

**SULTAN CITY COUNCIL  
AGENDA ITEM COVER SHEET**

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**ITEM NO:** City Council/Planning Board Joint Workshop

**DATE:** July 10, 2008

**SUBJECT:** Water /Sewer Comprehensive Plans

**CONTACT PERSON:** Deborah Knight, City Administrator

**ISSUE:**

The issue before the City Council and Planning Board is to review the General Sewer Plan Amendment No 2 (Attachment A) and Water System Plan Amendment No 2 (Attachment B).

**STAFF RECOMMENDATION:**

The Council and Planning Board should review the policy alternatives, capital improvements, and financing strategies discussed during the Joint Meetings in April and May and ensure the Amendments are consistent with the direction given to staff and consultants.

On July 10 City Staff and consultants will discuss the specifics of each plan amendment; and will answer Council's questions. Further discussion will occur on July 24, 2008. Once adopted, any changes affecting the Capital Facilities Plan or Comprehensive Plan will be incorporated into the final versions brought to Council for adoption in September.

**SUMMARY:**

Two documents are being presented for Council's review General Sewer Plan Amendment No 2 (Attachment A) and Water System Plan Amendment No 2 (Attachment B). Council will be asked to adopt these amendments on July 24, 2008.

The amendments are prompted by revisions to the City's Capital Facilities Plan and Comprehensive Plan, currently under public review.

The Growth Management Hearings Board has found that Sultan's 2004 Capital Facilities Plan was not adequate to demonstrate that anticipated future growth could be accommodated by improved infrastructure, including its sewer and water systems.

An update to the Comprehensive Plan has been prepared to correct this deficiency. Adoption of the updated Comprehensive Plan and Capital Facilities Plan in September

2008 will meet the requirements of the Growth Management Act, and ensure that the impacts of growth as projected in 2004 will be properly mitigated by a well-planned infrastructure system.

The documents being presented to Council include amendments to the General Sewer Plan and Water System Plan to be consistent with the revisions proposed to the Comprehensive Plan. Each plan amendment includes:

- 2008 revisions to population, employment and land use assumptions;
- New or revised goals and policies;
- Updated maps
- Capital improvement plan and financing strategy.

### What's Changed

During the planning horizon, sewer service will be available to all properties in the City and in the City's urban growth area. Property owners with functioning septic systems may be allowed to pay a hook up fee for utilities extended past their properties without having to connect. These owners may be required to sign annexation or non-protest ULID agreements; and may be required to abandon their septic systems when new construction occurs on their property.

Design criteria have been revised to better reflect the standards to be used by the City in designing water and sewer improvements. For the water utility, the water distribution system will be designed to deliver a fire flow of 1,000 gallons per minute (GPM) at fire hydrants in residential areas, and 1,500 GPM in non-residential areas.

For the sewer system, the sewerage piping system will be designed to contain all flow projected to enter the sewer system during a 10-year, 24-hour, storm event; and peak hour flow will be contained within the pipes as flowing full without surcharging flow up into manholes.

Water service provided within the Urban Growth Area (UGA), plus the current water residents already connected that are outside the UGA.

Management of private wells inside the city once water service is available to the resident, but not to force connection or decertification.

Fire flow standard set at minimum requirement of 1,000GPM for residential and 1,500 GPM for non-residential properties.

Water supply from Everett as supplemental to Lake 16.

Require connection to sewer when new lines are laid and related financing when lines are extended. Residents are not required to connect to existing lines unless septic tanks fail or the property is redeveloped.

Alternative sewer collections systems were allowed, but do not prefer grinder pumps. Although the board wants to keep in mind cost benefit.

Code revisions are being proposed to clarify when and how property owners will be expected to pay fair-share costs for extension of the planned sewer and water systems.

Key changes, as summarized in the Draft Comprehensive Plan revision, are as follows:

#### Water Utility:

1. A defined water service area has been identified for the City and water service will not be provided to properties outside that boundary.
2. Property owners within the water service area desiring water service from the City will be required to annex into the City.
3. Standards for fire flow rates have been reduced to levels established by the National Fire Code, which may mean that a lower, but still safe rate of water flow may be available to fight fires at some properties.
4. Fire walls and fire sprinklers will be required in some non-residential structures at property owner expense.
5. New development will pay to construct a new Northeast Reservoir within the next decade, either as a condition of plat approval or through General Facilities Charges.
6. Property owners with existing private wells desiring to connect to the City water system and retain their private well for irrigation will be required to keep the private well irrigation system physically separate from the City water system as a backflow prevention valve will not be an accepted separation.
7. Reclaimed water from the wastewater treatment facility may become available to some customers for irrigation use or other non-potable purposes in lieu of potable water from the City water system.

#### Sewer Utility:

1. Sewer service will be made available to all properties within the urban growth area and all properties that develop or redevelop within the UGA will be required to connect to the City sewer system as new on-site sewage systems will not be allowed.
2. Projected population to be served by City sewers will increase to 11,119 people by 2025 and require increased wastewater treatment capacity to be provided by a membrane bioreactor process that will be paid for by new development through increased capital facilities charges as defined by the recent sewer rate study.
3. New sewer extensions may require some property owners to participate in utility local improvement districts.
4. Extension of sewer mains past existing properties now served by on-site sewage systems will require the property owners to pay for the benefit conferred by the sewer

but will not require actual connection unless the on-site system fails, the structure is remodeled, the property is sold, or it changes ownership.

5. Reclaimed water from the wastewater treatment facility may become available to some customers for irrigation use or other non-potable purposes in lieu of potable water from the City water system.
6. Sewer extensions to some properties will be served through new local sewage pump stations, which will be built in the local neighborhood resulting in some minor noise and visible appurtenances.

#### **RECOMMENDED ACTION:**

The Council and Planning Board should review the policy alternatives, capital improvements, and financing strategies discussed during the Joint Meetings in April and May and ensure the Amendments are consistent with the direction given to staff and consultants.

#### **ATTACHMENTS**

Attachment A –Water System Plan Amendment No. 2

Attachment B – General Sewer Plan Amendment No. 2



# Water System Plan AMMENDMENT NO 2

June 2008 Draft

Prepared By

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EXPIRES

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John C Wilson PE

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2008

City of Sultan

## **WATER SYSTEM PLAN**

### **AMENDMENT NO 1**

June 2008 Draft

#### **Purpose**

*The Growth Management Hearings Board identified a significant GMA compliance issue in that the City's planning for capital facilities was not adequate to demonstrate that anticipated future growth could be accommodated. An update to the Comprehensive Plan has been prepared to correct this deficiency. Projections outlined in the 2004 Plan and EIS have been changed substantially, as have the capital cost estimates. Adoption of the updated Comprehensive Plan and Capital Facilities Plan in late 2008 will meet the mandates of the Hearings Board, and ensure that the impacts of growth as projected in 2004 will be properly mitigated by a well-planned infrastructure system.*

This Amendment No 2 to the Water System Plan for the City documents how the water system will be upgraded to be consistent with the Comprehensive Plan.

#### **Growth Management Boundary**

The growth management boundary as shown in Figure W-1 has been revised to reflect the current assignment to the City of Sultan by Snohomish County. The current boundary reflects a modest change from the 2004 boundary.

Some changes have also been made to the land use planning for the City, though these did not result in significantly different development densities than were used in the previous sewer planning efforts.

The City water system planning is conducted in compliance with the North Snohomish County Coordinated Water System Plan as updated and amended. In particular, the City coordinates water system planning as needed with the adjacent water purveyors including the City of Everett, Snohomish County PUD, Highland Water District, and Startup Water Association.

The City currently serves two customers south of US-2 and west of the Sultan River that are outside the city limit and outside the Urban Growth Area as shown on Figure W-1. Water service to this area will continue; however the City will not extend water service into other areas that are not within the UGA.

#### **Background**

Lake 16 remains the primary source for the existing water supply to the City. The City filed in 1974 a water right claim for 2.88 million gallons per day (MGD) but does not yet have a formal water right. The City updated this claim in 1991 and the Department of Ecology stated by letter of November 3, 1993, that the claim held potential for becoming vested. The actual measured capacity from Lake 16 through the 11,800 feet of transmission piping is 1.36 MGD.

The City executed a Water Supply Contract with the City of Everett on 30 June 1999 for Pipeline 5 as a supplemental source of water supply for a Maximum Day Demand in 2025 of 2.91 MGD of treated water. The pipeline built to implement this Contract has a gravity flow capacity of 3.84 MGD; and more when the City of Everett activates pumping into Pipeline 5. This capacity is shared with the Snohomish County PUD however; so the City of Sultan share is 2.56 MGD.

The City also has two wells rated at 300 gallons per minute (GPM) each located north of the Centennial Park. These wells draw from the Sultan River aquifer; however the water quality does not meet drinking water standards and is currently used only for irrigation. Neither well has been able to actually produce 300 GPM within the past decade.

Sultan’s water filtration plant has a capacity of about 1.36 MGD over 24 hours.

The City currently operates two water storage tanks on the same site as the water filtration plant. The first tank was built in 1978 with a capacity of 1,080,000 gallons. The second tank was completed in 2000 with a capacity of 1,500,000 gallons.

The City water distribution system totals about 25.5 miles of pipe. About 20 percent of the system is asbestos cement. About 12 percent of the system is 4-inch diameter pipe, mostly in the downtown area. The existing water distribution system is shown on Figure W-2 and an inventory of the system is summarized in Table 1.

**Table 1  
Inventory of Water Distribution System Piping (2005)**

Pipe Diameter In inches	Pipe Footage by Material			Total Footage
	Asbestos Cement	PVC	Ductile Iron	
4	11,800		4,100	15,900
6	14,000	1,900	11,540	27,440
8	2,400	500	51,630	54,530
10			16,850	16,850
12			14,850	14,850
14			5,300	5,300
Total	28,200	2,400	104,270	134,870

The northeast portion of the City distribution system can not be adequately supplied by gravity from the water surface elevation in the water storage tanks. A booster pump station serves this area as a high pressure zone as summarized in Table 2.

**Table 2  
Booster Pump Station Equipment**

Pump Description	Gallons per Minute	Horsepower
Service pumps (two)	100	10
High service pump	200	15
Fire pump (& backwash)	2,000	100

The fire pump is also used to backwash the filters in the water treatment plant.

## Goal and Policies

Maintain and enhance the development and operation of a quality water supply and distribution system that will meet the needs of Sultan's present and future urban service area through implementing the following policies:

1. Provide potable water throughout the service area for consumption and fire protection purposes to Sultan residents and parties who agree to annex in exchange for service.
2. Construct additional storage facilities at locations that will provide sufficient reserves and maintain line pressure for consumption and fire protection purposes.
3. Provide distribution loops that are capable of providing adequate fire flow and pressure requirements throughout the Sultan service area. Maintain fire hydrant distributions and other standards appropriate to the highest public fire protection ratings.
4. Work with Snohomish County, Washington State Department of Ecology, and other public agencies to correct failed septic system problems within the city limits, the urban growth area, and rural areas surrounding the Sultan urban service area to reduce possible contamination of the groundwater reserve and aquifer.
5. Encourage property owners of developed parcels currently served by a private well and within the UGA to connect to the City water system and to transfer their water right to the City. These water rights, together with the rights already possessed by the City for irrigation wells, will be assembled for possible future water supply needs, even should treatment of the groundwater be required.

Where wells remain private for irrigation use, the irrigation system shall remain separate from the City water system and no new backflow prevention valves will be allowed. Existing backflow prevention valves for irrigation systems of existing customers using City water will remain subject to annual inspection.

6. Consider additional incentives for water conservation, surcharge for service outside the city limits, acquisition of groundwater rights, new sources of employment, and other water programs with cost implications. The City currently has a rate structure defining the methodology for monthly service charge, capital facilities charges, service connection and meter cost, and various other fees related to operation and maintenance of the water system. A differential exists between residential and non-residential customers, as well as for low-income and elderly.

## Design Standards

Standards for water system facilities are defined by WAC 246-290-100 and the 'Water System Design Manual' published by the Washington State Department of Health. State Health also issues requirements for water quality and monitoring to ensure compliance with federal drinking water standards. Planning, design, construction, operations, and

maintenance for the City water system is conducted in accordance with these standards, plus the following:

- The 'Water System Design Manual' specifies that the minimum operating pressure is the water distribution system shall not fall below 30 pounds per square inch (PSI) at the water meter, which is normally at the right-of-way line for the served property, and not less than 20 PSI under fire flow conditions.
- The City has established the minimum fire flow standard as 1,000 GPM for residential areas and 1,500 GPM for non-residential development in accordance with the National Fire Code. Non-residential construction must also comply with the Fire Code requirements for dividing structures into fire areas according to the class of building construction and providing fire sprinklers.

Lake 16 will remain the primary water source of supply for the City. The connection to the City of Everett Pipeline 5 will provide a supplemental source for peak day demands that exceed the Lake 16 capacity. However, the City recognizes that the Contract with Everett encourages Sultan to manage withdrawals from Pipeline 5 so that peak withdrawal does not exceed 3 times the average withdrawal. Accordingly, average withdrawals will be managed using the storage capacity available in the City water tanks so the withdrawal from Pipeline 5 does not exceed the Contract ratio of peak at 3 times average.

**Population Projections**

The Puget Sound Regional Council expects the Skykomish Valley area will eventually support 17,026 persons by the year 2010, 20,549 persons by the year 2020, and 23,977 persons by the year 2030. The projected Sultan population of 11,119 in 2025 would represent about half of these residents.

By the year 2012, the County's Buildable Lands Report (BLR) expects approximately 7,300 persons will reside in the UGA of which 90% will reside in city limits. The BLR further expects the current UGA will eventually support a population of 11,119 persons at build-out in 2025. It is assumed that the entire UGA will be incorporated into the City by that time. This is an official population estimate and is used by the City for its growth and capital facilities planning.

In 2006, there were approximately 1,010 jobs located in Sultan. Snohomish County's Buildable Lands Report and the City's Comprehensive Plan estimate an increase to 2,000 jobs in Sultan by 2025. These projections are summarized in Table 3.

**Table 3  
Population and Development Projections**

<b>Parameter</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2010</b>	<b>2012</b>	<b>2014</b>	<b>2025</b>
City Population	4,225	4,440	4,530	5,874	6,382	7,386	11,119
UGA Population		4,785		6,066	7,300	8,028	11,119
City Housing Units		1,713	1,739	2,066	2,505	2,920	4,464
<b>Parameter</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2010</b>	<b>2012</b>	<b>2014</b>	<b>2025</b>

Average Household Size	2.78	2.78	2.74	2.71	2.68	2.66	2.62
Housing Vacancy Rate	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Employment		1,010					2,000
UGA Area in Acres			2,304				2,304
Buildable			954				954
Unbuildable			1,350				1,350

**Water Demand Projections**

The existing water supply and demand parameters have been computed in gallons per day from the flows recorded for 2007 as reported by the City are summarized in Table 4.

**Table 4  
2007 Water Supply and Demand Parameters**

Parameter	Average GPD	Percent
Water Produced from Lake 16	487,000	95.5
Water Purchased from Everett	23,000	4.5
Total Average Day Water	510,000	100
Filter Backwash	46,000	9.0
Residential Billings	239,000	46.9
Non-Residential Billings	165,000	32.4
Water Lost	60,000	11.7

Unit water consumption for 2007 as derived from Table 4 can be summarized as follows:

Residential               = 239,000 GPD / 4,530 people = 52.8 GPD per person  
 Non-Residential       = 165,000 GPD / 1,010 employees = 163 GPD / employee

Peak day water demand in 2007 was 1,023,000 GPD through the filter plant on July 12<sup>th</sup>, which is a peak factor of about 2.1 x average day demand. However, 2006 experienced a peak day of 1,134,000 GPD on August 7<sup>th</sup>, which was a peak day factor of about 2.2 x the 2006 average day demand.

Water conservation activities are projected to reduce water demands per employee; however, residential water demands may increase as new home are built with more water-using appliances. Table 5 summarizes the projected 2025 population to be served by the water system and the projected employment to project the future water demand for that year.

**Table 5  
Projected 2025 Water Demands**

Parameter	Quantity	Unit GPD	Total GPD
Population	11,119	55	612,000
Employment	2,000	130	260,000
Backwash	8 %	---	86,000
Water Lost	11 %	---	118,000
Average Day Demand			1,076,000

Peak day demand in 2025 is projected to decline to about 2.0 x average day demand to about 2,150,000 GPD. The increase in average day demand will create more days when Lake 16 can not meet the demand so water purchase from the City of Everett is projected to increase to an average of about 30 percent or about 320,000 GPD.

**Projected Needs Through 2025**

Improvements to the water distribution piping system fall into categories as described below:

- New Streets listed in the Transportation Improvement Program (TIP) will have a water main at least 8-inch diameter.
- Reconstructed Streets listed in the TIP will have a water main at least 8-inch in diameter, unless an adequate water main is already in place.
- Main Extensions in streets within UGA but not included in the TIP list will have a water main at least 8-inches in diameter.
- Replacement Pipes at least 8-inch diameter are needed in several locations where the existing water main is under sized, of obsolete material, or otherwise defective.

Table 6 summarizes the water mains to be installed concurrently with street improvements listed in the Transportation Improvement Program. Construction costs include only the water facilities with crushed backfill. The street and surface improvements are in the TIP.

**Table 6  
Water Improvements Included with Transportation Improvements**

<b>TIP No</b>	<b>Project Description</b>	<b>Min Diameter</b>	<b>Feet of Pipe</b>	<b>Construction Cost</b>	<b>Project Cost</b>
T-24	New collector (339th SE - Sultan Basin Rd)	8	5,400	\$648,000	\$907,000
T-25	Foundry Road (Cascade View - railroad)	8	1,400	\$168,000	\$235,000
T-26	New collector (339th SE - Sultan Basin Rd)	8	5,800	\$696,000	\$974,000
T-27	Extend E Main St to 149th St SE	8	500	\$60,000	\$84,000
T-28	Emergency access (BNSF and Skykomish R)	8	1,300	\$156,000	\$218,000
T-29	Extend Kessler Dr. (Bryant Rd. - 124th St)	8	2,700	\$324,000	\$454,000
T-31a	New north-south arterial (US-2 - 124th St)	8	8,800	\$1,056,000	\$1,478,000
T-31c	330 Ave SE just north of US-2	8	700	\$84,000	\$118,000
T-32a	Rice Rd /339th (132nd to UGA boundary)	8	1,400	\$168,000	\$235,000
T-32b	Extend Rice Rd /339th (UGA - 124th)	8	1,300	\$156,000	\$218,000
T-33	New arterial (Old Owen - Sportmans Park)	8	2,000	\$240,000	\$336,000
T-35	Cascade View Dr (US-2 - 331st)	8	1,600	\$192,000	\$269,000
T-36	138th St (Sultan Basin Rd - 339th Ave SE)	14 exists	0	\$0	\$0
T-38	1st St (High Ave to Trout Farm Rd)	8	4,700	\$564,000	\$790,000
T-41	339th Ave (Sultan Startup Rd - 132nd St)	8	1,900	\$228,000	\$319,000

TIP No	Project Description	Diameter	Feet of Pipe	Construction Cost	Project Cost
T-42	Sultan Basin Rd (138th - 124th St)	12 exists	0	\$0	\$0
T-43	Walburn Road (11th St - Sultan Basin Rd)	8	1,700	\$204,000	\$286,000
T-44	Extend Pine St (9th - Walburn)	8 *	1,300	\$156,000	\$218,000
T-45	Alder St (4th - 8th St)	8	2,700	\$324,000	\$454,000
T-47	Trout Farm Rd (307th - 125th)	8 *	2,500	\$300,000	\$420,000
T-48	Gohr Road (1st St - 132nd SE)	8 exists	0	\$0	\$0
T-49	Gohr Road (132nd Ave - about 128th)	8	2,100	\$252,000	\$353,000
T-51	3rd Street (Main - High)	8	2,500	\$300,000	\$420,000
T-57	132nd St. (Sultan Basin - Trout Farm Rd)	8	6,600	\$792,000	\$1,109,000
T-58	132nd St SE (Rice - Sultan Basin Rd)	8	5,300	\$636,000	\$890,000
T-61	6th Street (Main - Birch)	8	700	\$84,000	\$118,000
T-62	124th Street (Sultan Basin Rd - water plant)	12 exists	0	\$0	\$0
T-65	124th Street (water plant - Trout Farm Rd)	8	2,500	\$300,000	\$420,000
	Subtotal		67,400	\$8,088,000	\$11,323,000

Note: \* indicates some 8-inch pipe exists for part of the length required

Table 7 shows existing water mains to be replaced by 2025 that are not included in the TIP. Construction costs therefore include street patching.

**Table 7  
Water Main Replacements**

Project	Project Description	Diameter	Feet of Pipe	Construction Cost	Project Cost
R-1	307th Street (Trout Farm Rd - 124th)	8	1,600	\$384,000	\$538,000
R-2	1st Street (Main - High St)	12	2,800	\$672,000	\$941,000
R-3	along US-2 (Marcus and Old Owen)	8	1,900	\$456,000	\$638,000
R-4	along US-2 (Main St and Foundry Dr)	8	6,300	\$1,512,000	\$2,118,000
R-5	in Sultan Basin Rd and US-2	8	3,500	\$840,000	\$1,176,000
R-6	3rd Street (Main - High St)	8	2,700	\$648,000	\$907,000
R-7	Date Street (3rd Street - 8th Street)	8	2,000	\$480,000	\$672,000
R-8	Sultan River Crossing	12	600	\$500,000	\$600,000
R-9	Sultan Basin Rd PRV Station	---	---	\$30,000	\$50,000
	Subtotal		21,400	\$5,542,000	\$7,640,000

Table 8 summarizes new water mains to be installed by 2025 in locations not part of the TIP for 2025. These new City water mains will be installed in existing street rights-of-way and costs include patching of the existing street but not upgrading the street to any higher standard.

**Table 8  
New Water Main Extensions**

<b>Project</b>	<b>Project Description</b>	<b>Diameter</b>	<b>Feet of Pipe</b>	<b>Construction Cost</b>	<b>Project Cost</b>
N-1	6th/7th Street (Alder - Date St)	8	900	\$216,000	\$302,000
N-2	8th Street (140th - high school loop)	8	1,200	\$288,000	\$403,000
N-3	Sultan Basin Rd to new water tank	8	2,800	\$672,000	\$941,000
N-4	Trout Farm Rd (125th St - end)	8	1,900	\$456,000	\$638,000
N-5	SR-2 (extend to connect)	8	600	\$160,000	\$224,000
	Subtotal		7,400	\$1,336,000	\$2,508,000

A new water storage tank is needed for the northeast area to provide adequate operating pressure in the distribution system and residential fire protection. This tank will be located north along Sultan Basin Road on high ground to the east, and outside the current UGA. Tank volume will be at least 70,000 gallon.

In addition to the new Northeast Tank and the water main improvements listed in Tables W-3, 4, and 5 several additional capital projects need to be included in the Needs Assessment as summarized below:

- New Pressure Reducing Valve Vaults (four each)
- Water System Plan Update 2014 (six years after 2008 Amendment)
- Water System Plan Update 2023
- Lake 16 Watershed Upgrades (undefined, though some improvements should be anticipated)
- Water Treatment Plant Upgrades (undefined, though added requirements can be anticipated)

Table 9 summarizes the water facilities needed by 2025 and estimated costs.

**Table 9  
Needed Water Facilities by 2025**

<b>Improvement Category</b>	<b>Quantity</b>	<b>Construction Cost</b>	<b>Project Cost</b>
Water TIP Improvements	67,400 feet	\$ 8,088,000	\$ 11,323,000
Water Main Replacements	21,400 feet	\$ 5,542,000	\$ 7,640,000
New Water Main Extensions	7,400 feet	\$ 1,336,000	\$ 2,508,000
Northeast Water Tank	70,000 gallons	\$ 200,000	\$ 300,000
Pressure Reducing Stations	4 each	\$ 100,000	\$ 150,000
Water System Plan – 2014	----	----	\$ 100,000
Water System Plan – 2024	----	----	\$ 100,000
Lake 16 Watershed Upgrade	to be defined	\$ 200,000	\$ 300,000
Water Treatment Upgrade	to be defined	\$ 500,000	\$ 700,000
Total		\$ 15,966,000	\$ 23,121,000

All costs shown in the above tables are shown in 2007 dollars as none of the construction projects have been assigned an implementation date.

**Six-Year Capital Improvement Program**

In addition to the Project in Progress during 2007, the projects required during the initial six years of 2009 through 2014 are summarized in Table 10 as the capital Improvement Program (CIP).

**Table 10**  
**Six-Year Capital Improvement Program**  
Estimated Project Costs in \$ Thousands

<b>Project</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>Total</b>
Sultan Basin Rd PRV	100						100
Sultan River Crossing	25	50	425				500
Alder Street		54	400				454
East Main Street			50	200			250
132 <sup>nd</sup> Street			20	70	800		890
Rice Road				19	60	240	319
Northeast Reservoir					100	50	150
NE Reservoir Pipeline						75	75
Totals	125	104	895	289	960	365	2,738

Figure W-4 locates the projects included in the Six-Year CIP.

Financial projections indicate that the existing City water rate structure will be adequate to generate most of the revenue needed to implement the six-year CIP, assuming that the projected growth actually occurs. Table 11 summarizes these financial assumptions.

**Table 11**  
**Six Year Water Capital Improvement Revenue**  
Estimated Revenue on \$ Thousands

<b>Projects</b>	<b>GFC</b>	<b>Grant</b>	<b>Debt</b>	<b>Contributions</b>	<b>Totals</b>
Sultan Basin Rd PRV	100				100
Sultan River Crossing	500				500
Alder Street	454				454
East Main Street	250				250
132 <sup>nd</sup> Street				890	890
Rice Road				319	319
Northeast Reservoir	150				150
NE Reservoir Pipe	75				75
Totals	1,529			1,209	2,738

It is possible that growth will not occur as projected, of course. In that case the water improvements will not be needed and the projects may be delayed until the need does exist and funding becomes available.

**Existing Water Rates**

A progressive water rate structure has been used by the City for years. Table 12 summarizes an excerpt from the current water rates, which include 600 cubic feet (CF) in the base rate.

**Table 12  
Current Monthly Water Rates**

<b>Customer Class</b>	<b>2007 Rate</b>	<b>2008 Rate</b>
Single Family – Base Rate	\$24.25	\$25.25
Volume Rate / 100 CF	\$2.20	\$2.28
Commercial – Base Rates		
¾-inch meter	\$26.25	\$27.25
1-inch meter	\$36.75	\$38.15
1-1/2-inch meter	\$47.25	\$49.05
Volume Rate / 100 CF	\$2.20	\$2.28

Additional rates exist for larger water meter sizes, and a discount rate is available for low-income senior citizens at about 50 percent of the regular residential rate. Water customers outside of the city limits pay a 50 percent surcharge.

The current water capital facilities charge is \$5,254 per ERU.

**Financial Implications**

The total estimated project cost for providing water service to all parcels within the GMA and the water service area to be consistent with the Comprehensive Plan is about \$23,121,000 plus and additional \$1,263,000 of work in progress for a total of \$24,384,000. Several strategic considerations are relevant to the financial implications in funding the water system improvements as outlined below:

- About \$15.48 million in water system project needs are identified as needed to support development projected through the year 2025.
- About \$8.90 million in water main replacements or work in progress has also been identified.

Basic Needs for the water utility have been defined as the improvements necessary to maintain the established level of service for existing water customers within the present city limits and water service area as summarized below:

- \$2.2 million may become available from the existing system development charge (with some adjustment for future construction)
- Most of the remaining \$1.7 million can be raised by reasonable and appropriate contributions from benefiting property owners with the remainder paid through rates by existing customers

A rate study should consider the improvements that need to be built in the near future and verify adequate funding will be available through near term rate adjustments.

Additional improvements defined as ‘Necessary for Development’ throughout the UGA over the longer term are summarized below:

- \$9.6 million is suitable for financing by property owners or developers
- Another \$1.2 million could be funded from street projects not directly dependent on developer financing instead of the water rate structure
- The remainder would be funded through water rates or increased general facilities charges

Table 13 summarizes the above described financial strategy for the water utility.

**Table 13**  
**Water System Funding Strategy**  
Finances Shown in \$ thousands

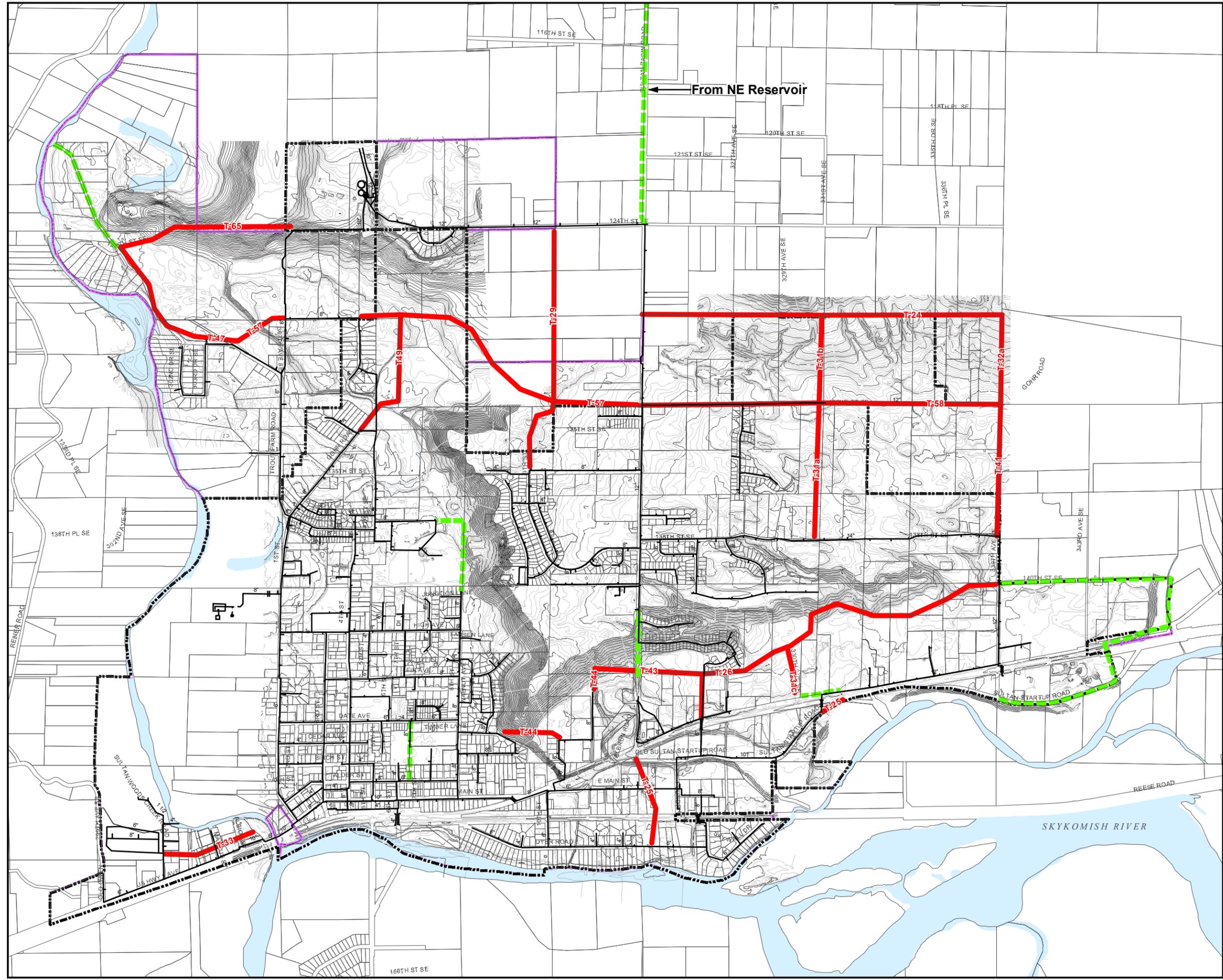
<b>Project Classes</b>	<b>GFC</b>	<b>Rates</b>	<b>Property Owners</b>	<b>Total</b>
Basic Needs				
Projects in Progress	1,263			1,263
Replace Existing Facilities		600		600
New Facilities	862		1,176	2,038
Subtotals	2,125	600	1,176	3,901
Necessary for Development				
Replace Existing Facilities	3,328	3,712		7,040
Water Main Extensions	2,451		9,642	12,093
Other Projects	1,350			1,350
Subtotals	7,129	3,712	9,642	20,483
Totals	9,254	4,312	10,818	24,384

Table 12 indicates that the revenue that may be generated by the existing water GFC rate may be adequate to fund the water main extensions and other new facilities when contributions from property owners and developers are included. However, needed replacements of existing facilities may not be adequately funded through existing rates and a rate increase may be needed.

Water main extensions and other new facilities are largely dependent on the expected developments actually occurring and on the schedule expected. Until those projections are validated by events, it is prudent for the City to adjust water rates in accordance with the CIP needs.

# FIGURE W-3

## WATER SYSTEM IMPROVEMENTS



### Legend

-  Water Pipes
-  New Water Pipes in TIP
-  New Water Pipes Not In TIP
-  City Boundary
-  UGA Boundary
-  Parcels
-  Water Bodies
-  10ft Contours
-  2ft Contours



0 1,000 2,000 Feet

UGA Boundary -Adopted: December 21, 2005  
-Effective Date: February 1, 2006

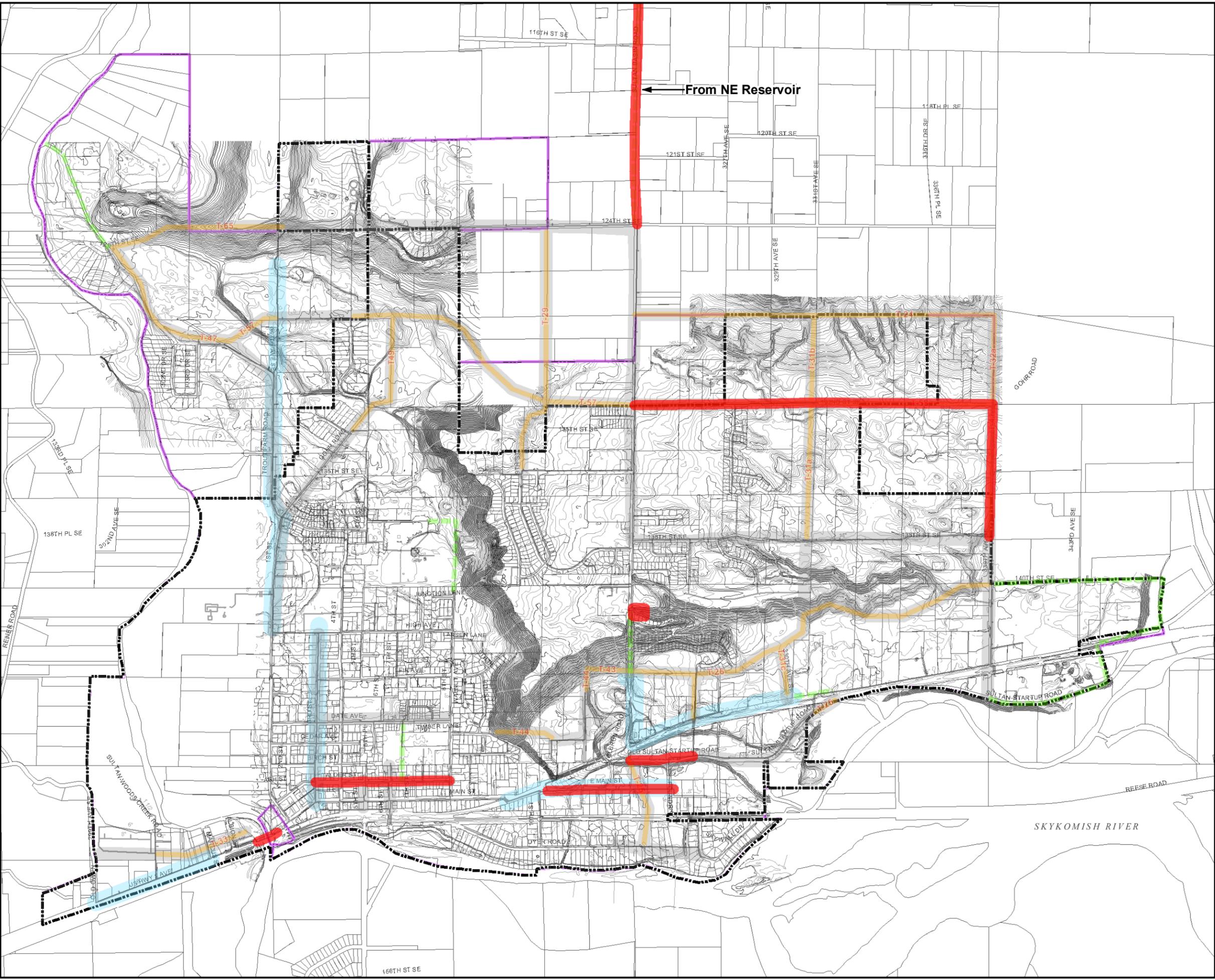
Contours: Triathlon - April 1997  
This map is a geographic representation based on information available. It does not represent survey data. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map. All other data obtained from Snohomish County Jan 2008.

MAP DATE: JUNE 2008

Projected Coordinate System: NAD\_1983\_StatePlane\_Washington\_North\_FIPS\_4601\_Feet  
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W-3 WaterSystemImprov\_11x17.mxd

# FIGURE W-4

## WATER SYSTEM CAPITAL IMPROVEMENT PROGRAM



- Legend**
-  Water Pipes
  -  New Water Pipes in TIP
  -  New Water Pipes Not In TIP
  -  New Roads in TIP
  -  Water Replacements
  -  Capital Improvement Program
  -  City Boundary
  -  UGA Boundary
  -  Parcels
  -  10ft Contours
  -  2ft Contours

0 1,000 2,000 Feet

UGA Boundary -Adopted: December 21, 2005  
-Effective Date: February 1, 2006

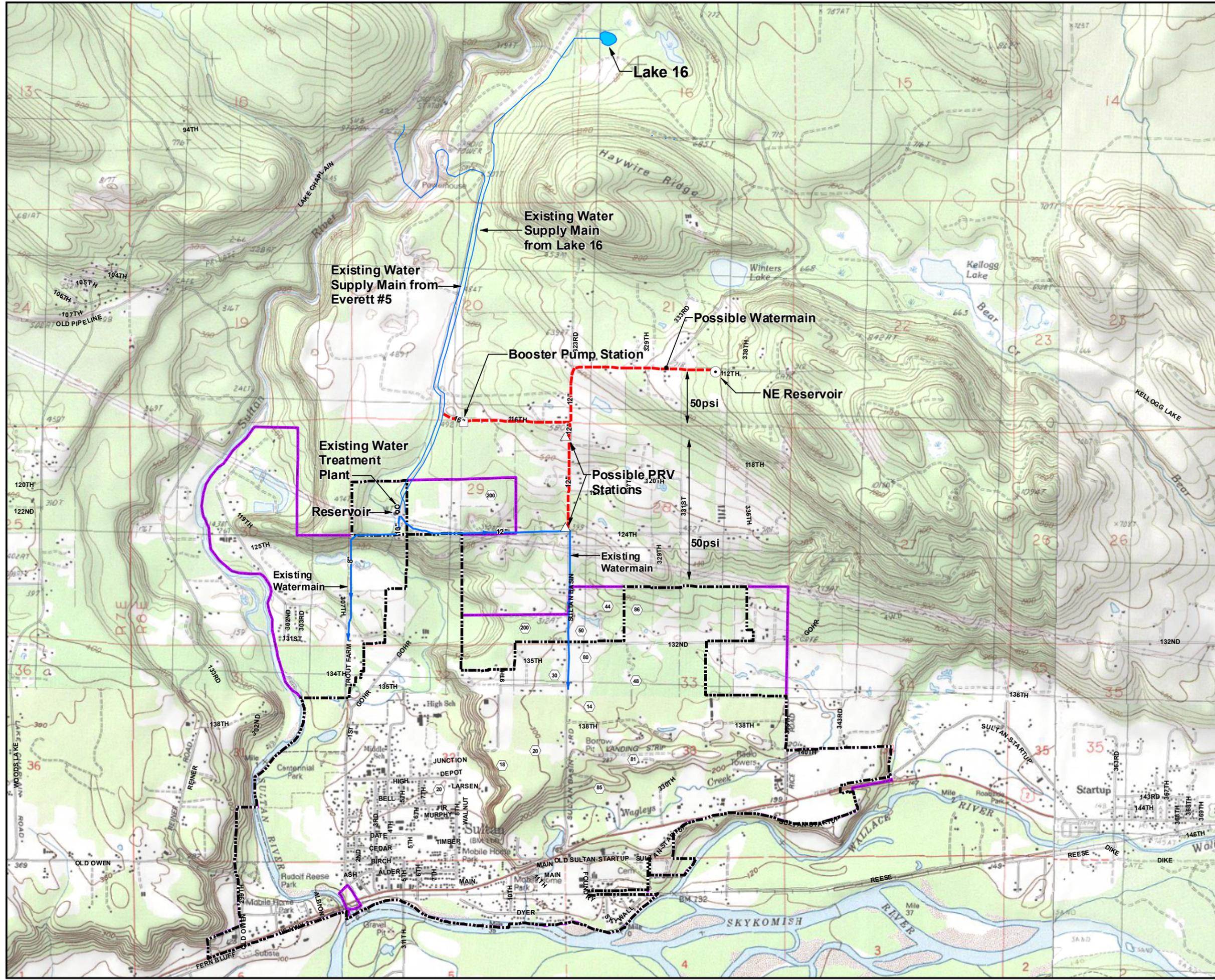
Contours: Triathlon - April 1997  
This map is a geographic representation based on information available. It does not represent survey data. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map. All other data obtained from Snohomish County Jan 2008.

MAP DATE: JUNE 2008

Projected Coordinate System: NAD\_1983\_StatePlane\_Washington\_North\_FIPS\_4601\_Feet  
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## FIGURE W-5

# WATER SYSTEM CIP OUTSIDE UGA



### Legend

- △ PRV
- NE Reservoir
- Pressure Booster Station
- Water CIP Elements
- Existing Water Lines
- City Limits
- Urban Growth Area



0 1,000 2,000 4,000 Feet

UGA Boundary -Adopted: December 21, 2005  
-Effective Date: February 1, 2006

Topo image: USGS 2001  
This map is a geographic representation based on information available. It does not represent survey data. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map. All other data obtained from Snohomish County Jan 2008.

MAP DATE: JUNE 2008

Projected Coordinate System: NAD\_1983\_StatePlane\_Washington\_North\_FIPS\_4601\_Feet  
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W-5 WaterSystemCIPoutsideUGA\_11x17.mxd



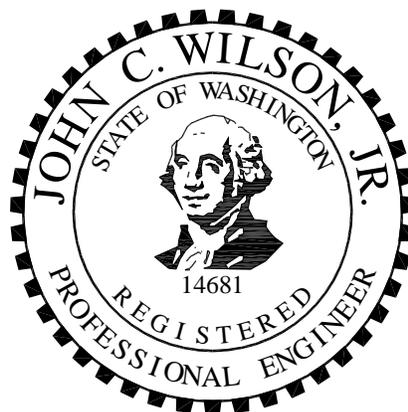
# General Sewer Plan AMMENDMENT NO 2

June 2008 Draft

Prepared By

**BHC Consultants LLC**  
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John C Wilson PE  
Project Manager



EXPIRES

\_\_\_\_\_  
John C Wilson PE

\_\_\_\_\_  
City of Sultan

2008

## GENERAL SEWER PLAN

### AMENDMENT NO 2

June 2008 Draft

#### Purpose

*The Growth Management Hearings Board identified a significant GMA compliance issue in that the City's planning for capital facilities was not adequate to demonstrate that anticipated future growth could be accommodated. An update to the Comprehensive Plan has been prepared to correct this deficiency. Projections outlined in the 2004 Plan and EIS have been changed substantially, as have the capital cost estimates. Adoption of the updated Comprehensive Plan and Capital Facilities Plan in late 2008 will meet the mandates of the Hearings Board, and ensure that the impacts of growth as projected in 2004 will be properly mitigated by a well-planned infrastructure system.*

This Amendment No 2 to the General Sewer Plan for the City documents how the sewer system will be upgraded to be consistent with the Comprehensive Plan.

#### Background

Figure S-1 shows the City sewer system as it existed in 2007.

Interceptor sewers are the principal pipes in the wastewater system. These pipes collect flow from the collector sewer mains. Sewer interceptors are summarized in Table 1.

**Table 1**  
**Sewer Interceptor System**

Location	Size (in)	Length (ft)	Material	Year	Slope (ft/ft)	Capacity (GPD)
Main Street	18	750	PVC	1989	0.0022	3,100,000
	15	4300	PVC	1989	0.0022	2,800,000
	8	820	PVC	2001	0.0040	490,000
1 <sup>st</sup> Street	12	2,450	PVC	2005	0.0022	1,050,000
4 <sup>th</sup> Street	10	1350	VC	1969	0.0022	650,000
	8	2950	concrete	1969	0.0040	490,000
8 <sup>th</sup> Street	12	330	PVC	1987	0.0097	2,200,000
SR 2 West	12	2450	concrete	1969	0.0022	1,050,000
Sultan Basin	15	1100	PVC	1999	0.0097	1,300,000
	12	1350	PVC	1998	0.0110	2,400,000
	12	3500	PVC	1999	0.0022	1,050,000
Wagley's Creek	15	2650	PVC	2001	0.0018	1,700,000
	16	400	DI	2001	0.0030	2,500,000
	15	3750	PVC	2001	0.0026	2,000,000
	8	2200	PVC	2001	0.0039	480,000
Total Footage		30,350				

In addition to the Sewer Interceptor System shown in Table 1, the system has about 40,000 feet of collector sewers. Almost all collector sewers are 8-inch diameter pipe of varying age and material.

The existing sewer system has only one pump station, which is located in the Sultan River Park. Most of the existing service area drains through this pump station, which also acts as the influent pump station for the wastewater treatment facility. The pump station has two 1,500 gallons per minute (GPM) pumps with 35 horsepower motors, which is a capacity of about 2.16 million gallons per day (MGD) each. The maximum existing capacity with both pumps operating is about 3.2 MGD. Inverts for both the First Street and the Main Street interceptors are more than 20 feet below street grade as they approach the pump station.

The 10-inch force main extends about 450 feet from the pump station across the Sultan River on the State Department of Transportation bridge for US 2 into the wastewater treatment facility.

### **Goal and Policies**

Maintain and enhance the development and operation of an effective, efficient wastewater treatment plant and collection system that will meet the needs of Sultan's present and future urban service area.

#### **Policies:**

1. Require all properties that develop or redevelop within the city limits to connect to the City's sewer system.
2. Increase sewer treatment plant and collection line capacities to meet the needs of Sultan residents and land within the Urban Growth Area, as well as meet state and federal discharge standards. Service to properties in the UGA shall not occur until such properties are annexed into Sultan.
3. Increase capacity to reflect increased usage trends influenced by the City's growth and economic development.
4. Maintain an updated comprehensive sewer system plan that is coordinated with the Land Use Element so that new development is located where sufficient sewer system capacity exists or can be efficiently and logically extended.
5. Ensure that existing deficiencies in the sewer system are upgraded.
6. Encourage all non-redeveloping properties that annex into the city to phase out their septic systems and connect to the City sewer system.
7. Provide sewer services for Sultan residents and parties who annex in exchange for service. Work with Snohomish County, Washington State Department of Ecology, and other public agencies to correct failed septic problems, provided solutions do not create urban developments that are not desired or controlled by Sultan. Phase service expansion to reflect growth management policies, particularly the realization of employment related developments that provide Sultan a sound fiscal base. The

principal controller of urban development within the Sultan planning area is thereby the wastewater treatment capacity that is available to be allocated to undeveloped lands within corporate boundaries. Accordingly, septic tanks will not be used in development projects within the Sultan urban growth area.

8. Increase wastewater treatment plant and collection line capacity allocations to meet the needs of the Sultan future urban area. Increase capacity allocations to reflect increased usage trends caused by Sultan's continued urban intensification and economic development.
9. Increase and improve secondary treatment capacities and methods to meet state and federal discharge standards. Investigate, where appropriate, other alternative methods of treatment including tertiary systems.
10. Continue City ordinances regulating public use of the City sewer system and update as needed. These include specific prohibition of illicit connections to the sewer for storm drainage. Fats, oils, and grease will be managed through required grease traps for designated classes of connections to the sewer.
11. Consider additional incentives for water conservation, surcharge for service outside the city limits, new sources of employment, and other sewer programs with cost implications. The City currently has a rate structure defining the methodology for monthly service charge, capital facilities charges, service connection, and various other fees related to operation and maintenance of the sewer system. A rate differential exists between residential and non-residential customers, as well as for low-income and elderly.

### **Growth Management Boundary**

The growth management boundary as shown in Figure S-1 has been revised to reflect the current assignment to the City of Sultan by Snohomish County. The current boundary reflects a modest change from the 2004 boundary.

Some changes have also been made to the land use planning for the City, though these did not result in significantly different development densities than were used in the previous sewer planning efforts.

Figure S-2 shows those parcels within the existing city limits that have been developed with on-site sewage systems; and how these parcels relate to existing sewer piping.

### **Design Standards**

Standards for sewer system facilities are defined by WAC 173-240-050 and the 'Criteria for Sewerage Works Design' published by the Washington State Department of Ecology (DOE). Ecology also issues NPDES permits with requirements for wastewater effluent quality and monitoring to ensure compliance with receiving water standards. Planning, design, construction, operations, and maintenance for the City sewer system is conducted in accordance with these standards, plus the following:

- The sewer system shall be designed to contain all sewage and the extraneous flow that enters during a 10-year, 24 hour storm event.

- Sewer capacity will be calculated with the pipe flowing full at the design pipe slope under projected peak hour conditions. The minimum pipe slope shall be sufficient to maintain a velocity of 2 feet per second under flowing full conditions.
- Pumping capacity is usually designed to accommodate the peak hour flow. However, the existing pump station is also the influent pump station for the wastewater treatment facility, and the interceptor piping enters the station more than 20 feet below street level. Flow attenuation into the treatment facilities is desirable to allow cost-effective sizing of the structures. Surcharging the interceptors into the pump station is an acceptable method to achieve flow equalization. This means that under storm conditions the Main Street pipes would be full and water levels in the manholes would rise several feet, though still be several feet below the street grade.

About 409 parcels within the existing city limits have been identified by City staff as having been developed with on-site sewage systems. All developed parcels outside the city limits and within the UGA use on-site sewage systems. According to the Growth Management Act, no new on-site septic sewage systems should be allowed in the UGA as new development is intended to be at urban densities which require sewers. In addition, RCW 70.118 requires counties including Snohomish County to develop and implement management plans for on-site sewage systems, including single family homes in communities like the City of Sultan. Sewer service will be available to all parcels within the UGA by 2025.

Parcels with existing development using on-site sewage systems where a sewer is available are not required to connect to the sewer unless the on-site system fails, or the existing structure is remodeled, the property is sold or changes ownership or the property owner wishes to connect. Determination of on-site sewage system failure is the responsibility of the Snohomish County Health Department.

Where a new sewer pipe is extended past a parcel with existing development using an on-site sewage system, the property owner will be required to pay for the benefit conferred by the sewer pipe but will not be required to actually connect and pay monthly service charges unless or until the on-site system fails, the property owner wishes to connect, or the property is sold or changes ownership, or the existing structure is remodeled under a City building permit.

Sewer extensions to some areas within the existing city limits, and other areas that are within the urban growth area, will require extremely deep sewer trenches to achieve gravity service. Local gravity sewer systems in such areas can be developed using local pump stations owned and operated by the City. Plans for such sewer systems shall be developed and approved by the City. All such facilities shall be designed and built in accordance with City standards.

Rain induced flow into the sewer system exceeds desirable rates. This problem is believed to be concentrated in the older parts of the sewer system. The City will continue to budget and implement regular rehabilitation programs to minimize the introduction of infiltration and rain induce flow into the sewer system by recognizing that such wastewater volumes take capacity in the pipe system and treatment facilities that would otherwise be available to sewer customers. Processing such extraneous flow

also incurs additional costs to the system which must be included in the monthly service charges.

The City will continue to inspect and test new sewer installations to verify that construction materials and methods conform to modern standards. The resulting new sewer extensions are expected to exhibit a significantly lower influx of extraneous wastewater than the existing sewer system.

**Population Projections**

The Puget Sound Regional Council expects the Skykomish Valley area will eventually support 17,026 persons by the year 2010, 20,549 persons by the year 2020, and 23,977 persons by the year 2030. The projected Sultan population of 11,1192 in 2025 would represent about half of these residents.

By the year 2012, the County’s Buildable Lands Report (BLR) expects approximately 7,300 persons will reside in the UGA of which 90% will reside in city limits. The BLR further expects the current UGA will eventually support a population of 11,119 persons at build-out in 2025. It is assumed that the entire UGA will be incorporated into the City by that time. This is an official population estimate and is used by the City for its growth and capital facilities planning.

In 2006, there were approximately 1,010 jobs located in Sultan. Snohomish County’s Buildable Lands Report and the City’s Comprehensive Plan estimate an increase to 2,000 jobs in Sultan by 2025. These projections are summarized in Table 2.

**Table 2  
Population and Development Projections**

<b>Parameter</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2010</b>	<b>2012</b>	<b>2014</b>	<b>2025</b>
City Population	4,225	4,440	4,530	5,874	6,382	7,386	11,119
UGA Population		4,785		6,066	7,300	8,028	11,119
City Housing Units		1,713	1,739	2,066	2,505	2,920	4,464
Average Household Size	2.78	2.78	2.74	2.71	2.68	2.66	2.62
Housing Vacancy Rate	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Employment		1,010					2,000
UGA Area in Acres			2,304				2,304
Buildable			954				954
Unbuildable			1,350				1,350

**Wastewater Flow Projections**

The existing wastewater parameters have been computed in gallons per day from the flow data recorded for 2006 as reported on the Daily Monitoring Report (DMR). These results are summarized in Table 3.

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**Table 3  
Existing Wastewater Flow Parameters**

<b>Flow Component</b>	<b>Quantity</b>	<b>Units</b>	<b>2006 Average Day</b>	<b>Unit Flow</b>	<b>Average Day Max Month</b>
Residents	3,440	67	230,000	67	230,000
Employees	1,010	35	35,000	35	35,000
Infiltration	312 ac	160	50,000	275	86,000
Rain Dependent II	312 ac	50	16,000	770	240,000
Totals			331,000		591,000
DMR recorded			331,000		591,000

Table 4 summarizes the projected population in future years to be served by sewers, the residential equivalent residential units (ERU), the commercial ERU, and wastewater flows based on data given in the 2006 Engineering Report. The plant capacity after Phase 1 improvements will correspond to the projected year 2017 numbers, while the plant capacity after Phase 2 improvements, to be on-line in 2017, will correspond to the projected year 2029 numbers.

**Table 4  
Projected Population, ERU, and Wastewater Flows**

<b>Parameters</b>	<b>2010</b>	<b>2012</b>	<b>2017</b>	<b>2025</b>	<b>2029</b>
Population Served by Sewers	5,492	6,495	8,624	11,119	12,540
Residential ERU	2,112	2,498	3,316	4,277	4,823
Commercial ERU	91	112	164	238	275
Wastewater Flows in MGD:					
Average dry weather	0.40	0.47	0.64	0.83	0.90
Maximum month	0.72	0.81	1.03	1.37	1.56
Peak hour	3.1	3.4	3.9	5.0	5.6

**Projected Needs Through 2025**

Figure S-3 shows the sewer extensions necessary to serve parcels throughout the UGA. Improvements to the sewer collection system fall into categories as described below:

- New Streets listed in the TIP will have a sewer main at least 8-inch diameter.
- Reconstructed Streets listed in the TIP will have a sewer main at least 8-inch in diameter, unless an adequate sewer main is already in place.
- Sewer Main Extensions in streets within UGA but not on the TIP list will be at least 8-inches in diameter.
- Replacement Pipes at least 8-inch diameter are needed in two locations where the existing sewer is under sized, obsolete material, or otherwise defective.

Table 5 summarizes the sewers to be installed concurrently with street improvements listed in the Transportation Improvement Program. Construction costs as shown for 2008 include only the sewer facilities, which include crushed backfill. Costs for street and surface improvements are in the TIP. Project costs add engineering design,

permits, and construction oversight to the construction costs as well as property acquisition where appropriate.

**Table 5  
Sewer Improvements Included with Transportation Improvements**

TIP No	Project Description	Depth	Diam	Feet of Pipe	Construction Cost	Project Cost
T-24	New east/west collector (339th SE - Sultan Basin Rd)	outside UGA				
T-25	Foundry Road (Cascade View - railroad)	served by existing sewer in Foundry Drive				
T-26	New east/west collector (339th SE - Sultan Basin Rd)	10	8	400	\$48,000	\$67,200
T-27	Extend E Main St to 149th St SE	served by existing sewer in Main Street				
T-28	Emergency access between BNSF and Skykomish R	15	8	1,250	\$200,000	\$280,000
T-29	Extend Kessler Dr. (Bryant Rd. - 124th St)	10	8	2,900	\$348,000	\$487,200
T-31a	New north-south arterial (US-2 - 124th St)	15	8	650	\$104,000	\$145,600
T-31c	330 Ave SE just north of US-2	served by existing sewer in Sultan Basin Road				
T-32a	Extend Rice Rd /339th (132nd to UGA boundary)	served from sewer in T-58				
T-32-b	Extend Rice Rd /339th (beyond UGA - 124th)	outside UGA				
T-33	New arterial (Old Owen Rd - Sportmans Park)	10	8	500	\$60,000	\$84,000
T-35	Cascade View Dr (US-2 - 331st)	served by existing sewer in Cascade View Drive				
T-36	138th St (Sultan Basin Rd - 339th Ave SE)	10	8	3,600	\$432,000	\$604,800
T-38	1st St (High Ave to Trout Farm Rd)	15	8	2,200	\$352,000	\$492,800
T-41	339th Ave (Sultan Startup Rd - 132nd St)	15	8	3,050	\$488,000	\$683,200
T-42	Sultan Basin Rd (138th - 124th St)	15	8	900	\$144,000	\$201,600
T-43	Walburn Road (11th St - Sultan Basin Rd)	served by existing sewer in Sultan Basin Road				
T-44	Extend Pine St (9th - Walburn)	10	8	1,600	\$192,000	\$268,800
T-45	Alder St (4th - 8th St)	served by existing sewer in Alder Street				
T-47	Trout Farm Rd (307th - 125th)	10	8	4,900	\$588,000	\$823,200
T-48	Gohr Road (1st St - 132nd SE)	15	8	1,950	\$312,000	\$436,800
T-49	Gohr Road (132nd Ave - about 128th)	10	8	1,600	\$192,000	\$268,800
T-51	3rd Street (Main - High)	served by existing sewer in 3rd Street				
T-57	132nd St. (Sultan Basin Rd - Trout Farm Rd)	10	8	2,150	\$258,000	\$361,200
T-58	132nd St SE (Rice - Sultan Basin Rd)	15	8	3,450	\$552,000	\$772,800
T-61	6th Street (Main - Birch)	served by existing sewer in 6th Street				
T-62	124th Street (Sultan Basin Rd - water treatment plant)	10	8	2,600	\$312,000	\$436,800
T-65	124th Street (water treatment plant - Trout Farm Rd)	10	8	3,400	\$408,000	\$571,200
	Subtotal			37,100	\$4,990,000	\$6,986,000

Some new sewer main extensions are planned in streets within UGA, but the streets are not on included on the TIP list. These sewer improvements are summarized in Table 6.

**Table 6  
New Sewer Extensions**

<b>New</b>	<b>Project Description</b>	<b>Depth</b>	<b>Diameter</b>	<b>Feet of Pipe</b>	<b>Construction Cost</b>	<b>Project Cost</b>
1	eastern city limits into SR 2	10	8	800	\$177,000	\$248,000
2	between 330th & 339th into SR 2	10	8	400	\$89,000	\$125,000
3	into 9th (T-29)	10	8	300	\$66,000	\$92,000
4	west of 339th into 132nd	10	8	900	\$199,000	\$279,000
5	west of 339th into 132nd	10	8	40	\$89,000	\$125,000
6	Skywall Drive	15	8	1,650	\$457,000	\$640,000
7	Dyer Road into 10th	20	8	2,700	\$860,000	\$1,204,000
8	north of SR 2 into Sultan Basin Rd	10	8	350	\$78,000	\$109,000
9	into T-44	10	8	300	\$66,000	\$92,000
10	into T-44	10	8	400	\$89,000	\$125,000
11	135th into Sultan Basin Rd	10	8	1,600	\$355,000	\$497,000
12	Kessler Drive	10	8	650	\$144,000	\$202,000
13	Love's Hill Drive	10	8	200	\$44,000	\$62,000
14	into 124th	10	8	200	\$44,000	\$62,000
15	into 124th	10	8	750	\$166,000	\$232,000
16	Trout Farm Rd & 125th	20	8	5,000	\$1,593,000	\$2,230,000
17	Trout Farm Rd & 125th	20	8	350	\$111,000	\$155,000
18	Trout Farm Rd west of 307th	20	8	1,050	\$334,000	\$468,000
19	307th into Trout Farm Rd	20	8	800	\$255,000	\$357,000
20	307th into Trout Farm Rd	10	8	800	\$177,000	\$248,000
21	134th into Trout Farm Rd	15	8	850	\$235,000	\$329,000
22	311th into Gohr Rd	10	8	1,500	\$332,000	\$465,000
23	Wysteria into Gohr Rd	10	8	950	\$211,000	\$295,000
24	into 4th	10	8	450	\$100,000	\$140,000
25	into High Avenue & 8th	10	8	100	\$22,000	\$31,000
26	between Birch & Cedar into 1st	10	8	200	\$44,000	\$62,000
27	Fir Avenue	10	8	1,800	\$399,000	\$559,000
28	between Birch & Cedar into 1st	10	8	250	\$55,000	\$77,000
29	from Birch into between Alder & Main	10	8	550	\$122,000	\$171,000
30	between 132nd & 138th into 339th	10	8	2,450	\$543,000	\$760,000
31	N Park into Gohr	10	8	500	\$111,000	\$155,000
	Subtotals			28,840	\$7,567,000	\$10,596,000

Several of the new sewer extensions shown in Table 6 will require local pump stations if sewer trenches are not to exceed 20 feet in depth. These pump stations and the associated force mains are summarized in Table 7.

**Table 7  
New Sewer Pump Stations and Force Mains**

Station	Project Description	Parameters		Construction Cost	Project Cost
A	Dyer Road	100 GPM	10 hp	\$225,000	\$434,000
	Force Main	4-inch	750 feet	\$85,000	
B	Skywall Drive	100 GPM	10 hp	\$225,000	\$553,000
	Force Main	4-inch	1,600 feet	\$170,000	
C	Trout Farm & 125 <sup>th</sup> Street	100 GPM	10 hp	\$225,000	\$371,000
	Force main	4-inch	400 feet	\$40,000	
D	Trout Farm & 303 <sup>rd</sup> Drive	100 GPM	10 hp	\$225,000	\$427,000
	Force Main	4-inch	800 feet	\$80,000	
E	124 <sup>th</sup> Street	100 GPM	10 hp	\$225,000	\$343,000
	Force Main	4-inch	200 feet	\$20,000	
Totals			3,750 feet	\$1,520,000	\$2,128,000

Replacement Pipes are needed in two locations where the existing sewer is under sized, obsolete material, or otherwise defective as summarized in Table 8.

**Table 8  
Sewer Main Replacements**

Project	Project Description	Depth	Diameter	Feet of Pipe	Construction Cost	Project Cost
<sup>3</sup>						
2	Force Main under Sultan River	----	12	600	300,000	500,000
	Subtotal			3,350	\$1,024,000	\$1,514,000

In addition to the sewer mains improvements listed in Tables 5, 6, 7, and 8; several other capital projects are included in the Needs Assessment to accommodate growth as projected through 2025. These projects are listed below:

- General Sewer Plan Update 2014
- General Sewer Plan Update 2024
- Ongoing infiltration/inflow rehabilitation
- Short-Term Improvements to Wastewater Treatment Facilities by 2009
- Upgrade of Wastewater Treatment Facilities with Membrane Bioreactor by 2017

General Sewer Plans are not required to be updated every six years as is the case for Water System Plans. However, capital facilities planning require periodic updating of the six-year Capital Improvement Program, which is best accomplished through periodic updates to the General Sewer Plan.

<sup>3</sup> Project completed in 2005.

Table 9 summarizes the sewer facilities needed by 2025 and estimated costs.

**Table 9  
Needed Sewer Facilities by 2025**

<b>Improvement Category</b>	<b>Quantity</b>	<b>Construction Cost</b>	<b>Project Cost</b>
Projects in Progress (2007)	---	----	\$ 1,137,000
TIP Sewer Improvements	37,100 feet	\$ 4,990,000	\$ 6,986,000
New Sewer Extensions	28,840 feet	\$ 7,567,000	\$ 10,596,000
Pump Stations & Force Mains	5 pump stations	\$ 1,520,000	\$ 2,128,000
Replacement Sewers	3,350 feet	\$ 1,024,000	\$ 1,514,000
General Sewer Plan – 2014	----	----	\$ 100,000
General Sewer Plan – 2024	----	----	\$ 100,000
Ongoing I/I Rehabilitation	Typically \$100,000/yr	\$ 1,700,000	\$ 2,380,000
WWTP – Short Term	---	\$ 350,000	\$ 400,000
WWTP – MBR	---	\$ 17,000,000	\$ 21,700,000
Total		\$ 34,151,000	\$ 47,041,000

Costs shown are estimated in 2008 dollars. These costs will need to be escalated in some manner to reflect the costs appropriate to the dates when the projects will actually be implemented.

**Six-Year Capital Improvement Program**

In addition to the Project in Progress during 2007, the projects required during the initial six years of 2009 through 2014 are summarized in Table 10 as the capital Improvement Program (CIP).

**Table 10  
Six-Year Capital Improvement Program  
Estimated Project Costs in \$ Thousands**

<b>Project</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>Total</b>
Short-term WWTP	400						400
Alder Street		54	400				454
132 <sup>nd</sup> Street			20	53	700		773
Rice Road			20	63	600		683
WWTP - MBR					2,000	15,150	17,150
Totals	400	54	440	116	3,300	15,150	19,460

Figure S-4 locates the projects included in the Six-Year CIP.

Financial projections indicate that the existing City sewer rate structure will be adequate to generate most of the revenue needed to implement the six-year CIP, assuming that the projected growth actually occurs. Table 11 summarizes these financial assumptions.

**Table 11**  
**Six Year Sewer Capital Improvement Revenue**  
Estimated Revenue on \$ Thousands

<b>Projects</b>	<b>GFC</b>	<b>Grant</b>	<b>Debt</b>	<b>Contributions</b>	<b>Totals</b>
Short-term WWTP			400		400
Alder Street	454				454
132 <sup>nd</sup> Street				773	773
Rice Road				683	683
WWTP - MBR	6,300	5,000	5,850		17,150
Totals	6,754	5,000	6,250	1,456	19,460

It is possible that growth will not occur as projected, of course. In that case the sewer improvements will not be needed and the projects may be delayed until the need does exist and funding becomes available.

### Existing Sewer Rates

A progressive water rate structure has been used by the City for years. Table 12 summarizes an excerpt from the current sewer rates with 600 cubic feet (CF) included in the commercial base rate.

**Table 12**  
**Current Monthly Sewer Rates**

<b>Customer Class</b>	<b>2007 Rate</b>	<b>2008 Rate</b>	<b>2009 Rate</b>
Single Family Residence	\$56.70	\$61.74	\$64.83
Low-income Senior	\$30.25	\$30.87	\$32.41
Multi-family Unit	\$56.70	\$61.74	\$64.83
Mobile Home	\$56.70	\$61.74	\$64.83
Commercial – Base Rates			
¾-inch meter	\$56.70	\$61.75	\$64.83
1-inch meter	\$79.38	\$86.44	\$90.76
1-1/2-inch meter	\$102.06	\$111.13	\$116.69
Volume Rate / 100 CF	\$4.04	\$4.40	\$4.61

Additional sewer rates exist for larger water meter sizes.

The sewer capital facilities charge was \$10,518 per ERU as of September 2007; and became \$11,282 per ERU in January 2008.

### Financial Implications

The total estimated project cost for providing sewer service to all parcels with the GMA to be consistent with the Comprehensive Plan is about \$45.4 million in 2007 dollars.

Several strategic considerations are relevant to the financial implications in funding these improvements as outlined below:

- About \$23.3 million in sewer collection facilities are identified as needed by 2025 to accommodate the projected growth within the GMA
- An additional \$22.1 million is identified as needed to expand sewer treatment plant capacity by 2025
- Existing utility rates, periodically adjusted for inflation, could generate an additional \$4.2 million during this planning period
- About \$32.8 million could be available from the system development charges as proposed in the recent rate study if the recommendations of that study are implemented after 2013 and the projected growth actually occurs

Basic Needs for the sewer utility have been defined as the improvements necessary to maintain the established level of service for existing sewer customers plus to extend sewer service to all developed parcels now using on-site septic sewage systems within the existing city limits as summarized below:

- Approximately \$6.9 million of basic needs are identified for the collection system to adequately continue serving existing customers
- About \$10.6 million would provide service to developed parcels currently using on-site sewage systems, which would financially benefit such properties
- The City financing plan includes \$4 million in City participation for sewer main extensions to encourage property owners to connect to the sewer system

*Code revisions are being proposed to clarify when and how property owners will be expected to pay fair-share costs for extension of the planned sewer and water systems.*

Additional improvements defined as 'Necessary for Development' throughout the remaining area within the existing city limits plus the UGA are summarized below:

- Estimated costs for the treatment system needed to support the planned growth are about \$22.1 million
- An additional \$10.0 million will be needed to extend sewers to the undeveloped parcels within the UGA

The City financing plan for these improvements can be summarized as follows:

- About \$32.8 million could become available from the system development charges (GFC) as proposed in the recent rate study, if the recommendations of that study are continued after 2013 development occurs as projected
- The City will continue to seek \$5 million in state financial assistance for an expansion to its sewerage treatment plant; and if are awarded, the amount of revenue needed by the city's system development charge (GFC) may be reduced or used for other system needs
- Approximately \$5.4 million is expected from developer financing as part of various street improvement projects
- About \$8.1 million may be contributed by property owners and developers towards sewer extensions to undeveloped areas within the GMA

The recommendations of the last rate study recommended setting the General Facility Charge (GFC) at \$20,086 per ERU. This amount should be reevaluated to ensure it is appropriate to long term needs of the sewer utility and particularly for financing the wastewater treatment plant improvements.

Table 13 summarizes the above described financial strategy for the sewer utility.

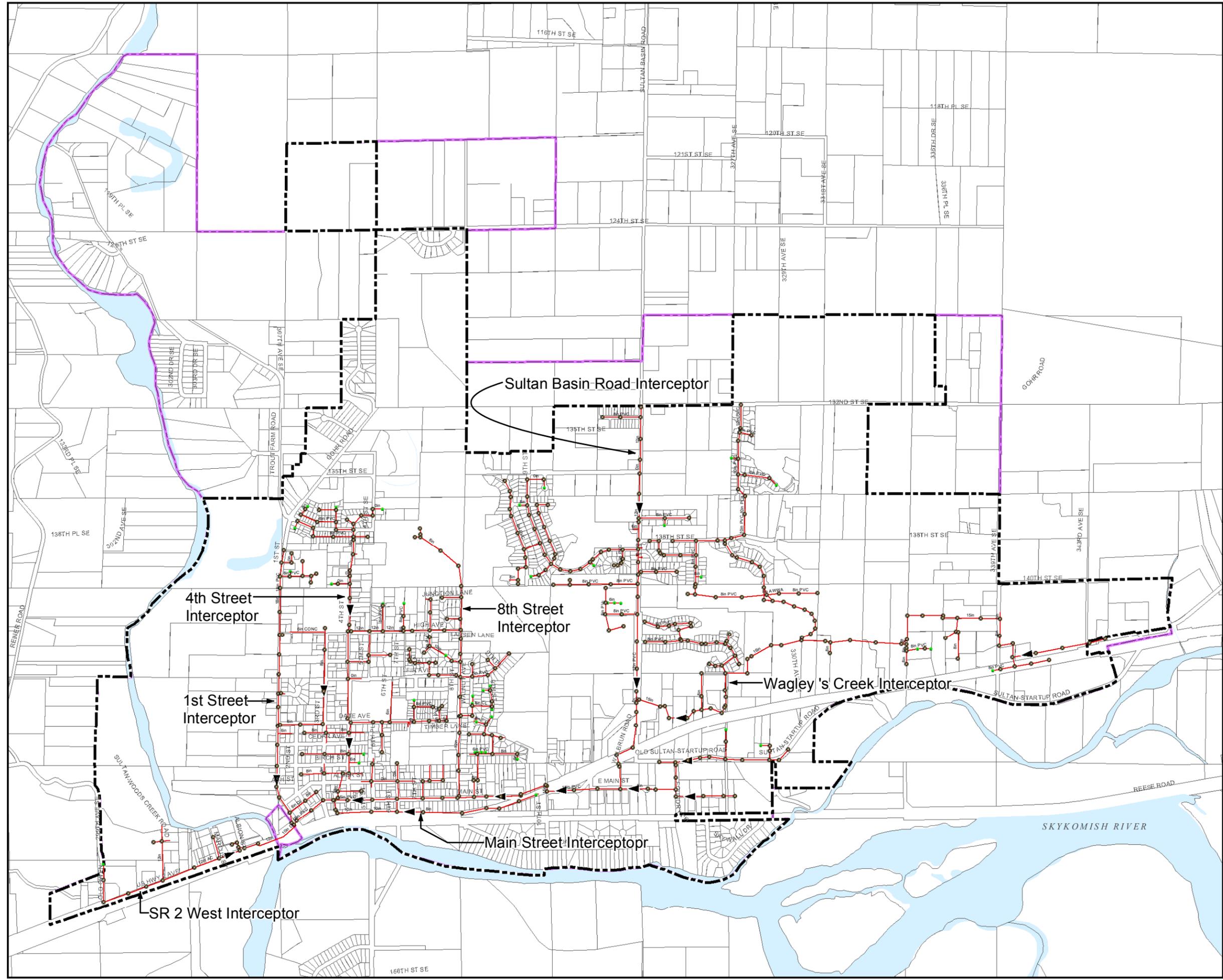
**Table 13**  
**Sewer System Funding Strategy**  
Finances Shown in \$ thousands

<b>Project Classes</b>	<b>GFC</b>	<b>Grants</b>	<b>Rates</b>	<b>Property Owners</b>	<b>Total</b>
Basic Needs					
I/I Rehab & Planning	2,380		200		2,580
Projects in Progress	454			683	1,137
Extension to Non-served	4,000			6,596	10,596
Replace Existing Facilities	1,514				1,514
Treatment Facilities Ph 1			400		400
Subtotals	8,348	---	600	7,279	16,227
Necessary for Development					
Treatment Facilities Ph 2	16,700	5,000			21,700
Sewer Extensions	2,908			6,206	9,114
Subtotals	19,608	5,000	---	6,206	30,814
Totals	27,956	5,000	600	13,485	47,041

Table 12 indicates that if the planned grant for the wastewater treatment plant improvements is actually received, not all of the revenue that may be generated by the GFC rate recommended by the recent rate study may be needed. However, that possibility is totally dependent on the expected developments actually occurring and on the projected schedule. Until those projections are validated by events, it is prudent for the City to maintain the rates in accordance with the rate study recommendations.

# FIGURE S-1

## EXISTING SEWER SYSTEM



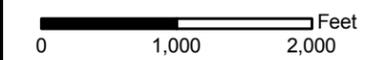
### Legend

#### Sewer System

- Man Holes
- Clean Outs
- Sewer Pipes
- ▶ Direction of Flow

#### Base Layers

- ⊕ City Boundary
- ⊕ UGA Boundary
- Parcels
- ☁ Water Bodies



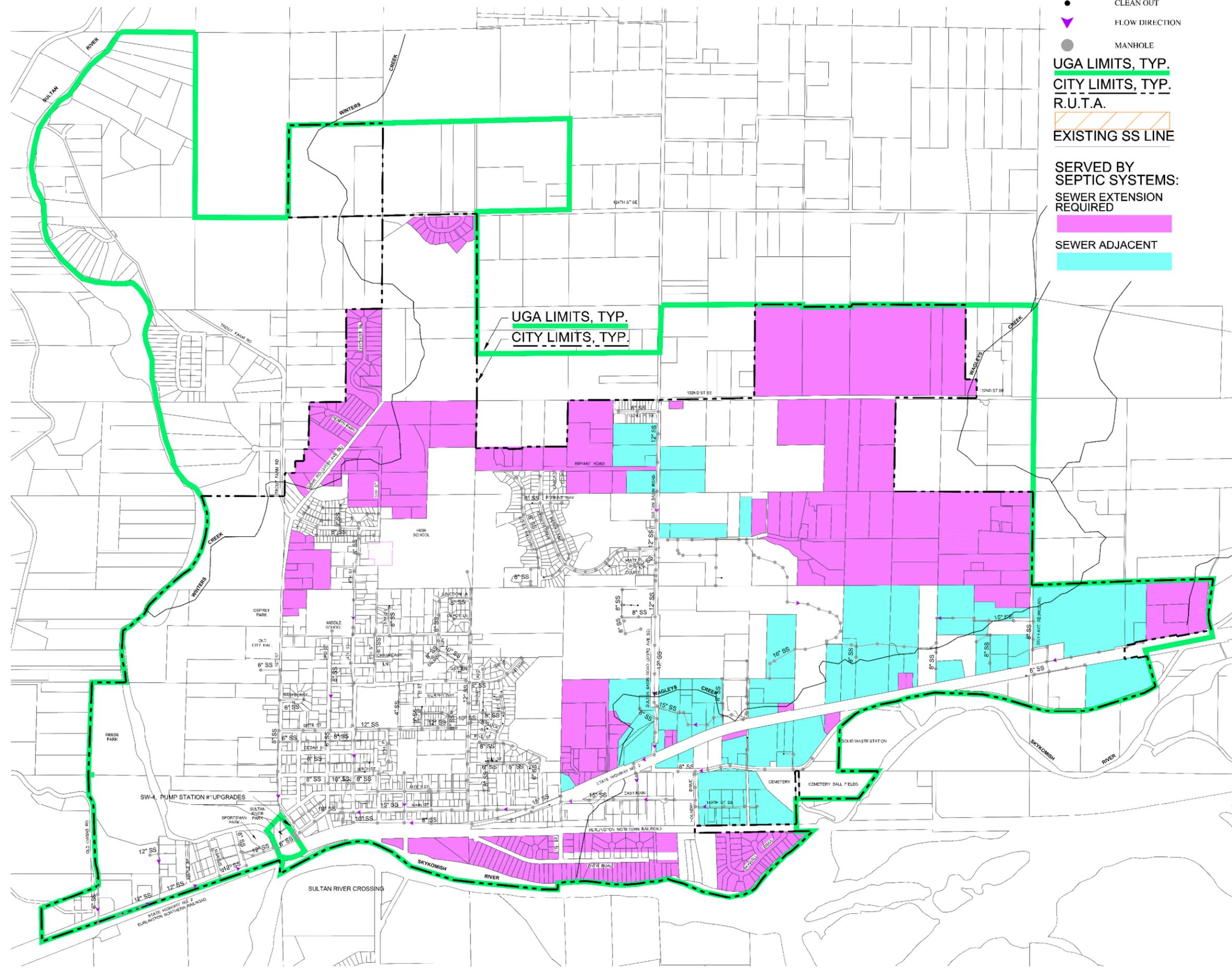
UGA Boundary - Adopted: December 21, 2005  
- Effective Date: February 1, 2006

Contours: Triathlon - April 1997  
This map is a geographic representation based on information available. It does not represent survey data. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map. All other data obtained from Snohomish County Jan 2008.

MAP DATE: JUNE 2008  
Projected Coordinate System: NAD\_1983\_StatePlane\_Washington\_North\_FIPS\_4601\_Feet  
P:\Mapping\Maps\_Generated\Sultan\Projects\Civil\Sewer\08\_10114\_01\003\maps\S-1 Existing Sewer System\_11x17.mxd

## FIGURE S-2

# AREAS SERVED BY ON-SITE SEWAGE SYSTEMS



- Legend**
- CLEAN OUT
  - ▼ FLOW DIRECTION
  - MANHOLE
  - UGA LIMITS, TYP.
  - CITY LIMITS, TYP.
  - R.U.T.A.
  - EXISTING SS LINE
  - SERVED BY SEPTIC SYSTEMS:
  - SEWER EXTENSION REQUIRED
  - SEWER ADJACENT



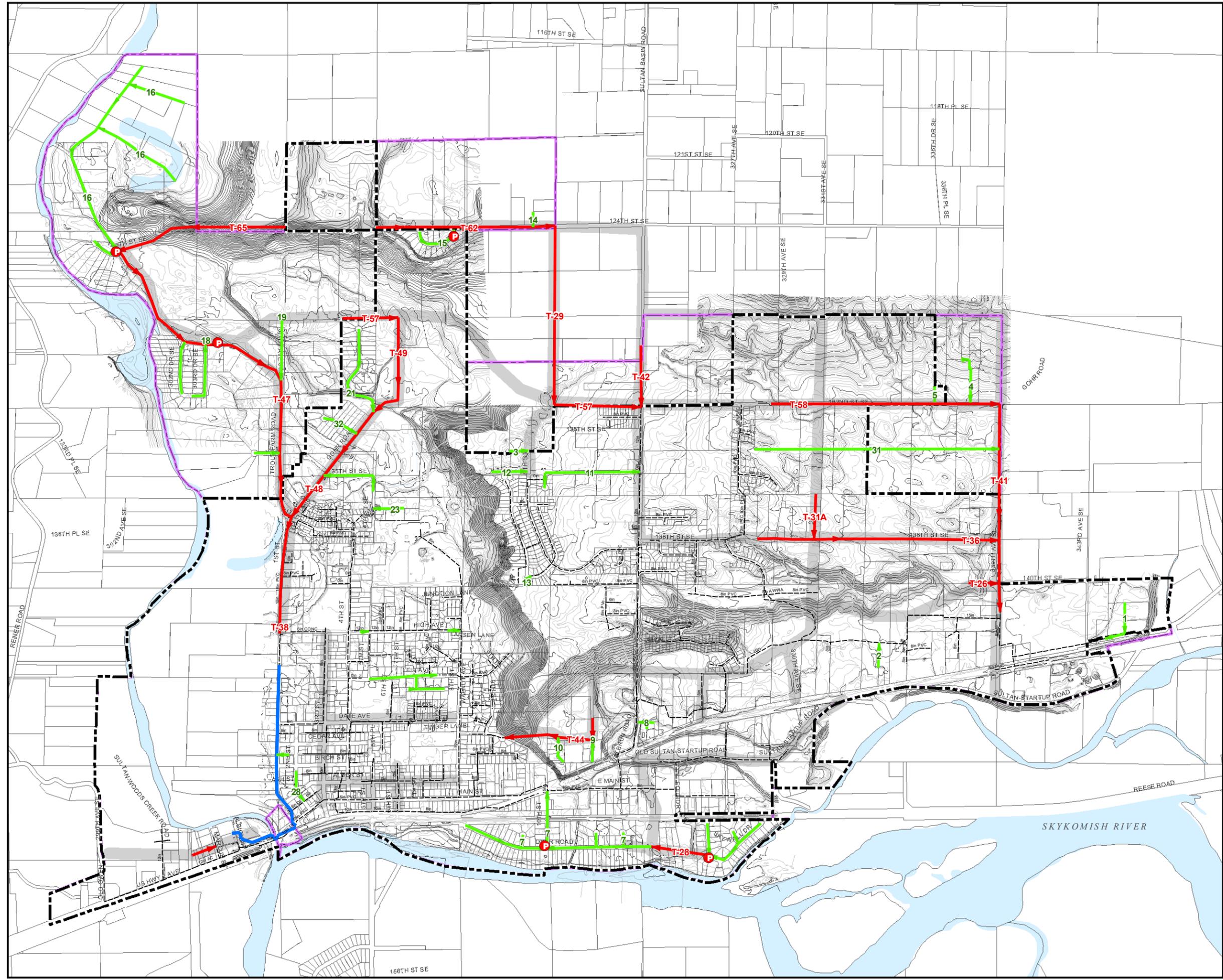
Image provided by Shockey Brent Inc: Jan 2006

This map is a geographic representation based on information available. It does not represent survey data. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

MAP DATE: JUNE 2008  
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 \S-2AreasServSewageSystems\_11x17.mxd

**FIGURE S-3**

**SEWER SYSTEM IMPROVEMENTS**

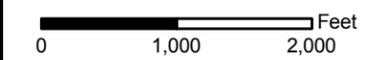


**Legend**

-  Future Pump Station
-  Sewer Associated with TIP
-  Replace Existing Sewer
-  Other Sewer
-  Existing Sewer Pipes

**Base Layers**

-  City Boundary
-  UGA Boundary
-  New Roads
-  Parcels
-  Water Bodies
-  10ft Contours
-  2ft Contours



UGA Boundary - Adopted: December 21, 2005  
-Effective Date: February 1, 2006

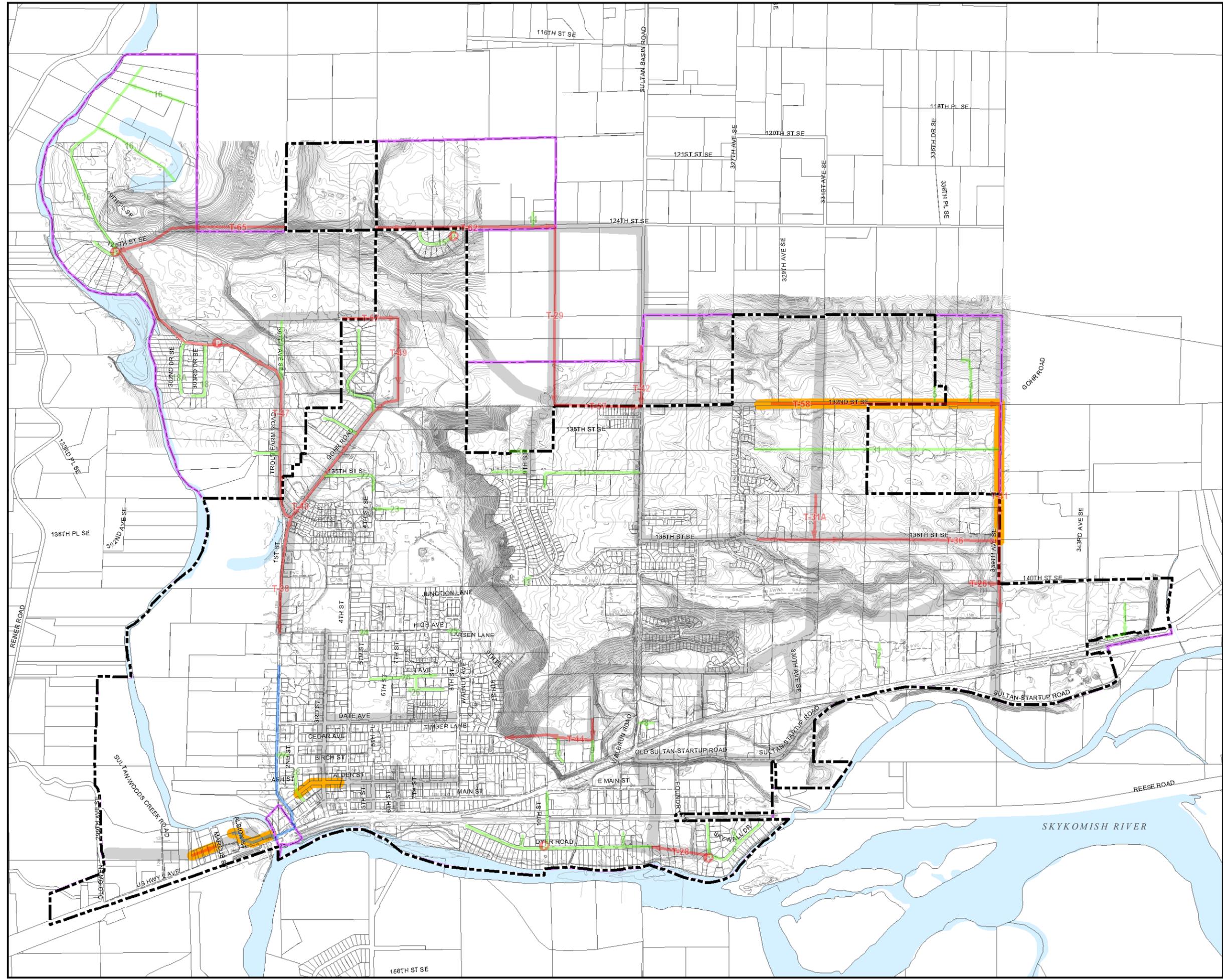
Contours: Triathlon - April 1997  
This map is a geographic representation based on information available. It does not represent survey data. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map. All other data obtained from Snohomish County Jan 2008.

MAP DATE: JUNE 2008  
Projected Coordinate System: NAD\_1983\_StatePlane\_Washington\_North\_FIPS\_4601\_Feet  
P:\Mapping\Maps\_Generated\Sultan\Projects\Civil\Sewer\08\_10114\_01\003\maps\S-3 SewerSystemImprov\_11x17.mxd



# FIGURE S-4

## SEWER SYSTEM CAPITAL IMPROVEMENT PROGRAM



### Legend

-  Future Pump Station
-  Sewer Associated with TIP
-  Replace Existing Sewer
-  Other Sewer
-  Existing Sewer Pipes
- Base Layers**
-  City Boundary
-  UGA Boundary
-  Capital Improvement Program
-  New Roads
-  Parcels
-  Water Bodies
-  10ft Contours
-  2ft Contours

0 1,000 2,000 Feet

UGA Boundary - Adopted: December 21, 2005  
-Effective Date: February 1, 2006

Contours: Triathlon - April 1997  
This map is a geographic representation based on information available. It does not represent survey data. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map. All other data obtained from Snohomish County Jan 2008.

MAP DATE: JUNE 2008  
Projected Coordinate System: NAD\_1983\_StatePlane\_Washington\_North\_FIPS\_4601\_Feet  
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S-4 SewerSystemCIP\_11x17.mxd