perform sewer repair and/or replacement work as necessary to ensure a functional and environmentally safe system. The line repairs include both trenchless spot repairs as well as repairs that require excavation.

3. Manhole Rehabilitation

The District has a disproportionately high number of manholes due to the extreme topography of its service areas. Many of these manholes are located in roadways and take a beating from traffic. Staff has observed inflow and infiltration that appears to originate in the manholes. The District has been inspecting manholes for deterioration and leaks as part of their ongoing sewer videoing program and developed a priority list of manholes in need of rehabilitation. This Manhole Rehabilitation program and the Miscellaneous Sewer Line Replacement and Repair program above constitute the District's Capacity, Management, Operations and Maintenance (CMOM) Program, and has an annual budget of about $160,000.

VI. STORMWATER & WATER QUALITY MANAGEMENT WITHIN LAKE WHATCOM WATERSHED

A. Overview

The need for increased stormwater and water quality management has been well documented as it relates to Whatcom County as a whole, and in particular as it relates to the Lake Whatcom Watershed (watershed). As a significant member of the watershed community, the District has continuously endeavored to play a meaningful part in protecting and improving the water quality within the watershed.

In this chapter, the existing stormwater and water quality management hierarchy within the watershed is summarized. Next, the driving forces and potential benefits to the District of becoming more involved in stormwater and water quality management within the watershed are explained. Then, the governance options available for the District to either act alone or partner with local agencies in the watershed's protection are given. Finally, a summary outlining the recommended governance option for partnering and summary of key issues for setting up a local agency partnering effort are described.

B. Stormwater and Water Quality Management within the Watershed

There are several state and local agencies, as well as private sector groups, who have key roles in addressing the water quality issues in and around the lake, (reference Figure 1).

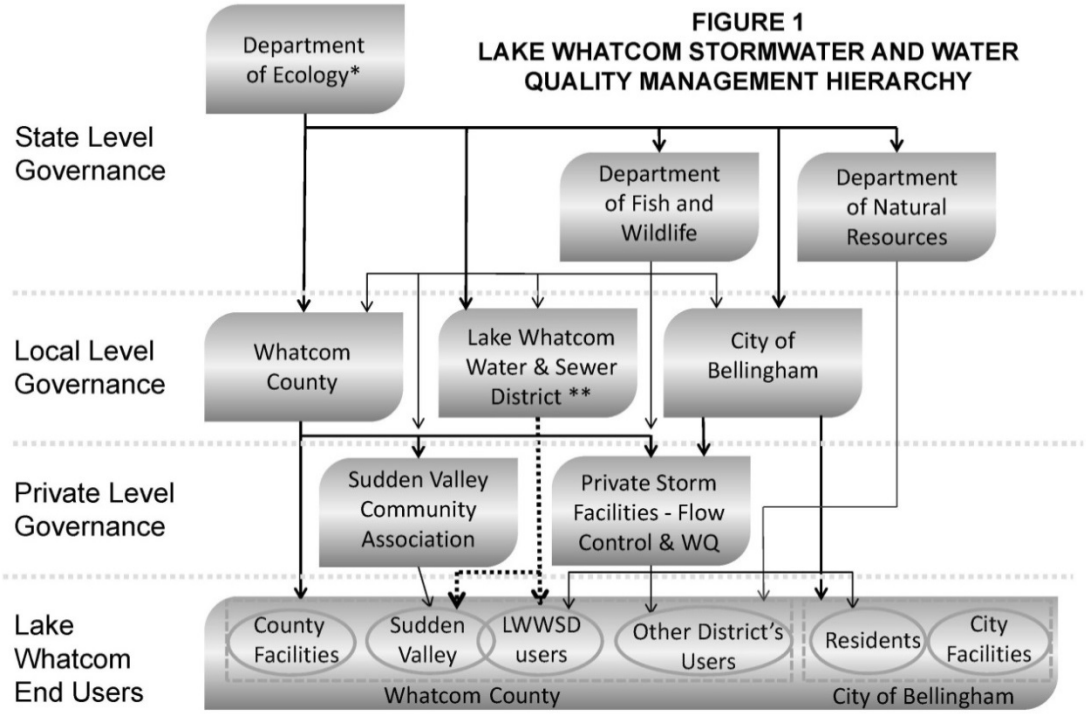


FIGURE 1
LAKE WHATCOM STORMWATER AND WATER QUALITY MANAGEMENT HIERARCHY

*DOE does not govern other agencies - placement at the top indicates its leading role in stormwater and water quality.
** The LWWSD connection to end users is included because of contributions to watershed water quality currently provided by the district in addition to water and sewer services and the potential for future water quality contributions.

The County and the City, operating under Washington Department of Ecology's (Ecology) Western Washington Phase II Municipal Stormwater Permit (Phase II permit), split almost all of the responsibility as it relates to planning and implementation of stormwater management and water quality protection within the watershed, (reference Exhibit A for jurisdictional boundaries within the watershed). However, there are multiple levels of governance that influence the end users within the Lake Whatcom watershed. A summary of each of these levels is described below.

1. State Management

In addition to administration of the Phase II permit, Ecology sets ground water and surface water standards, and regulates nonpoint pollution and pollution runoff through field assessments, phosphorus reduction programs, clean/green boating programs, education, and financial assistance. Ecology also regulates construction stormwater pollution prevention, sets stormwater infrastructure design standards, and regulates water and wastewater treatment. Other involved state agencies include the Washington Department of Fish and Wildlife (WDFW) which provides permit regulation for any and all work within the surface waters of the state through the hydraulic permit approval (HPA) process and the Washington Department of Natural Resources (DNR) which administers stormwater management within the watershed on land zoned commercial, state and rural forestry.

2. County and Municipal Management

Both the County and the City have individual critical areas ordinances (CAOs) for the protection of critical areas within their jurisdictions. Critical areas include; geologically hazardous areas, frequently flooded areas, areas underlain by critical aquifer recharge zones, wetlands, and habitat conservation areas, (especially those for salmonid fish species). As it relates to stormwater and water quality management, wetlands and habitat conservation critical areas are the most crucial. Development and infrastructure improvements within these CAOs are regulated by the County and City under ordinances which seek to minimize impacts to the unique characteristics of each critical area through various management strategies including but not limited to buffer setbacks, buffer enhancement, habitat restoration, and maintenance of critical hydrologic functions within the critical areas.

a) Whatcom County

Stormwater and water quality management within the County is accomplished through several different county departments working together and utilizing various provisions of the Whatcom County Code (WCC) and planning documents. Some of the management efforts of the various departments are discussed below.

(1) Whatcom County Planning and Development Services

Planning and Development regulates development within the watershed primarily through two titles of the county code; WCC Title 20 Zoning and WCC Title 21 Land Division. Through these titles Planning and Development is able to implement the provisions of the County's Comprehensive Plan. Within WCC Title 20, Chapter 20.51 Lake Whatcom Watershed Overlay District was adopted in July of 2013 to "manage and treat stormwater runoff and establish more stringent standards on clearing activities and reduce the phosphorus loading into Lake Whatcom." The underlying intent of this chapter is to protect Lake Whatcom as a drinking water source and limit phosphorus loading into Lake Whatcom.

(2) Whatcom County Health Department

As it relates to stormwater and the public water supply, the Health Department regulates on-site sewage systems, solid waste handling and disposal, and drinking water under WCC Title 24. The Department's On-site Sewage System (OSS) Local Management Plan was developed to assist in the management of the OSS's within the County. Under the OSS Local Management Plan, the Lake Whatcom Basin has been designated as a sensitive area requiring special protections and inspection priorities.

(3) Whatcom County Public Works

Stormwater Division – The Stormwater Division implements stormwater programs and builds capital improvement projects in target watersheds, (such as Lake Whatcom). The Stormwater Division also leads the County's Phase II

permit stormwater program. In 2008, the Stormwater Division completed preparation of the Lake Whatcom Comprehensive Stormwater Plan which helped identify some of the highest priorities for stormwater management within the watershed to reduce phosphorus inputs to the lake and to mitigate altered hydrology within the basin. Since completion of this comprehensive plan, the Stormwater Division has implemented several of the capital improvement projects (CIP) outlined in the plan, (especially in Lake Whatcom's Geneva Area); however, budgetary constraints have continued to hamper the CIP implementation process.

Maintenance & Operations (M&O) Division– Stormwater maintenance and operation within the County right-of-ways is provided by the M&O Surface Drainage Management Division. M&O is not responsible for maintenance and repair activities either outside the ROW or on private property. Despite the fact that the watershed has been designated as a "sensitive" and/or "special" water resource, existing manpower and budgets makes it difficult for the M&O Division to provide any more than basic services in the area.

b) City of Bellingham

The City has several programs which address stormwater and water quality related issues. Below is an overview of some the more critical activities, programs, and projects within the watershed.

City of Bellingham Public Works - Storm and Surface Water Utility (SSWU) – The SSWU funds improvements and maintenance to the stormwater system in the City. The SSWU also administers the City's Stormwater Management Program which was developed specifically to address compliance issues related to Ecology's mandated Phase II permit. The City's *Stormwater Comprehensive Plan* outlines the compliance measures instituted to address the Phase II permit, and the City issues an annual compliance report, (*Stormwater Management Program 2013 NPDES Report*, most recent) which evaluates progress enacting the permit conditions.

The SSWU is also responsible for maintaining the City's drainage system which is comprised of natural components, (creeks and lakes), and manufactured conveyance and detention, (network of open ditches, catch basins, closed pipes, manholes, and water quality facilities such as ponds, vaults, storm filters, and bioswales). Maintenance activities include: open ditch cleaning; catch basin pumping; storm line jetting; trash rack cleaning and storm patrol; tile, frame and grate repair; culvert cleaning and creek drainage; regional detention facility maintenance; and water quality facility maintenance.

Environmental Resources Division - The Environmental Resources Division oversees programs associated with resource protection of the watershed. Among its other

duties, the division administers many of the joint County/City programs and projects developed to protect the watershed, such as;

- Lake Whatcom Management Program (LWMP) – Joint agency effort between the City, the County and the District to help protect the lake.
- LWMP Aquatic Invasive Species Program (along with partial funding by the District and Whatcom County) - A comprehensive program designed to guide aquatic invasive species prevention, monitoring, and response efforts in the watershed.
- Filter-Clogging Algae Mitigation Evaluation - Evaluation of alternatives to reduce algae clogging the filters at the City's water treatment plant.
- Property Acquisition Program – Efforts to purchase and preserve land within the watershed.
- Silver Beach Creek Pilot Project – Project aimed at discovering successful strategies to reduce phosphorus.
- Residential Stormwater Retrofit Program – Program aimed at reducing stormwater flows and increasing infiltration at residential properties. Completed 6/30/2011.
- Homeowner Incentive Program – Program offering reimbursement incentives to watershed residents who install projects that increase water infiltration on their properties, and
- Miscellaneous Lake Whatcom Capital Improvement Projects.

3. Local Management

Non-governmental groups are also involved in stormwater and water quality. The Sudden Valley Community Association has internal programs and development reviews to identify and address stormwater infrastructure concerns and to plan for future stormwater management improvements within their boundaries. In addition, individual private property owners and homeowner associations (HOAs) play a role in stormwater management and pollution control through the maintenance and operation of their own, private, onsite stormwater facilities. (See Exhibit M, Private Stormwater Systems, for a map of those in the County NPDES Phase II permit area). These installations have been installed by private owners and developers as a condition of County and City subdivision and other land use approvals. The individual owners of these facilities are responsible for their regular maintenance and operation. The County and City are responsible (by statute) for periodic inspections to confirm that the required maintenance is being performed at each facility. Historically, budgetary constraints have made regular inspection and oversight of these facilities an ongoing challenge for these two agencies.

C. Governance and Funding Options for District Participation

There are several governance options which would allow the District to partner with local agencies in the protection of the watershed. Each governance option has pros and cons with regard to formation, leadership, management powers, and funding resources. Below we have given a brief overview of the governance options available at this time. Reference Table 1 for a summary of the individual characteristics of each option detailed below.

1. Joint Municipal Utility Service Authority/Agreement (JMUSA)

A JMUSA is a separate legal entity, a Washington municipal corporation, created under a statute passed in 2011 and now codified in Ch. 39.106 RCW. It is formed by an agreement between two or more governmental entities, i.e., city, town, county, or special purpose district. Formation does not require boundary review board approval, state approval, or a public vote. The agreement describes the utility services to be provided and can specify powers not to be exercised. It must spell out member financial obligations, a process for adding additional members, conditions for withdrawal (including disposition of assets and liabilities), define which public works law it will be operating under, specify an amendment process, and a process for dissolution.

Utility services which can be addressed in a JMUSA include the services the District already provides (water and sewer), however, utility services can also include point and non-point water pollution monitoring programs, and management and handling of storm water, surface water, drainage, and flood waters. Each member executing the agreement must be providing the type of service which the JMUSA is to provide, which makes it important that the District adopt a comprehensive drainage plan and have some sort of responsibility for this activity before a JMUSA is entered into.

The JMUSA is governed by a board consisting of an agreed upon number of directors. Each director must be an elected official of one of the member governments forming the authority. The agreement must specify how they would be chosen, whether each would have an equal vote or there would be weighted voting, whether a supermajority vote is required, and if so, for what decisions, and so on.

The JMUSA does not have the power to tax. If agreed to by the members, the JMUSA would have the ability to set and collect rates and charges. The City already has a watershed fee for its water customers that is used for land acquisition and preserving water quality in the Lake Whatcom reservoir. However, if the agreement were to include the City, this may be a means of having all who benefit from a clean lake pay a uniform rate or classes of rates, for its protection and cleanup.

TABLE 9
SUMMARY OF POTENTIAL GOVERNANCE AND FUNDING OPTIONS

LEGEND
- MOST FAVORABLE GOVERNANCE OPTION
- LESS FAVORABLE GOVERNANCE OPTION
- LEAST FAVORABLE GOVERNANCE OPTION

GOVERNANCE OPTION	STATUTORY AUTHORITY	FORMATION		LEADERSHIP		MANAGEMENT POWERS	FUNDING
		MEMBERSHIP PARTICIPANTS	AGREEMENT APPROVAL	SEPARATE LEGAL ENTITY	GOVERNING BODY	SERVICES WHICH CAN BE PROVIDED	FUNDING MECHANISMS
Joint Municipal Utility Service Authority / Agreement (JMUSA)	RCW 39.106 (2011)	Cities, Towns, Counties, Special Purpose Districts, Federally Recognized Tribes	Legislative Authority of Each Member; No Boundary Review Board, Public Vote, or County/State Approval Required	YES - Municipal Corporation	Joint Board of Directors - Must be elected officials from the member governments.	Water;Sewer; Point & Non-Point Water Pollution Monitoring Programs; & Management and Handling of Stormwater, Surface Water, Drainage, & Flood Waters	Rates & Charges; Revenue Bonds; Pledge Revenues; Local Improvement District Assessments (member consent), no ability to tax
MOST FAVORABLE GOVERNANCE OPTION				**Partnership Opportunities, Concise Agreement Process, Separate Legal Entity, LWWSD Part of Leadership, Can Fund with Rates & Charges Linking Those Who Benefit to Those Who Pay**			
Interlocal Agreement	RCW 39.34	Federal/State Agencies, Counties, Cities, Special Purpose Districts	Agreement shall be filed pursuant to RCW 39.34.040 with the county auditor of each county lying within the geographical watershed area to be addressed by the partnership.	NO	Administrator or Joint Board	Water, Sewer, Misc. Utilities and Facilities	Contributions from member agencies, or bonds. Because an interlocal is not a separate legal entity - bond issuance is difficult. Participating agencies may appropriate funds and provide personnel, property, & services. Joint boards are authorized to accept loans or grants of federal, state, or private funds.
LESS FAVORABLE GOVERNANCE OPTION				**Partnership Opportunity with LWWSD Part of Leadership, but Not a Separate Entity - So No Rates and Charges so Harder to Link Those Who Benefit to Those Who Pay**			
Cooperative Watershed Management	RCW 39.34.210	Federal/State Agencies, Counties, Cities, Special Purpose Districts	Agreement shall be filed pursuant to RCW 39.34.040 with the county auditor of each county lying within the geographical watershed area to be addressed by the partnership.	EITHER - Can be set up as either a separate legal entity or not.	Administrator or Joint Board	Two or more public agencies form a partnership to implement any or all elements of a watershed management plan.	Contributions from member agencies, or bonds. Participating agencies may appropriate funds and provide personnel, property, & services. Joint boards are authorized to accept loans or grants of federal, state, or private funds. Water District may authorize up to 10% of its water-related revenues for implementation.
LESS FAVORABLE GOVERNANCE OPTION				**Partnership Opportunity with LWWSD Part of Leadership, but Not a Separate Entity - So No Rates and Charges so Harder to Link Those Who Benefit to Those Who Pay**			
County Flood Control Sub-District	RCW 86.15.25	County - Not a partnership mechanism	Formation by vote of County Board of Commissioners or by petition from the public.	Quasi municipal corporation	County Board of Commissioners or elected Supervisors if population of sub-district is >2,000. Provision for local advisory committee included.	Flood water and stormwater control	Excess levies, assessments, regular levies, charges, general obligation bonds, and revenue bonds
LEAST FAVORABLE GOVERNANCE OPTION				**Not a Partnership Mechanism, County Leadership with LWWSD Limited to Advisory Role, Quasi Municipal Corporation - No Rates and Charges so Harder to Link Those Who Benefit to Those Who Pay**			
Lake and/or Beach Management District	RCW 36.61	County - Not a partnership mechanism	County Ordinance	NO	County Board of Commissioners with a provision for a local advisory committee	(1) Controlling or removing aquatic plants and vegetation; (2) improving water quality; (3) controlling water levels; (4) treating and diverting storm water; (5) controlling agricultural waste; (6) studying lake or marine water quality problems and solutions; (7) cleaning and maintaining ditches and streams entering the lake or marine waters or leaving the lake; (8) monitoring air quality; and (9) the related administrative, engineering, legal, and operational costs, including the costs of creating the lake or beach management district.	Special assessments, rates and charges or bonds
LEAST FAVORABLE GOVERNANCE OPTION				**Not a Partnership Mechanism, County Leadership with LWWSD Limited to Advisory Role, Not a Separate Legal Entity but Rates and Charges Allowed Linking Those Who Benefit to Those Who Pay**			
Whatcom County - Countywide Stormwater Utility	RCW 36.89	County - Not a partnership mechanism.	County Resolution	NO	County Board of Commissioners	Resolution for revenues by fixing rates and charges, issuing revenue bonds, or charging assessments for the furnishing of service to those served or receiving benefits or to be served or to receive benefits from any storm water control facility or contributing to an increase of surface water runoff.	Rates and charges, Revenue Bonds, Assessments
LEAST FAVORABLE GOVERNANCE OPTION				**Not a Partnership Mechanism, County Leadership with Possible Advisory Role for LWWSD, Not a Separate Legal Entity but Rates and Charges Allowed Linking Those Who Benefit to Those Who Pay**			

2. Interlocal Agreement

The District, City and County have used an interlocal agreement in their ongoing efforts to address lake water quality through the Lake Whatcom Management Group and are very familiar with how the interlocal agreement process works. The JMUSA legislation was put forth largely because an interlocal agreement does not form a separate legal entity, and the issuance of bonds for any group effort is therefore much more complicated. The JMUSA has the express authority to issue bonds.

The interlocal agreement is a true partnership with an administrator or joint board. Participating agencies may appropriate funds and provide personnel, property and services but rates and charges could not be implemented to fund the program.

3. Cooperative Watershed Management

Watershed management partnerships and projects are governed by RCWs 39.34.190, 39.34.200, 39.34.210, 39.34.215, and 39.34.220 (under 39.34 - Interlocal Cooperation Act). Under RCW 39.34.210, any two or more public agencies may enter into agreements with one another to form a watershed management partnership for the purpose of implementing any portion or all elements of a watershed management plan, including the coordination and oversight of plan implementation. Cooperative management would require the execution of a watershed partnership agreement which includes the provisions required of all interlocal agreements under RCW 39.34.030(3). The watershed partnership agreement can establish a separate legal entity to conduct the cooperative undertaking of the partnership. This legal entity would be authorized to contract indebtedness and to issue and sell general obligation bonds and to issue revenue bonds.

RCW 39.34.190 states that a water-sewer district “may authorize up to ten percent of its water-related revenues to be expended in the implementation of watershed management plan projects or activities that are in addition to the County's, City's, or District's existing water-related services or activities”.

RCW 36.89.130 allows that a county may, as a part of maintaining a system of storm water control facilities, participate in and expend revenue on cooperative watershed management actions, including watershed management partnerships under RCW 39.34.210 and other intergovernmental agreements, for purposes of water supply, water quality, and water resource and habitat protection and management.

At this time, it is unknown if other agencies would be interested in entering into a cooperative watershed management agreement for implementation of a comprehensive stormwater management program in the Lake Whatcom Basin. Efforts by the District would be limited to what could be funded with ten percent of its water-related revenues and additional rates and charges could not be implemented to fund the program.

4. County Flood Control Sub-district

Whatcom County could form a Lake Whatcom Flood Control sub-district. The sub-district has a local advisory board. However, County Public Works provides the staffing, and the County Council has final say on what projects are approved and to what purpose funds are devoted.

An advantage of this approach is that it would use existing County staff and administration, and possibly additional staff at the County, rather than creating a new, separate entity. This may result in cost savings over other options. Disadvantages are that the same government entity and division responsible for setting road maintenance budgets and capital spending on stormwater management related to roads would also be in charge of setting priorities for spending fees assessed on local residents for other stormwater related projects. The need easily outstrips available public funding sources, and there are a number of other impaired water bodies in the County, as well as critical Endangered Species Act (ESA) and other concerns as to the Nooksack basin. There is a potential that sub-district funds would not be spent as local residents desire, and that funds otherwise spent on controlling runoff from County roads in the watershed may be diverted to controlling runoff from roads outside the watershed.

5. Lake and/or Beach Management District

Lake and Beach Management Districts are governed by RCW 36.61, and formation can either be initiated by County Resolution or by landowner petition (15% of acreage contained within District). After appropriate public hearings, the creation of the Lake Management District is subject to a vote of the landowners, then a Special Assessment roll is adopted - a process very similar to the Utility Local Improvement District (ULID) process. It appear that RCW 36.61 does not allow a water-sewer district to run a Lake Management District - it is set up for Counties to manage.

Funding of a Lake Management District can be through a single special assessment, and/or an annual assessment, or periodic rates and charges, and would need to be declared in the formation petition / resolution, along with the amount of money proposed to be raised. It also appears that any changes to the Special Assessment would need to be voted on, and any changes to rates and charges would be determined by the County.

There has been at least one Lake Management District in Whatcom County. Lake Management District No. 1 (LMD) was formed in 1991 at Lake Samish to provide administration, operation and maintenance of a new retention dam structure located at the Friday Creek outlet. The original assessment also covered annual maintenance for a fixed period of time. The LMD has since been relieved of its duties which were transferred to the Lake Samish Flood Control Subzone.

6. Whatcom County – County-wide Stormwater Utility

RCW 36.89 allows for municipal stormwater management through the establishment of community-based stormwater utilities. These types of utilities are commonly formed to address not only stormwater infrastructure issues, but also issues related to stormwater and surface water quality, public education and outreach, flood control, and planning. The power to comprehensively address such a broad spectrum of stormwater and water resource issues makes the stormwater utility an appealing choice for addressing county-wide issues. Utility funding is usually accomplished through user fees based upon a property's percentage of impervious surface. User fees charged must establish a connection between the fee amount and the benefit received. The utility's funding plan must decide if both developed and undeveloped properties will be assessed and what fees will be assessed for public roadways and other public properties.

In recent years, the County has investigated the possible establishment of a stormwater utility as a means to plan, provide, and fund (via County-imposed user fees) a county-wide stormwater program. A comprehensive County stormwater utility could: provide a baseline level of stormwater services throughout the county, ensure compliance with current Western Washington Phase II Permit (Phase II) regulations, and be responsive to the specialized stormwater needs of various sensitive watersheds and water resources within the County. Additional information on the stormwater utility approach is included in the report "National Pollutant Discharge Elimination System Phase II Stormwater Funding Study for Whatcom County" prepared by CH2MHill, December 2010.

7. Stormwater Utility District – LWWSD Controlled

Another option available to the LWWSD is to become a Stormwater Utility District within the Lake Whatcom watershed, independent of the City or the County. RCW 57.08.005 Powers, Section 7 allows the district to "construct, condemn and purchase, add to, maintain, and operate systems of drainage for the benefit and use of the district, the inhabitants thereof, and persons outside the district with an adequate system of drainage, including but not limited to facilities and systems for the collection, interception, treatment, and disposal of storm or surface waters, and for the protection, preservation, and rehabilitation of surface and underground waters, and drainage facilities for public highways, streets, and roads, with full authority to regulate the use and operation".

Comprehensive rate setting authority is specified in both Section 7 and Section 11 for stormwater control (See Exhibit M, District Drainage Powers – RCW 57.08.005 abbreviated). In addition, Section 10 authorizes various types of bonding for a district to "to provide for the reduction, minimization, or elimination of pollutants from those waters [lake, stream, or groundwater] in accordance with the district's comprehensive plan".

Unique from the other governance options, LWWSD would have complete control over planning activities, decision making, and implementation timelines by the stormwater

utility, and LWWSD customers would bear all of the costs. This would not be a partnering effort. Along with control over the stormwater utility, LWWSD would also assume all of the associated risk and liability and would become a separate permittee under the NPDES Phase II permit.

D. District Involvement in Stormwater and Water Quality Management within the Watershed

Stormwater and water quality management within the watershed involves playing in a complex and crowded field. However, there are both pros and cons to both maintaining the current level of participation and becoming more involved. Possible driving forces and goals for further watershed involvement are listed below.

1. Driving Forces

a) Lake Whatcom as a Drinking Water Source

Lake Whatcom serves as the primary drinking water supply for the majority of residents within the Lake Whatcom Basin and in the City. Whatcom County's 2008 Lake Whatcom Comprehensive Stormwater Plan outlines a number of stormwater and water quality goals in management of the watershed. Managing water quality and quantity for long-term uses, with first priority being domestic water supply and prioritization of protection before treatment of Lake Whatcom water are just a couple of examples. As the primary public water purveyor to residents around the lake, the District has a vested interest in protection of the lake's water quality.

b) TMDL Listing of Lake Whatcom as an Impaired Water Body for Both Phosphorus and Bacteria

Lake Whatcom is listed as an impaired water body under Section 303d of the Federal Clean Water Act for total phosphorus and bacteria. As outlined in Whatcom County's 2008 Lake Whatcom Comprehensive Stormwater Plan;

> "Phosphorus is a key issue because it is the limiting factor in lake eutrophication and associated water quality problems: high algae and organic matter concentrations, and taste/odor/toxicity problems from algae-produced chemicals. Phosphorus delivered by stormwater can accelerate this eutrophication. At best, these water quality problems increase treatment costs. The potential threats to maintaining the lake as a high-quality source of drinking water and to preventing large increases in costs for treatment and additional infrastructure are increasing."

According to Department of Ecology studies (Reference 2, 2008), Lake Whatcom suffers from several types of water quality degradation – each to a greater or lesser degree: suspended sediment; bacterial and protozoa contamination; pesticide, heavy metals, total organic carbon, and petroleum hydrocarbons such as oil and gas from vehicles; and increase water temperatures which are harmful to fish and other aquatic life in the ecosystem. Bacteria and protozoa provide an immediate risk to public health and safety. Coliform bacteria, including E. coli, are indicators of potential contamination by other disease-causing organisms. Potential sources for bacterial and protozoa contamination include livestock, pet, and wildlife droppings, failing septic systems, and sewer system overflows.

c) Funding Gap

Many of the County's and City's stormwater and water quality management programs lack sufficient funding. Implementation of the capital improvement projects outlined in Whatcom County's Lake Whatcom Comprehensive Stormwater Plan are behind schedule due to budgetary shortfalls. These County projects are being funded by the County tax payers as a whole. At this time, there is no system in place which directly links those who benefit to those who pay to secure that benefit.

2. End Goals

a) Protection of Public Health and Safety

Through its public sewer system, the District plays one of the most crucial roles in the watershed related to water quality improvement and protection of public health and safety. However, more can be done to address the issue in the area of stormwater management and water quality treatment within the basin. The District is in a unique position to effect improvement. The District boundaries almost completely surround the lake and encompass some of the most intensely developed areas within the watershed. Partnering for the improvement of stormwater and surface water quality in the watershed would be a direct extension of the stewardship role the District currently plays.

b) Reduced Treatment Costs

As the public water purveyor for the greater portion of the Lake Whatcom basin, any improvement to the water quality of the lake could result in treatment cost savings for the District and for the District's rate payers.

c) Funding Assistance

By partnering with one or more local agencies, the District may be able to fill some of the existing funding gaps related to:

- public outreach and education programs related to stormwater and water quality improvement,

- oversight and inspection programs related to both private stormwater facilities and onsite sewage disposal,
- implementation of planned stormwater treatment CIPs identified in Whatcom County's *Lake Whatcom Comprehensive Stormwater Plan*,
- compliance with Ecology Phase II permit requirements, and/or
- many other stormwater and water quality related projects and programs.

d) Habitat Protection

Not only is Lake Whatcom the sole source for water consumption by residents living near the lake and throughout the City, but it also provides crucial habitat to fish in the lake, downstream of the lake in Whatcom Creek, and also for the Whatcom Falls Fish Hatchery. A healthy fish population provides enjoyment to sport fishers in addition to contributing to the overall health of the lake ecosystem.

DOE [2008] released water quality study findings for Lake Whatcom that go into great detail to describe the effect of reduced levels of dissolved oxygen and the correlated phosphorus levels on water quality and aquatic organisms.

> "The health of fish and other aquatic species depends on maintaining an adequate supply of oxygen dissolved in the water. Growth rates, swimming ability, susceptibility to disease, and the relative ability to endure other environmental stressors and pollutants are all affected by dissolved oxygen levels" [Pickett and Hood, 2008].

Reduction of phosphorus will also limit algal growth, which in turn increases dissolved oxygen levels.

3. Existing Activities and Programs

a) Lake Whatcom Management Team

The District is a partner in the interlocal agreement governing the Lake Whatcom Management Team and actively participates in its meetings at all levels - Policy Group, Executive, and ICT (Interjurisdictional Coordinating Team). The District also provides funding for the Team's ongoing programs, such as the Invasive Species Program. The Team will be preparing its next five-year action plan in 2014.

b) Education Outreach

The District provides educational materials on various topics to its customers on the District website, and through bill-stuffers and handouts at the District Office. These materials include ways to conserve water, reduce stormwater runoff and improve lake water quality.

4. Potential Activities and Programs

a) Residential Retrofit Resources

As mentioned earlier, RCW 39.34.190 allows the District to "authorize up to ten percent of its water-related revenues to be expended in the implementation of watershed management plan projects or activities." The District may consider authorizing additional funding in support of such projects and activities, especially those that provide resources for residents to implement water quality projects on their own property.

E. Summary

There are many opportunities available to the District to assist in the ongoing stormwater and water quality improvement efforts within the Lake Whatcom Basin. Choosing the right partnering relationship(s), governance type, and project end goals will be critical to building a successful program. The field for stormwater and water quality management within the basin is crowded with many inter-related and sometimes conflicting mandates that are murky with regard to execution and priority. The District will choose the management areas which are most relevant to its own mandate and where it can make the most difference.

The District would ideally like to partner with the City and the County in protecting the quality of Lake Whatcom through stormwater management efforts. Both the JMUSA and interlocal agreement would be potential options for this approach. Becoming a separate stormwater utility is also a potential option if the County and/or the City are unable to take action to effectively address lake water quality. Considering the existing watershed partnerships and programs and the framework that would most efficiently build upon it, the District's most advantageous governance option for setting up a future management partnering relationship is the JMUSA. This preferred governance option is described in detail below. Some of the key issues to consider when developing a joint stormwater and water quality management strategy are also listed below.

1. Optimal Governance Option for Local Agency Partnering – JMUSA

The JMUSA governing option provides the best option for the District when embarking on a joint stormwater management strategy for the watershed. A JMUSA would allow partnering with the County and/or City by creating a separate legal entity. Formation would not require any of the cost or complications associated with obtaining boundary review board approval, state approval or holding a public vote. The governing RCW specifically requires that the JMUSA agreement address many of the crucial operating issues up-front, (i.e. member financial obligations, process for adding members, conditions for withdrawal, determination of public works laws under which the JMUSA will operate, amendment process, and process for dissolution), limiting District uncertainty.

Although a JMUSA is unable to tax, it does have the ability to set rates and collect fees. This ability would be similar to the watershed fee charged by the City to their residents both inside and outside of the watershed, who rely on Lake Whatcom as their primary potable water source, and similar to the Whatcom County flood control zone fee. The Lake Whatcom Watershed Land Acquisition and Preservation Program is billed to City customers as a base rate combined with a price per cubic foot of water consumed. Through a JMUSA, uniform rates or classes of rates could be likewise adopted. Since the governing board of directors must be made up of elected officials from the member governments, the District would have a voice in the decisions regarding policy, funding and implementation.

If there is no interest from other entities to create a JMUSA, the District may still consider partnering with the City and/or County through an interlocal agreement (not a separate entity). However, funding would be restricted to budget allocations from the participating members or issuance of bonds by each agency.

Lastly, becoming its own stormwater district is an option available if it is determined that the District can more effectively accomplish water quality improvement and lake protection on its own. All of the other governing options detailed above such as the cooperative watershed management partnership, County flood control subdistrict, and Lake and/or Beach management District are not as desirable for the reasons previously mentioned in Section III.

The only real limitation to the JMUSA is that the District needs to already be "in the business" of stormwater and water quality management prior to entering into a JMUSA and, under RCW 57, must adopt a comprehensive plan outlining its goals and responsibilities with respect to stormwater and water quality activities. The District has already undertaken the preliminary planning process which has resulted in this stormwater and water quality chapter of the District's current comprehensive sewer plan update.

2. Key Issues in Determining Any Joint Stormwater Management Strategy

Within the development of any joint stormwater management strategy, there are a few key areas which must be addressed:

- Public Support and Public Outreach – For the District to successfully expand its services to include a stormwater and water quality management component, local public support by Lake Whatcom residents will be crucial. Early and frequent public outreach and education will most likely be an important component for the success of any agency partnership.
- Establishing Clear Goals and Timelines for Implementation – The establishment of clear, identifiable goals at the outset and tying the accomplishment of those goals commitment to a specific timeline for implementation, the District will avoid

entering into open-ended partnerships where accomplishments are impossible to track and whose costs are difficult to justify.

- Avoid Inadvertent Assumption of Statutory Authority – Earlier in this chapter, we provided an overview of the existing management hierarchy associated with stormwater and water quality management in the watershed. Many of the management and regulatory programs detailed are dictated by specific federal, state, and/or local statutes. The District is currently required under its charter to provide public water and sewer service within its boundaries. If additional funding is obtained for expanding into stormwater and water quality management activities within the watershed, the District may be assuming liability related to the statutory requirements for which another agency is responsible, such as becoming an NPDES Phase 2 permit holder.
- Retain Direct Joint Authority – Any joint partnering effort will probably result in the expending of District resources in the form of money and/or manpower. To offset these costs, the District will likely want to enter into a local agency partnership which allows joint governing authority and guarantees the District a voice in the decisions regarding policy, funding and implementation.

F. Chapter References

1. CH2M HILL. *Lake Whatcom Comprehensive Stormwater Plan*. Prepared for Whatcom County Public Works. March 2008

2. Department of Ecology, *The Lake Whatcom Watershed Total Phosphorus and Bacteria TMDLs: WQ Study Findings, Volume 1*, Pickett and Hood. November 2008.

3. Lake Whatcom Reservoir Management Program. 2010. Website: http://lakewhatcom.wsu.edu/. A joint effort of the City of Bellingham, Whatcom County, and Lake Whatcom Water and Sewer District.

VII. DOCUMENTS INCORPORATED BY REFERENCE

The District maintains several documents that are relevant to this Comprehensive Sewer Plan that are hereby incorporated by reference. Since the nature of these documents requires them to be updated more frequently than the Comprehensive Sewer Plan, they have not been integrated into this Plan.

The documents incorporated by reference include:

- District Design and Construction Standards
- Developer Extension Agreement - Master Form
- Capital Improvement Plan
- Master Fees and Charges Schedule (current version is attached in Exhibit I)
- Water System Comprehensive Plan
- District Administrative Code

VIII. NON-PROJECT SEPA

WAC 197-11-960 Environmental checklist.

ENVIRONMENTAL CHECKLIST

Purpose of checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

A. BACKGROUND

1. Name of proposed project, if applicable:

Comprehensive Sewer System Plan - 2014 Update

2. Name of applicant: ***Lake Whatcom Water and Sewer District***

3. Address and phone number of applicant and contact person:
Lake Whatcom Water and Sewer District
1220 Lakeway Drive
Bellingham, WA 98229
Patrick Sorensen, General Manager
Tel. 360-734-9224

4. Date checklist prepared: *3/12/2014*

5. Agency requesting checklist: *Lake Whatcom Water and Sewer District*

6. Proposed timing or schedule (including phasing, if applicable):
Exact construction timing of the various improvement projects included in the Comprehensive Sewer Plan is unknown. The Plan identifies the anticipated schedule for projects and alternatives proposed for the next 6 years. Project funding will impact construction phasing.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
This Comprehensive Sewer Plan covers planned sewer system improvements within the District for the next 20 years, with anticipated updates of the plan every six years.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
The District authorized an FEIS for provision of sewage disposal services to serve anticipated population along the South Shore of Lake Whatcom (Sudden Valley and Geneva areas). That 1997 FEIS investigated the direct and indirect impacts of anticipated ultimate populations in the Sudden Valley and Geneva areas of the District. An SEIS regarding potential changes to the operation of the Nooksack Diversion Dam was prepared in 2000-2001 for the District. An EIS was prepared for the proposed North Shore Estates (formerly Winchester Estates) subdivision, including sewer collection facilities, in the District's North Shore area. A non-project environmental checklist was prepared for the District's 2010 Water System Plan Update, which is the companion of this Plan update.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.
Yes, the District has submitted a Shoreline Substantial Development permit application for rehabilitation of a 30-year old sewer pump station to Whatcom County.

10. List any government approvals or permits that will be needed for your proposal, if known.
It is anticipated that the following governmental approvals or permits will be required for the construction of sewer system improvements:

Washington Department of Ecology

- *NPDES Construction Activities stormwater management permit for construction projects disturbing areas greater than one acre.*

Whatcom County (various departments)

- *Approval of the Comprehensive Sewer Plan by County Engineer, County Health Officer, and County Council.*
- *Approval of construction plans and specifications for all improvements constructed in Whatcom County road rights-of-way, and for any structures requiring occupancy permits.*
- *Conditional use permit for new above-ground structures.*
- *Shoreline substantial development permit if new facilities are within 200 feet of Lake Whatcom, Lake Louise, and lower portions of Austin Creek. The County's shoreline jurisdiction with respect to creeks is subject to modification.*
- *Right-of-way encroachment permits*
- *Land disturbance permit*
- *Critical Areas Ordinance review in the context of other permit applications, i.e. conditional use, shoreline, building permits, etc.*

Department of Fish & Wildlife

- *Hydraulic Project Approval for any construction below the ordinary high water mark of Lake Whatcom or its associated wetlands and tributary streams (none known at this time)*

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

This proposal is a Comprehensive Sewer Plan which is a non-project action. The Comprehensive Sewer Plan addresses future growth planning in addition to the needs of maintaining an existing sewer system so the District can continue to operate a safe, reliable, and cost effective sewer system. The purpose of the Comprehensive Sewer Plan is to identify those projects the District will need to construct in order to continue to meet standards for capacity, I&I reduction and system replacement. District efforts will be focused on maintaining its existing pumping stations and sewer mains and reducing inflow and infiltration.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The proposal includes the area within the Lake Whatcom Water and Sewer District boundary, in Whatcom County, Washington. A map showing the District Boundary is included in the Comprehensive Sewer Plan as Exhibit A.

B. ENVIRONMENTAL ELEMENTS

1. **Earth**

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other . . . . . .
The "site" for this purpose is defined as the area within the District boundary. All types of terrain are included in the service area, but predominantly it is rolling and hilly, with some very steep areas.

b. What is the steepest slope on the site (approximate percent slope)?
There are cliffs within the service area (100% slopes). Steep slope areas would be avoided in the selection of construction locations for sewer system improvements.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

There is no known prime agricultural farm land in the District boundary. The soils include classifications of Squalicum, Chuckanut, Nati, Kickerville-Barneston-Everett, and Sumas Outwash. (Source: Soil Survey of Whatcom County Washington. USDA Soil Conservation Service 1983)

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Yes. Within the District boundaries, unstable slopes are evidenced by surface indications along Lake Whatcom Boulevard, west of Strawberry Point, and possibly along Agate Heights Road on the North Shore. There may be other areas as well. The District will engage site-specific geotechnical and structural expertise prior to the design and construction of its new reservoir facilities.

<u>Indirect</u>: Although the Soil Survey may indicate moderate to severe restrictions to buildings based on slopes and wetness, in fact these obstacles have been overcome by site-specific structural designs to allow house construction. The District is unaware of any significant quantity of soil so unstable as to render platted properties un-buildable. It is anticipated that County environmental review of new or pending plat applications will address these issues on a site-specific basis for presently un-platted properties.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

<u>Direct</u>: In general, sewer main trench spoil is properly disposed of off site, and replaced with imported granular backfill material whenever the line is in a roadway or road shoulder. The quantity of imported backfill is approximately 30 cubic yards per 100 feet of pipe. For reservoir construction, excess excavation spoil is also removed and properly disposed of offsite. The quantity will be dependent upon the slope of the site and the degree to which the reservoir is partially buried or not. The project site's surface is always restored.

<u>Indirect</u>: Filling and grading associated with individual home construction cannot be projected, but would be subject to County review and regulation through the building permit process. Filling and grading associated with new subdivisions would be subject to environmental review and regulation via either the short or long plat subdivision process.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

<u>Direct</u>: The highest probability of erosion would occur during construction. Best Management Practices (BMPs) such as silt fences, silt check dams, cobbled construction entrances and directed site drainage are required and enforced by the District for its construction projects. The Department of Ecology Stormwater Management Manual for the Puget Sound and Whatcom County's regulations govern the BMP's.

<u>Indirect</u>: With respect to individual home sites and construction of new subdivisions, erosion and sedimentation is most likely to occur during construction and prior to establishment of vegetative cover. Approved erosion and sedimentation control techniques such as silt fences and silt check dams must be implemented and maintained for even the smallest project. These requirements are addressed on a site-specific basis by Whatcom County building permit and subdivision processes, and include the Land Disturbance Permit and required Erosion and Sedimentation Control Plans.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

<u>Direct:</u> The surface over sewer mains would generally be restored to its condition prior to construction, i.e. mains in streets would have paved surfaces, mains in easements would have turf surfaces. Whatcom County overlay zoning regulations stipulate the allowable level of impervious cover on a site. These rules will not affect sewer main construction or repair.

<u>Indirect:</u>
South Shore area: The District's 1997 FEIS for South Shore Sewage Disposal Alternatives thoroughly identified the level of impervious surfaces which may occur as a result of homebuilding. The County's overlay zoning has been passed since that time, further reducing the level of anticipated impervious surface.

North Shore area: North Shore development will generally be less dense with less impervious cover based on lower-density zoning and Whatcom County's overlay zoning. Many external factors govern development there, some of which are ultimately based on availability of water, but beyond the District's control.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:
Direct: Implement County-approved temporary erosion and sedimentation control measures during construction, and re-vegetate immediately upon completion of construction. The District supervises contractor-implemented erosion control procedures for any District-funded construction projects.

Indirect: The Sudden Valley Community Association, supervises homebuilder-implemented temporary erosion and sedimentation control measures during construction, and establishes and supervises erosion control standards for the permanent residence. These are in addition to those imposed by Whatcom County through the above-mentioned Land Disturbance Permit and Erosion and Sedimentation Control regulations.

In the Geneva and North Shore areas, Whatcom County supervises contractor compliance with erosion control requirements during homebuilding.

2. **Air**

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile,odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.
Direct – temporary impacts: During construction, any construction project would result in dust and exhaust from heavy equipment such as backhoes, graders, dump trucks, and tractor/trailer trucks delivering heavy construction equipment. Construction workers' personal vehicles would also create dust and exhaust.

Direct – permanent impacts: District staff would visit some of the facilities (e.g. pump stations, generators) for operational purposes, and their vehicles would create exhaust and possibly dust.

Indirect – temporary impacts: There will be increased vehicle emissions associated with home construction traffic. Onsite burning of trees removed for house construction will occur if not specifically prohibited via burn bans as regulated by Whatcom County.

Indirect – permanent impacts: Automobile and bus vehicle emissions associated with residential subdivisions and public transportation to serve same.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.
No.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:
Direct – temporary impacts: Appropriate dust control measures will be implemented on District-managed construction projects.

Direct – permanent impacts: District staff will endeavor to reduce the potential vehicle emissions from its trucks by managing operating procedures and service routes so as to minimize driving miles and properly maintaining vehicles.

Indirect – temporary impacts: Appropriate dust control measures during home construction are enforced through Whatcom County Erosion Control regulations.

Indirect – permanent impacts: A significant reduction in vehicle emissions over the total potential level can best be achieved through individual, personal decisions to choose alternatives to single-occupancy vehicle. Public transportation, bike trails connected to work centers, carpooling, and reducing unnecessary travel are all important measures which could be supported by individuals and by the community as a whole.

3. **Water**

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Lake Louise and the majority of Lake Whatcom is located inside the District boundaries. Several streams are also contained within the District's boundaries, including:

- *On the South Shore - Beaver Creek, which is tributary to Austin Creek, which is tributary to Lake Whatcom.*
- *On the North Shore - Smith Creek, Olsen Creek, and Carpenter Creek, which are tributaries to Lake Whatcom.*
- *South End – Anderson Creek, which is tributary to Lake Whatcom. Anderson Creek is also a component of the City of Bellingham's Middle Fork Nooksack River Diversion System.*

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

It is possible that projects will be constructed within 200 feet of the waters listed. Plans will be developed prior to construction and the District will apply at that time for Shoreline Exemption permits for the work as it is normal maintenance and repair of existing facilities.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

<u>Direct</u>: No net removal of dredge or placement of fill in surface waters or wetlands is anticipated. However, fill and dredge is typically project-specific and will be addressed by the project environmental checklist.

<u>Indirect</u>: Fill and dredge material placed or removed from surface waters in the future due to homebuilding is anticipated to be minimal, as most waterfront property has already been developed. There may be some areas of wetlands which individual home sites or future subdivisions could impact. Whatcom County requires environmental review of any subdivision proposal impacting wetlands. It is unlikely that dredge or fill of surface waters or wetlands would occur on any significant number of existing platted lots. In either circumstance, Whatcom County has regulatory powers to require wetlands and surface water protection.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

This proposal for the Comprehensive Sewer Plan does not require additional surface water withdrawals or diversions. Provision of drinking water by the District currently requires direct surface water withdrawal for Sudden Valley and Geneva, and indirect surface water withdrawal for part of North Shore (City of Bellingham intertie). Lake Whatcom is the source of the surface water withdrawals. . Projected quantities are included in the District's Water Use Efficiency Plan.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No. The City of Bellingham operates the Whatcom Falls dam and the Nooksack Diversion to attempt target water surface elevations of 314 feet above mean sea level during May through September, and 311.5 feet during November through March. April and October are transition months. There is not an identified 100-year floodplain associated with the Lake.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

The Plan does not include any project that would intentionally discharge waste materials to surface waters.

b. Ground:

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

This proposal for the Comprehensive Sewer Plan does not require additional ground water withdrawals nor will water be discharged to ground water. The District uses direct ground water withdrawals to supply part of North

Shore. Water will not be discharged to ground water. Projected quantities are included in the District's Water Use Efficiency Plan.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

Direct: No waste material from the proposed facilities will be purposely discharged into the ground.

Indirect: Prior to the completion of the Lake Louise Road Interceptor which now provides sufficient sewage transmission capacity on the South Shore, the number of onsite sewage systems increased, leading to discharge of effluent to the groundwater. Septic systems installed in areas served by public sewer were required to connect to the public sewer within five years of sewer availability. In areas not served by public sewer, onsite sewage systems are allowed and approved by the Whatcom County Health Department.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Direct: Sewer system projects will not create any new significant storm water runoff. Area storm water runoff flows to Lake Whatcom and its tributary streams.

Indirect: The impacts of runoff from new home construction on the South Shore were identified by the District's 1997 FEIS. Impacts of runoff for proposed North Shore Estates (formerly Winchester Estates) were identified in that development's EIS.

2) Could waste materials enter ground or surface waters? If so, generally describe.

Direct: The sewer system facilities will not discharge waste materials to the ground or surface waters.

Indirect: See 1997 FEIS. With regard to general residential population increase in the watershed, waste materials may enter the ground or surface waters only if spilled on the ground and subsequently carried off by storm runoff. Typical residential waste materials might include automotive fluids, insecticides, fertilizers, paints, cleaning products, etc.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

Public education is necessary to inform homeowners of the potentially serious impacts of some typical "home and garden" activities, such as cleaning paint brushes, changing motor oil, using lawn and garden fertilizers and pesticides.

The Lake Whatcom Management Plan includes a substantial educational component to provide this information.

4. **Plants**

a. Check or circle types of vegetation found on the site:

.X.	*deciduous tree: alder, maple, aspen, other*
.X.	*evergreen tree: fir, cedar, pine, other*
.X.	*shrubs*
.X.	*grass*
___	*pasture*
___	*crop or grain*
.X.	*wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other*
.X.	*water plants: water lily, eelgrass, milfoil, other*
.X.	*other types of vegetation*

b. What kind and amount of vegetation will be removed or altered?

Direct: Sewer system maintenance and repair projects will generally be confined to traveled right-of-ways or previously disturbed areas.

Indirect: See 1997 FEIS. Housing construction will result in trees being removed to make room for buildings and driveways. Sudden Valley Community Association has very stringent requirements that limit tree removal.

c. List threatened or endangered species known to be on or near the site.

The 1997 FEIS identified a state threatened plant species, water lobelia (Lobelia dortmanna) and a state sensitive species, southern mudwort (Limosella acaulis) as being recorded in historic records for the study area. No impacts to these species or their habitats are expected from sewer system projects.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

The surface over the water mains would generally be restored to its condition prior to construction (paved or unpaved). Landscaping at the perimeter any sites will be accomplished in accordance with Whatcom County requirements established by the permits issued.

5. **Animals**

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds, ducks, sea gulls, swans
mammals: deer, bear, elk, beaver, cougar, other:
fish:bass, Kokanee salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

See 1997 FEIS, page 3-52. The sewer system projects are not expected to harm endangered, threatened or sensitive species or their habitats, as the projects generally take place in traveled right-of-ways and previously disturbed areas.

c. Is the site part of a migration route? If so, explain.

The area is part of the Pacific Flyway bird migration route. Regular large concentrations of waterfowl appear at the north end of Lake Whatcom and on the Sudden Valley golf course.

d. Proposed measures to preserve or enhance wildlife, if any:

The District's projects will be designed to minimize disruption of wildlife habitat by occupying traveled right-of-ways and previously disturbed areas to the largest extent possible.

6. **Energy and natural resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Direct: Some sewer facilities are powered by electricity. Emergency backup power is supplied by propane or diesel generators.

Indirect: The homes which will be served by the District's sewer facilities will have electricity, natural gas, propane, solar energy, and/or wood energy available.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

Direct: No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Direct: Electric motors for the sewer facilities will have high energy efficiency requirements.

7. **Environmental health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Direct: None anticipated

Indirect: Increasing urbanization of the Lake Whatcom watershed is viewed by some as a potential environmental health hazard which could affect the suitability of the Lake as the area's major drinking water source. These issues have been addressed in detail in the 1997 FEIS for South Shore Sewage Disposal Alternatives. All legal challenges as to the adequacy of the FEIS under SEPA have been resolved in favor of the District.

Risks from accidental spill of toxic chemicals or fuel into the water supply already exist due to residential traffic, residential activities, and boating recreation. These risks may increase with an increase in population performing these same activities in the watershed.

1) Describe special emergency services that might be required.

Direct: No special emergency services are required.

Indirect: The District, City of Bellingham, and Whatcom County have prepared an emergency response plan for the watershed. The District has also completed an update to its own Emergency Response Plan.

2) Proposed measures to reduce or control environmental health hazards, if any:

Direct: N/A

Indirect: Although not specifically included as part of this proposal, community efforts which can be continued within the watershed include constructing and retrofitting runoff quality enhancement techniques such as sedimentation ponds and biofiltration swales; continued public education as to impacts of residential chemical use in the watershed; and transportation demand management promoting less vehicular travel.

b. **Noise**

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Direct – Temporary and Permanent: No existing noises would affect the construction and operation of sewer facilities.

Indirect– Temporary: No existing noises would adversely impact the construction of additional homes in the District.

Indirect– Permanent: Traffic noise on Lake Whatcom Blvd. and Lake Louise Road will increase with increasing population, and the change would most greatly impact those houses located on these streets.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Direct – Temporary: Heavy construction equipment noise will occur during the daylight hours on weekdays during construction of sewer facilities.

Direct – Permanent: Auxiliary generators used in the event of power outages are somewhat noisy, even if housed and equipped with mufflers. The noise impact would occur during power outages and during regular weekly generator exercise periods. Generator installations in residential areas already exist at several sewage pump stations.

Indirect– Temporary: Construction noise from homebuilding would occur during similar hours and will occur throughout the service areas.

Indirect– Permanent: Traffic noise, and the noises of living in proximity to one another (e.g. lawnmowers, dogs, children) are to be expected with population increase in an area zoned urban residential.

3) Proposed measures to reduce or control noise impacts, if any:

N/A.

8. **Land and shoreline use**

a. What is the current use of the site and adjacent properties?
Residential development at varying densities with some commercial, resort, and public use. There are some public and private forestry tracts located adjacent to the residential zones.

b. Has the site been used for agriculture? If so, describe.
No agriculture known except limited forestry. See 8.a above.

c. Describe any structures on the site.
There are approximately 3,900 equivalent residential connections in Sudden Valley, Geneva and North Shore, comprised primarily of single family residences, but also including two schools, two fire stations, condominiums, residential treatment center, neighborhood commercial center, camps, recreation center, restaurant and golf club.

d. Will any structures be demolished? If so, what?
None anticipated.

e. What is the current zoning classification of the site?
Refer to the official Whatcom County Zoning Maps for Sudden Valley, Geneva, North Shore and South Lake areas. Zoning designations include UR, RR2, RR3, and R5A, ROS, STC, NC, RF and CF.

f. What is the current comprehensive plan designation of the site?
The site is in the Lake Whatcom Special Study Area of the Whatcom County Comprehensive Plan. The District's intended sewer service areas were designated in the conditionally-approved 2008 Comprehensive Sewer Plan. Most, but not all, of the Geneva area is included within the City of Bellingham's Urban Growth Area boundary. Other Comprehensive Plan designations include Public Recreation, Rural Community, Rural Forestry, Commercial Forestry and Rural.

g. If applicable, what is the current shoreline master program designation of the site?
Lake Whatcom is a shoreline of statewide significance. The Lake Whatcom shorelands within the District include urban, rural, and conservancy shoreline designations, and the waters of Lake Louise and Lake Whatcom have aquatic designations. Austin Creek has a conservancy shoreline designation under Whatcom County's Shoreline management Program.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.
The Critical Areas Ordinance of Whatcom County classifies some areas as environmentally sensitive for wetlands and steep slopes.

Lake Whatcom, Austin Creek, Beaver Creek, Whatcom Creek and other unnamed creeks tributary to Lake Whatcom would be classified as Critical Areas.

i. Approximately how many people would reside or work in the completed project?
<u>Direct</u>: No persons would reside at the proposed sewer facilities.

<u>Indirect</u>: Development is predominantly residential. Approximately 50-100 people may work at the neighborhood commercial center and the Sudden Valley Community Association recreational facilities (golf course, clubhouse, marina, pool, etc.).

i. Approximately how many people would the completed project displace?
None anticipated.

k. Proposed measures to avoid or reduce displacement impacts, if any:
Not applicable.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
The proposal is to provide public sewer service in accordance with existing zoned land uses and urban growth area / LAMIRD boundaries.

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.
Direct: No housing units will be provided by the District.

Indirect: The Comprehensive Sewer Plan will support existing customers and anticipated growth in the District in accordance with Whatcom County zoning and regulations.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.
Direct: No existing houses are anticipated to be eliminated by the proposed projects.

Indirect: Generally, no existing houses would be eliminated by new home construction. A conceivable exception would be the removal of an old house for replacement with a newer structure.

c. Proposed measures to reduce or control housing impacts, if any:
Direct: Does not apply.

Indirect: No measures proposed.

10. **Aesthetics**

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?
Direct: The tallest proposed sewer system structure would be a new or replacement generator building for a sewer pump station. It would be the height of a single story building.

Indirect: County building regulations and the architectural controls of the Sudden Valley Community Association will determine maximum allowable building heights and building materials.

b. What views in the immediate vicinity would be altered or obstructed?
Direct: None anticipated

Indirect: Additional homes have the potential to obscure or block some views.

c. Proposed measures to reduce or control aesthetic impacts, if any:
Direct: The District will work with adjacent property owners to reasonably mitigate aesthetic impacts. However, an above-ground sewer system component cannot usually be totally buffered from sight. The costs of mitigating aesthetic impacts will be weighed against the benefits to the community.

Indirect: In Sudden Valley, aesthetic impacts of housing are addressed by the SVCA Architectural Control Committee. Other property owner associations in the District may exist or may be formed in the future to provide a similar function.

11. **Light and glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
Direct: Exterior security lighting at sewer system facilities can be directed so as not to disturb neighbors. Site perimeter vegetation buffers may also help mitigate for glare onto adjacent properties. Lighting would only occur at night.

Indirect: There will be additional light and glare produced by additional homes. It will be up to individual adjacent property owners to identify and resolve site-specific issues of light and glare, although Whatcom County Building and Codes and the SVCA Architectural Control Committee may take part in these matters.

b. Could light or glare from the finished project be a safety hazard or interfere with views?
Direct: No. If a District-owned security light was determined to present a view impediment, it would be adjusted.

Indirect: N/A.

c. What existing off-site sources of light or glare may affect your proposal?
Direct: None will affect the provision of sewer service.

Indirect: N/A.

d. Proposed measures to reduce or control light and glare impacts, if any:
See 11.a above.

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity?
Lake Whatcom provides public recreational opportunities including swimming, fishing, boating and water skiing. Private recreational opportunities include swimming, golfing, parks, recreation center in Sudden Valley, and private campgrounds and church camps near Sudden Valley.

b. Would the proposed project displace any existing recreational uses? If so, describe.
Direct: No displacement of existing recreational use is anticipated.

Indirect: No known formal recreational uses would be displaced by house construction in the District. Nearby residents may be currently using vacant properties for informal recreation (sanctioned or not). These uses will be generally lost with increased home construction on currently vacant lots and properties.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
Direct: No measures proposed.

Indirect: Sudden Valley has already provided numerous recreational opportunities for its residents. The expansion of these facilities, if necessary to accommodate increased population, will be the duty of the Sudden Valley Community Association. The recreational impacts and mitigating measures for any new subdivisions in the Geneva and North Shore areas will be regulated by Whatcom County through the individual subdivision SEPA processes.

13. **Historic and cultural preservation**

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.
Direct: See 1997 FEIS, pages 4 - 58-59. the known petroglyph site will not be impacted by any sewer system construction. Utility lines are usually constructed within existing right-of-way corridors, so there is virtually no potential conflict with historic sites.

Indirect: The 1997 FEIS identified the possibility that archaeological resources may be discovered in the process of future homebuilding around Lake Whatcom.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.
See 1997 FEIS, pages 4 – 58-59.

c. Proposed measures to reduce or control impacts, if any:
If potentially important archaeological material is uncovered during any sewer system construction project, the excavation will be stopped for contact of the Washington State Office of Archaeology and Historic Preservation.

14. **Transportation**

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.
Existing arterial access to Geneva and Sudden Valley is via Lakeway/Cable Street/ Lake Whatcom Blvd. and Lake Louise Road from Bellingham. Access to Sudden Valley from Interstate 5 to the south is via Highway 9 and Lake Whatcom Blvd. Access to North Shore is via North Shore Road, or via Britton Road from Hwy 542 (Mt. Baker Highway). There are numerous public streets in the Geneva and North Shore areas, and numerous private streets created by the plats of Sudden Valley.

Whatcom County and the City of Bellingham have previously examined construction of another arterial from Sudden Valley to the City of Bellingham, informally known as the Whatcom Connector. The County and City would have the most current information on this road in their respective six year capital improvement plans.

Traffic studies authorized by the two local governments indicate that such an arterial is required to serve the land uses anticipated in Geneva and Sudden Valley. (Lake Whatcom Transportation Study, Bellingham to Sudden Valley, Reid Middleton, 1991)

The District has no legislative authority to create and maintain roads, so has no role in transportation issues.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?
Geneva and Sudden Valley are currently served by public transportation provided by Whatcom Transit Authority. Stops exist along Lake Whatcom Blvd and Cable Street. The North Shore is not served by regular public transportation.

c. How many parking spaces would the completed project have? How many would the project eliminate?
Direct: Sewer facilities need only the temporary parking necessary for operator and service trucks, one – two spaces at most.

Indirect: Each residential unit must provide sufficient on-lot parking in accordance with Whatcom County zoning and building regulations.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).
Direct: No new streets are anticipated for access to the proposed sewer facilities.

Indirect: Traffic studies authorized by the County and the City indicate that another major arterial is required to serve the land uses anticipated in Geneva and Sudden Valley. Within Geneva and North Shore, there may be additional street construction by others in the future.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.
The District service areas are not in the immediate vicinity of public water, rail or air transportation.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.
Direct: The number of vehicular trips generated by any new sewer system facilities would be less than one per day per facility. Upcoming projects are primarily replacement and maintenance of existing sewer facilities, and would generate no additional vehicular trips.

Indirect: Whatcom County subdivision procedures typically require traffic from newly created subdivisions to be addressed in the subdivision application. The Lake Whatcom Transportation Study, Bellingham to Sudden Valley (Reid

Middleton, 1991) reported then existing ADT volumes of 18,000 trips on Lakeway Drive east of Yew Street, attributed to 3,450 households in the study corridor, or 5.2 trips per household. The report's ADT volumes for the year 2010 on Lakeway Drive and a future Whatcom Connector east of Yew Street are approximately 35,000 trips. According to the study, a 6-8 percent reduction in vehicle trips in the Lakeway Corridor may be achievable through aggressive transportation demand management. See the 1997 FEIS (pages 4–31 - 4-40) for discussion of indirect traffic impacts from population growth on the South Shore.

g. Proposed measures to reduce or control transportation impacts, if any:

Direct: The District has no authority to reduce or control transportation impacts from any activity other than its own operations.

Indirect: The City and County will need to jointly construct an additional arterial to accommodate the anticipated traffic increase. The Whatcom Transit Authority would also need to consider increasing bus routes, service volumes, and park-and-ride lots.

15. **Public services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

Direct: The sewer service facilities would not directly require new public services, other than power to run pump stations and controls.

Indirect: The District provides some water for fire protection. The population increase made possible by current land use designations will require police and fire protection, schools, and health care facilities to be augmented.

It is not known whether the development of these areas in accordance with plats and zoning has already been considered in the planning and financing of these public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Direct: Does not apply.

Indirect: The proposed measures of other governmental agencies to reduce and control impacts on fire and police protection, schools, and health facilities are not known. When new subdivisions are created, these agencies have an opportunity to review the proposals and request impact fees. However, 96% of the anticipated future sewer demand is to serve for existing platted lots, so other agencies must base their long-term planning on available census data, projections, and other financial planning mechanisms.

16. **Utilities**

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

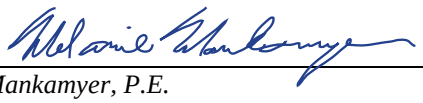
b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Direct: The proposed sewer facilities would possibly utilize electricity, and natural gas (or delivered propane or diesel) for emergency generators.

Indirect: The District proposes to provide sewer service to serve properties that can be legally developed in accordance with existing plats, zoning and building regulations. General construction activities required to provide such services would include: excavation for utility lines and underground structures such as valve vaults; installation of emergency backup generators for major pumping stations; construction of driveways and access roads, surface grading, drainage, restoration and landscaping.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

Melanie Mankamyer, P.E.
Wilson Engineering, L.L.C., 805 Dupont St., Suite 7, Bellingham, WA 98225
Consulting Engineers for Lake Whatcom Water and Sewer District

Date Submitted: March 20, 2014

D. SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS

(do not use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Direct Impacts: Construction of additional sewer mains will have negligible impacts on discharge to water, emissions to air, release of toxic substances, or production of noise.

Indirect Impacts: If population continues to increase in conformance with existing plats, zoning, and development regulations, the quantity of direct storm water runoff to surface water will probably be increased due to an increase in impervious surfaces in the District. The entire street system has already been constructed in Sudden Valley, so any increase there will be from additional houses and driveways. In Geneva, there may be some additional impervious street area with the extension of streets within old plats, but the possibility of new subdivisions has been greatly reduced. The City of Bellingham purchased the largest parcels that had vested subdivision applications and are restricted them from development. In the North Shore area, there are approximately 325 existing residences on the public sewer system (fewer are on public water). This population would not increase runoff. The remaining area on North Shore is currently very sparsely populated, zoning was primarily RR2 and R5A, and was not subdivided in the 1800's and 1900's as was Geneva. Current overlay zoning limits new subdivisions to 5-acre minimum lot size and several large parcels have been purchased by the City of Bellingham and restricted from development. The degree of future impervious surface created per parcel is now governed by the Lake Whatcom overlay zoning adopted by Whatcom County.

The water quality of the runoff, if untreated, could be worse, as it could contain oily residue from more cars and lawn care chemicals from more houses than the present condition. Continued public education, and detention and enhancement of storm water runoff can potentially mitigate erosion, sedimentation and water quality problems if properly managed.

Increased traffic will produce more emissions to air and more noise than the present condition. Public acceptance of alternatives to the single occupancy vehicle can potentially reduce traffic impacts.

No storage, production, or transportation of hazardous materials is anticipated for the service area, other than expansion of activities already taking place, such as transportation of chlorine gas, sodium hypochlorite, and sodium sulfite for water treatment purposes, and transportation of gasoline by others to the privately-owned service station in Sudden Valley.

Proposed measures to avoid or reduce such increases are:

See the Water Source Protection Plan for the Lake Whatcom Watershed, prepared by the Lake Whatcom Management Team (Whatcom County, Lake Whatcom Water and Sewer District and the City of Bellingham).

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Direct: The District's sewer system construction projects will have minimal impact on plants and animals, negligible impacts on fish, and none on marine life, as most proposed facilities will be located within existing right-of-ways, or previously disturbed areas.

Indirect: People already inhabit the majority of the sewer system service areas, and most additional population growth would represent infilling. There will be some reduction of animal habitat as a result of infilling on platted lots and development of residential-zoned properties. Most of Geneva is designated as part of the City of Bellingham's Urban

Growth Area and Sudden Valley is designated as resort recreational with urban-type services available. North Shore is a mix of developed water frontage, Eagle Ridge and Agate Heights Estates residential subdivisions, and sparsely populated areas uphill from the lakeshore. South Lake includes developed water frontage, rural residential areas, and recreational uses.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Continued implementation and enforcement by Whatcom County of best management practices for stormwater runoff, including enforcement and maintenance beyond the temporary construction impacts.

3. How would the proposal be likely to deplete energy or natural resources?

Construction of sewer system facilities will use some energy and some water. The activities will not deplete energy or natural resources.

Construction of new homes will require additional energy, and will utilize natural resources for building materials. These impacts are the result of increasing population in our geographic area, and will occur regardless of the location of the new homes. Private utilities, such as gas and electric, have performed their own long range planning to accommodate the land uses designated by Whatcom County, and indicate a willingness to provide service. Energy and natural resources will not be "depleted" by this proposal.

Proposed measures to protect or conserve energy and natural resources are:

The District will specify high efficiency motors for its facilities in order to conserve energy. The District will continue to promote water conservation through tracking and reducing distribution system losses, residential water audits, new construction requirements for water-saving fixtures, and public education. The District is implementing its Water Use Efficiency Program. The Lake Whatcom Management Plan contains conservation and education components. The District also has a robust Inflow and Infiltration reduction program , where the goal is to reduce the quantity of outside water entering the sewer system, thereby reducing the volume of wastewater to pump and treat. The District will also support other utility companies' energy-saving home construction packages and public education programs regarding energy conservation.

3. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

This proposal does not impact significant wilderness areas or prime farmlands because the majority of land within the Geneva and Sudden Valley areas is already platted, the North Shore area is zoned R5A, and all areas are inhabited to varying degrees, The area is not in a floodplain. The majority of frontage of Lake Whatcom is already occupied by homes, so the public access to the lake for recreational opportunities will not be impacted by construction of additional homes.

Lake Whatcom is the primary source for treated drinking water for the District and City of Bellingham. Protection of this resource is the most serious responsibility, and one which the District takes very seriously. The District's 1997 FEIS studied all of the environmental impacts of providing services, which may allow population to increase in accordance with platting, zoning and development regulations. The adequacy of the 1997 FEIS has been confirmed through the courts. The lead agency is relying upon the information in this expanded checklist and the 1997 FEIS to make its determination.

Proposed measures to protect such resources or to avoid or reduce impacts are:

To the largest extent possible, District projects will be confined to traveled right-of-ways, or previously disturbed areas, to avoid directly impacting wildlife habitat.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

The Comprehensive Sewer Plan seeks to provide adequate sewer service to serve existing land use plans, and would, by definition, be compatible.

Proposed measures to avoid or reduce shoreline and land use impacts are:

To the largest extent possible, District sewer system projects will be confined to traveled right-of-ways, or previously disturbed areas, and will mitigate permanent shoreline impacts when replacement or maintenance projects are located near the shoreline.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Population increases in accordance with zoning and building regulations will increase demands on the roads and other public services. These impacts must be planned for and addressed by the responsible agencies (such as the fire districts, school districts, gas and electric companies, and Whatcom County), just as the District has done for sewer and water services.

Proposed measures to reduce or respond to such demand(s) are:

The District is the water and sewer service provider for the area, and therefore does not have the authority to undertake reducing such demands unilaterally. However, the District has participated with Whatcom County and the Sudden Valley Community Association in a density reduction program in Sudden Valley that promotes activities such as lot consolidation and conservancy designations.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The Comprehensive Sewer Plan - 2014 Update is itself a requirement of WAC 173-240 and the Washington Department of Ecology. The District is authorized to operate systems of sewers by Title 57 RCW, and the improvements (including alternatives) identified in the Plan update represent the District's efforts to provide reliable sewerage collection and transport services to the public in accordance with all local, state and federal laws.

TO BE COMPLETED BY APPLICANT

EVALUATION FOR
AGENCY USE ONLY

DETERMINATION OF NONSIGNIFICANCE

Description of proposal: Comprehensive Sewer Plan - 2014 Update

Proponent: Lake Whatcom Water and Sewer District

Location of proposal, including street address, if any:
All areas contained within the Lake Whatcom Water and Sewer District boundary, Whatcom County, Washington.

Lead agency: Lake Whatcom Water and Sewer District

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030 (2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

☐ There is no comment period for this DNS.

☐ This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

☒ This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by April 14, 2014.

Responsible official PATRICK SORENSEN

Position/title GENERAL MANAGER Phone. 360-734-9224

Address 1220 LAKEWAY DRIVE

Date. March 26, 2014 Signature

IX. EXHIBITS