Sanitary Sewer Comprehensive Plan Amendment

Prepared for:

City of Sumner

Parametrix

May 2000

SANITARY SEWER COMPREHENSIVE PLAN AMENDMENT

Prepared for:

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Project No. 216-1527-050

CERTIFICATE OF ENGINEER

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

5-10-00

EXPIRES: 9/12/00

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EXECUTIVE SUMMARY

INTRODUCTION

The City of Sumner authorized the preparation of the Comprehensive Sewer Plan Amendment in accordance with WAC 173-240-050 as administered by the State of Washington Department of Ecology. This plan updates the previous Comprehensive Sewer Plan prepared by Parametrix, Inc. in November 1989.

Since preparation of the 1989 Comprehensive Sewer Plan, the City of Sumner has experienced major demographic changes that affect the City's wastewater collection system, including:

- Reduction of the total Urban Growth Area (UGA).
- Increased industrial development along 142nd Avenue East.
- Amendment to the Comprehensive Land Use Plan.
- Increase in City growth pattern predicted at 3.5 percent per year.

It is the intent of this document to analyze the City's collection system and to identify system deficiencies for existing and future flow conditions. If any deficiencies are identified in the City's collection system, improvement and cost recommendations will be developed.

COLLECTION SYSTEM ANALYSIS

The City's wastewater collection system was analyzed for existing and future capacity. The existing system's condition was also assessed. The collection system capacity determines the ability to hydraulically convey the wastewater flows to the treatment plant. The system's condition and reliability is determined by examining the age of the system and deficiencies identified by City personnel. Using this information and the analysis components below, Parametrix was able to determine if any system deficiencies exist:

- Comparison of the current collection system capacity to a simulated current peak day flow.
- Review of the existing system's condition and identification of potential impacts on the overall system's reliability.
- Comparison of existing system capacity to a simulated future peak day flow for the existing service area.
- Expansion of the collection system into unserved areas of the UGA boundary (future service area).

Existing Peak Day Flow Simulation (Existing Service Area)

The capacity of the existing collection system was compared to a simulated peak day wastewater flow generated for the City's current service area. Both the existing pipeline capacity and the simulated peak day flow were calculated using a computer program called "HYDRA." HYDRA calculates the capacity of

the City's existing pipelines and pump stations using conventional engineering formulas and assumptions. A detailed description of HYDRA and its operation is provided in Chapter 5.

An existing peak day flow simulation was calculated based upon land use and the percentage of build-out of properties within the city's service area, plus the anticipated contribution of infiltration and inflow (I/I) of stormwater entering the City's sanitary sewer pipelines during winter months. I/I assumptions were calculated separately for each pump station basin and manually entered into the computer program. I/I was calculated between 500 and 2,000 gallons per acre per day (gpad) depending upon the age of the pipelines within individual pump station basins and the amount of I/I indicated by pump station run times recorded during wet weather conditions.

The percent build-out of properties within the City's service area was established using visual observation of aerial photos of the Sumner valley. Once the flow simulation was completed, it was compared to existing treatment plant records to validate results of the computer model. Based upon the result of the computer modeling, the simulated peak day flow for the Sumner service area was calculated at 3.1 million gallons per day, which compared reasonably well to actual peak day flows of 2.7 million gallons per day recorded at the Sumner treatment plant.

Future Peak Day Flow Simulation (Existing Service Area)

The future peak day flow simulation was generated using the computer model HYDRA. This flow simulation used the same methodology as the existing peak day flow simulation, with the following exceptions:

- It was assumed that all of the area currently served by the City's existing wastewater collection system would be at 100 percent build-out. Based upon the rate of growth within the City of Sumner, it was estimated that build-out of the service area would occur between 20 and 25 years.

- It was assumed that the City would reduce I/I in the pump station basins with older pipeline not to exceed 500 gpad.

The future peak day flow simulation was compared to the capacity of the existing City pipelines and pump stations to determine if capacity deficiencies could occur as the existing service area builds out.

Expansion of the Collection System to Accommodate the Entire UGA

Portions of the City's UGA are not yet served by the City's existing wastewater collection system. Those areas are shown on figures within this report and are described as follows:

- The area bounded by the Stuck River on the west, Lake Tapps on the east, Elm Street on the south, and the Pierce County line on the north.

- The region bounded by SR 167 on the east, the City of Edgewood on the west, 16th Street East on the north, and Caldwell Road East on the south.

- The region located along Valley Avenue East west of SR 167 near the existing city cemetery.

- The region located along 160th Avenue East south of SR 410.

Adding service area to the City's wastewater system will increase the total wastewater flow to the wastewater collection system downstream of the connection point. Impacts to the City's existing collection system from additional service areas were determined by simulated future wastewater flows using the entire UGA acreage. Flow simulation for the entire UGA was generated by adding those unserved portions of the UGA to the future peak day flow simulation previously discussed. The only exceptions to the assumptions within the future peak day flow simulation included:

- The increased service area size to accommodate the additional UGA acreage.

- The area east of East Valley Highway was assumed at 40 percent of total land utilization due to steep topography.

System Reliability

The condition of the existing system was examined to determine if there are potential impacts to the reliability of the collection system. The system's condition was established by interviewing City of Sumner maintenance staff, reviewing the results of the modeling exercise, and researching the age of the collection system pipelines and pump stations throughout the City's system. Those portions of the City's collection system that need to be upgraded over the next 20- to 25- year planning period were noted and improvements were recommended.

SYSTEM CAPACITY IMPROVEMENTS

Listed below are improvements recommended to correct the capacity deficiencies in the existing collection system resulting from **existing** peak day flow volumes:

- Increase the existing capacity of the Parker Pump Station from 285 gpm to 950 gpm. Ultimately, the Parker Pump Station will need to be upgraded to 1,800 gpm to accommodate future peak day flows. Replace the existing 6-inch-diameter force main with 4,000 feet of 10-inch force main from the Parker Pump Station to a new discharge at Wood Avenue.

- Increase the existing capacity of the Van Tassel Pump Station from 135 gpm to 365 gpm. Extend the 4-inch-diameter force main from the current discharge approximately 1,800 feet further west along Elm Street to a new discharge at Wright Avenue.

- Increase the existing capacity of the 16th Street Pump Station from 700 gpm to 1,400 gpm.

- Replace approximately 1,400 lf of existing 10-inch gravity pipe main with 12-inch pipe from the 16th Street Pump Station east along 16th Street, then south along Wright Avenue to between Langdon and Washington Streets.

- Increase the existing capacity of the Tacoma Street Pump Station from 175 gpm to 372 gpm.

Following are improvements recommended to correct capacity deficiencies in the existing collection system resulting from **future** peak day flow volumes:

- Increase the capacity of the Cherry Street Pump Station from 534 gpm to 1,180 gpm.

- Increase the capacity of the South Street Pump Station from 1,115 gpm to 1,750.

Following are improvements recommended to provide capacity to the collection system to allow for expansion into unserved portions of the service area (UGA boundary):

- Increase the capacity of the 142nd Street Pump Station from 2,300 gpm to 5,200 gpm. Install a new 14-inch force main parallel to the existing line from the existing station to a new discharge at the intersection of W. Main Avenue and Fryar Avenue. This improvement is contingent on the actual industrial wastewater flow meeting or exceeding per acre flow estimates.

- Expand the capacity of the 16th Street Pump Station No. 2 from 100 gpm to 160 gpm.

COLLECTION SYSTEM UPGRADES

The following improvements are recommended to upgrade the collection system, reduce I/I, extend the lifecycle of the collection system, and extend the life and capacity of the treatment plant.

- Eliminate the hydraulic intertie between Parker, Van Tassel, and 160th Street Pump Stations.

- Identify and eliminate excessive I/I within the collection system.

- Institute a sewer main replacement and/or rehabilitation program to reduce I/I and extend the lifecycle of the collection system.

- Install flow meters at all existing pump stations.

- Install standby generators at the South, North, Tacoma, and Cherry Street Pump Stations.

- Re-wire the Cherry Street and 16th Street Pump Stations to meet current electrical code requirements.

Table ES-1 summarizes the recommended improvements and provides probable estimates of cost:

Table ES-1. Recommended System Improvements

Improvement Category	Estimated Project Cost (1999 Dollars)
System Capacity Improvements	
Parker Pump Station	$1,176,000
Extend Van Tassel Pump Station Force Main	$184,400
Van Tassel Pump Station	$284,000
16th Street Pump Station	$637,500
Increase Gravity Pipe Mains from 10-inch to 12-inch in 16th Street Basin	$271,700
Tacoma Street Pump Station	$284,000
Cherry Street Pump Station	$673,000
South Street Pump Station	$692,000
142nd Street Pump Station	$810,000
Parallel 14-inch Force Main	$715,000
16th Street Pump Station No. 2	$27,000
Subtotal:	**$5,754,600**

Table ES-1. Recommended System Improvements	
Improvement Category	**Estimated Project Cost (1999 Dollars)**
Collection System Upgrades	
Pipe Main Rehabilitation/Replacement Program	$8,100,000
Hydraulic Intertie Removal	$54,800
Infiltration and Inflow (I/I) Program	$150,000
Flow Meter Installation at each Station	$190,500
On-site Generator Installation	$307,200
Electrical System Upgrades	$23,800
Subtotal:	**$8,826,300**
TOTAL PROJECTED COST IN 1999 DOLLARS:	**$14,680,900**

WASTEWATER TREATMENT PLANT CAPACITY IMPACTS

Based upon all indications, the City of Sumner's treatment plant has sufficient capacity to accommodate growth within the collection system given the following assumptions:

- WWTP expansion is completed by 2003.
- Average collection system growth rates do not exceed 3.5 percent.
- The City continues aggressive identification and reduction of existing system infiltration and inflow (I/I) to a system-wide average of 500 gpad.
- The City encourages the use of alternative collection systems where appropriate.
- The City coordinates I/I reduction efforts with the City of Bonney Lake and unincorporated Pierce County.

FUTURE SOUTHERN SERVICE AREA

It is understood that the City of Sumner wishes to extend sewer service to the region south of the existing UGA boundary. The City has depicted expansion of the service area in three previous documents. Table ES-2 lists the previous City of Sumner documents and the approximate area of the proposed expansions.

The feasibility of extending service to this region was evaluated to determine what policies, regulations, and laws were in place that could govern expansion of the wastewater collection system. Under the Growth Management Act, the City is prohibited from direct annexation and providing utility service to any area outside of its existing UGA boundary.

The City may apply for an inter-agency agreement with Pierce County Regional Council called a "Joint Planning Area." The agreement allows the City and County to jointly establish design, land use, building, capital facilities, and environmental criteria for the region.

The potential impact to the wastewater treatment plant capacity was reviewed based upon expansion of the collection system into the future southern service area. It was determined that providing sewer service beyond the existing UGA boundary will require additional treatment plant capacity. Table ES-2 summarizes the magnitude of additional capacity needed to serve the three possible expansion regions.

Table ES-2. Potential Maximum Month Flows (MMF)

Proposed Expansion Region	Area (ac)	Additional Maximum Month Flow (mgd)(a)
1979 EPA Contract	600	0.49
1989 Sewer Comprehensive Plan	1,500	1.23
1998 Sumner Comprehensive Plan[(b)]	2,300	1.88

(a) Average wastewater flow was assumed to be 1,300 gpad with I/I flows of 500 gpad and a peak factor of 2.2.

(b) Joint Planning Area

FINANCING PLAN

A financing plan was prepared to provide an indication of the impacts on the City's existing sewer fees to finance the recommended improvements for the collection system outlined in this report and the wastewater treatment plant improvements listed in the *Wastewater Treatment Facility Final Comprehensive Plan Amendment No. 1* as prepared by Gray & Osborne. The plan focused upon funding

1. capacity improvements by generating revenues from the System Development Charges, and

2. system upgrades by generating revenues from the sewer utility rates.

The two separate funding options considered as part of this plan are:

- *Funding Option 1 Assumptions:*

  - Capacity improvements will be paid by revenues generated from system development charge (SDC).

  - Upgrades to the system will be paid through sewer utility rates.

  Option 1 also assumes that the City's existing debt payment will continue to be paid by revenues generated by sewer utility rates, and revenues from the golf course and land lease.

- *Funding Option 2 Assumptions:*

  - Capacity improvements will be paid by revenues generated from SDC.

  - Upgrades to the system will be paid through sewer utility rates.

  Option 2 assumes that half of the existing annual debt payment will be paid by revenues generated by SDCs and that the remainder of the debt will be paid by revenues from the golf course and land lease.

Projected impacts upon the SDCs and the sewer utility rates by the two funding options is summarized in Table ES-3.

Table ES-3. Projected SDC Charge and Sewer Utility Rate to Fund Collection System and Treatment Plant Improvements

Option 1	SDC Charge	Percent Increase in Utility Sewer Rates
Option 1	$2,318	52%
Option 2	$3,362	33%

It is recommended the City consider Funding Option No. 2 that includes a combined SDC and sewer utility rate increase along with payment of approximately half of the City's existing debt payment through revenues generated by SDCs. This option is more equitable to existing and future system customers for the following reasons:

- Growth pays for growth – The future system customers pay for the capacity improvements necessary to provide them service.

- Existing users pay for system upgrade – The customers who have been using the system would be responsible to pay for the system upgrades that benefit all customers.

To finalize the financial element of the sanitary collection system and treatment plant planning, it is recommended that the City of Sumner conduct a detailed financial analysis prior to implementing rate adjustments. A detailed financial analysis will confirm or deny the impacts of the recommended system improvements on the existing sewer fees.

1. INTRODUCTION

1.1 BACKGROUND

The City of Sumner authorized preparation of a Sanitary Sewer Comprehensive Plan Amendment in accordance with the Department of Ecology regulatory requirements. The previous revision to the City's Sanitary Sewer Comprehensive Plan was prepared by Parametrix, Inc. in November of 1989. Since preparation of the 1989 Sanitary Sewer Comprehensive Plan, the City of Sumner has experienced changes to the city's demographics that would affect the wastewater collection system. Major changes to the City's demographics over the last 10 years include:

- Establishment of an Urban Growth Area (UGA) that is smaller than the 1989 Sanitary Sewer Comprehensive Plan service area.
- Development of the Industrial Area along 142nd Avenue East between the Stuck River and northern boundary of Pierce County.
- Update of the zoning map in October 1997.
- Amendment of the Comprehensive Land Use Plan, October 1997.
- Anticipated and actual population increases averaging 3.5 percent per year.

1.2 PLANNING GOALS

It is the City's goal to ensure that the 2000 amendment to the Sumner Sanitary Sewer Comprehensive Plan includes the following:

- Demographic changes that affect the sanitary sewer collection system.
- Evaluation of the condition and capacity of the existing wastewater collection system.
- Establishment of wastewater collection system improvements necessary to upgrade the existing collection system.
- Establishment of improvements to the City's existing wastewater collection system to provide adequate capacity to serve future City wastewater users.
- Recommendations of the wastewater collection system improvements necessary to extend the wastewater collection system into portions of the UGA that are not currently being served.
- Estimates of the probable capital costs for improvements to the City's existing wastewater conveyance system to meet existing and future needs.
- Estimates of the impact to the City's sanitary sewer rates necessary to fund recommended improvements.

1.3 PLAN REQUIREMENTS

The Plan has been prepared in accordance with the requirements of the Department of Ecology and the Washington Administrative Code. Chapters 2 and 3 of this document fulfill the information requirements of WAC 173-240-050. This Plan update also integrates previous wastewater plans, including:

- *Sewer Collection System Comprehensive Plan*, City of Sumner, Parametrix Inc., November 1989;
- Feasibility Study for Sewer Service to North End of Sumner, City of Sumner, Parametric, Inc., December 1987.
- *Sewage Pumping Facilities Evaluation*, City of Sumner, Parametrix, Inc., October 1987;
- *Sumner Comprehensive Plan*, City of Sumner, Hanson & Associates, June 1983.
- *Sumner Comprehensive Plan*, City of Sumner, July 1998.

2. EXISTING CONDITIONS AND SERVICE AREA DEMOGRAPHICS

2.1 INTRODUCTION

Existing conditions and service area demographics affect the wastewater collection system, including physical features such as the size of the service area, land use and zoning population variations, soils, groundwater conditions, and topography. Climate and economic factors also play an important role in planning community utility systems. Collectively, the factors discussed in this chapter and Chapters 3 and 4 have a considerable impact on the processes involved in determining the location, size, and extent of the sanitary sewer collection system facilities, and the ability of the community to accept the financial burden of improvements. These factors are briefly described in this chapter.

2.2 BOUNDARY AND SERVICE AREA

The City of Sumner is located approximately 11 miles southeast of the City of Tacoma. The City of Sumner corporate limits is generally found northeast of the convergence of the Puyallup and Stuck Rivers (see Figure 2.1). Land within this area is subject to the City's municipal code, ordinances, resolutions, and policies. Other agencies with limited jurisdiction include the Sumner School District, Sumner Fire Department, Fire District No. 22, Pierce County Health Department, and all State and Federal agencies.

The City of Sumner sanitary sewer service area is the City's Urban Growth Area (UGA) (see Figure 2.1). A portion of the UGA is not served by the City's wastewater collection system. The 6.83-square-mile (4,336 ac) area designated as the Urban Growth Area contains over 179,000 lineal feet (33.90 miles) of sewer mains. The City and Pierce County coordinated activities in developing an annexation policy and in identifying the Urban Growth Boundary in accordance with countywide planning policies. The Sumner UGA boundaries coincide with Sumner city limits.

In accordance with the State Growth Management Act (GMA), the boundary of the Urban Growth Area established in 1997 was based upon the following:

- 20-year population forecast
- Environmental constraints
- Concentration of existing development
- Existing infrastructure and services
- Location of existing and proposed transportation corridors
- Areas the City could extend and provide urban services to logically and economically

It is expected that within the 20-year time frame of the Comprehensive Land Use Plan that sewer, water, stormwater, utilities, telecommunications, and transportation may be extended to developments in all or most of the areas outlined in the UGA.

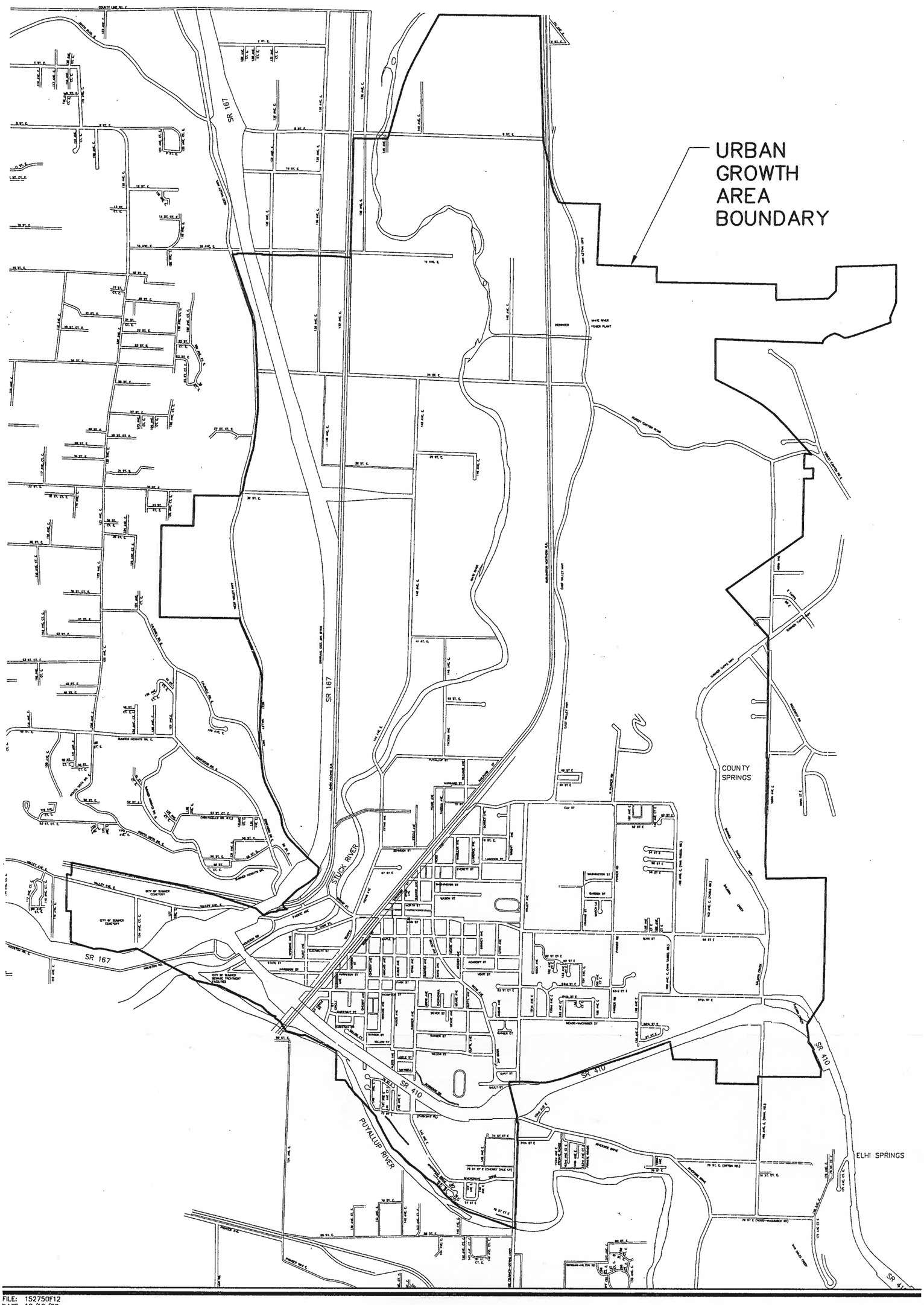

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Figure 2.1
Urban Growth Area Boundary

2.3 HISTORY

The City of Sumner was first platted in 1883 and incorporated in 1891. The City of Sumner began a collection system in 1927. The initial system combined sanitary sewer and stormwater collection. This system discharged through seven outfalls, four along the Stuck River and three along the Puyallup River. Of the seven original outfalls (overflows), only two remain today. Each of the remaining outfalls have each been equipped with manually operated control valves.

The first wastewater treatment plant, pump stations, and sanitary sewer force main system were installed in 1957. Additional pump stations have been installed at various times during the expansion of the system. The North Pump Station remains the oldest station in the system. It was initially installed in 1957 and it was upgraded in 1986. The following table lists the City's pump stations, year of construction, last year rebuilt or refurbished (if known), and station capacity.

Table 2-1. Pump Station Characteristics

Pump Station	Year Constructed	Last Year Rebuilt	Type	Station Design Capacity (gpm)
Tacoma	1982		Dry/Wet Well	175
North	1957	1987	Dry/Wet Well	300
Van Tassel	1977		Submersible	135
Jansen	1979		Submersible	130
Parker	1963		Dry/Wet Well	285
16th Street	1967		Dry/Wet Well	700
Cherry	1966		Dry/Wet Well	535
South	1966		Dry/Wet Well	1,500
160th Street	1996		Submersible	130
16th PS No. 1	1998		Submersible	100
16th PS No. 2	1998		Submersible	100
142nd Street	1998		Submersible	2,280

Figure 2.2 shows the locations of the City of Sumner's existing pump station and manually controlled emergency overflows.

2.4 LOCATION, TOPOGRAPHY, AND SOILS

The regional topography has been developed by the natural drainage of the Stuck and Puyallup Rivers and major mudflows from Mount Rainier over the millennia. Due to these influences, the majority of the City of Sumner has a flat terrain with steep hills to the east and west.

Elevations in the valley range from 40 feet above mean sea level to 90 feet, based upon the 1929 National Geodetic Vertical Datum (NGVD) for the City of Sumner. Ground slopes typically range from 0 to 5 percent. The highest point within the city limits is approximately 680 feet above mean sea level near the eastern end of the city near Lake Tapps. Hillside slopes along both east and west of Sumner range from 20 to 70 percent. Figure 2.3 shows the planning area topography.

Parametrix, Inc.

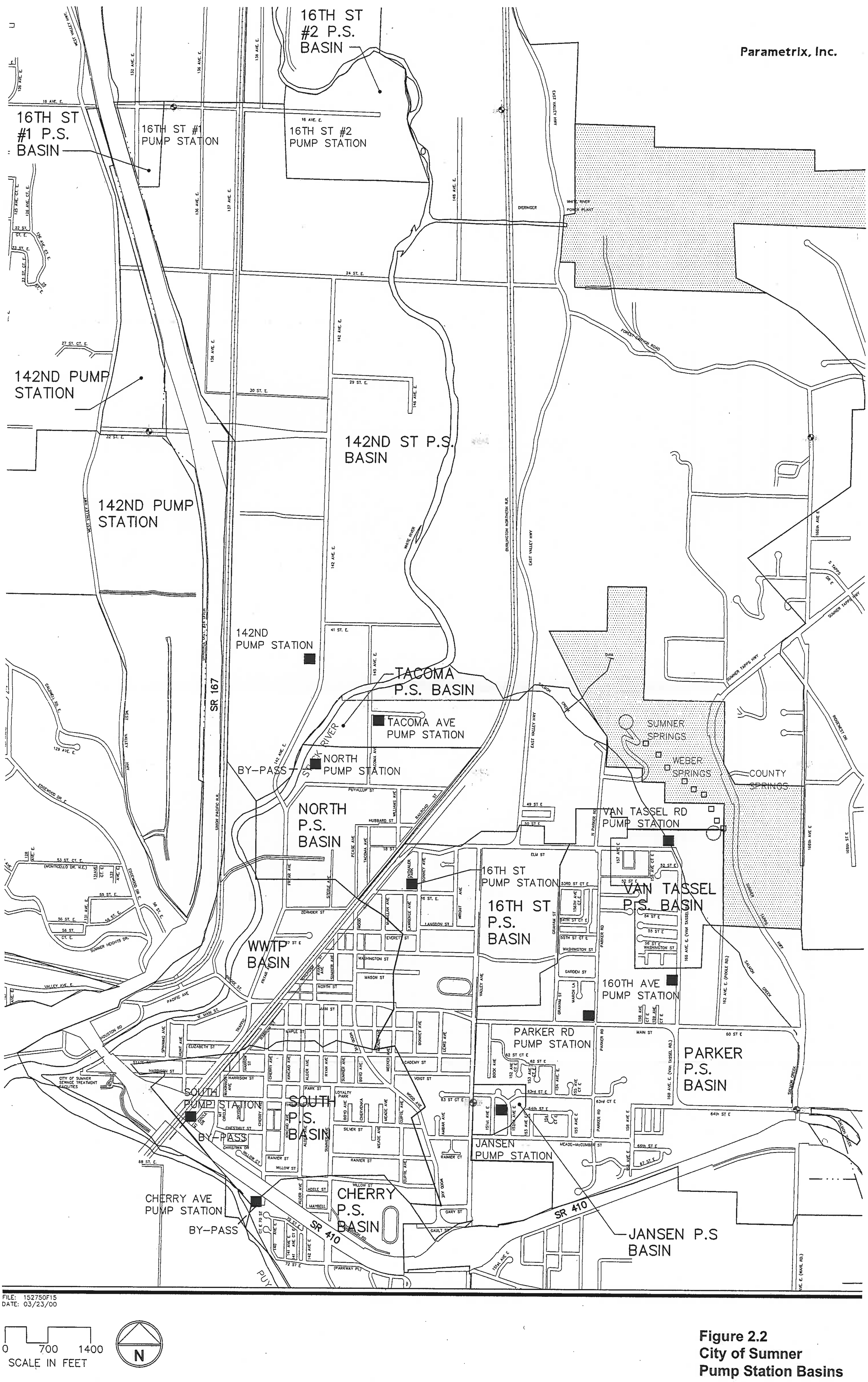

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Figure 2.2
City of Sumner
Pump Station Basins

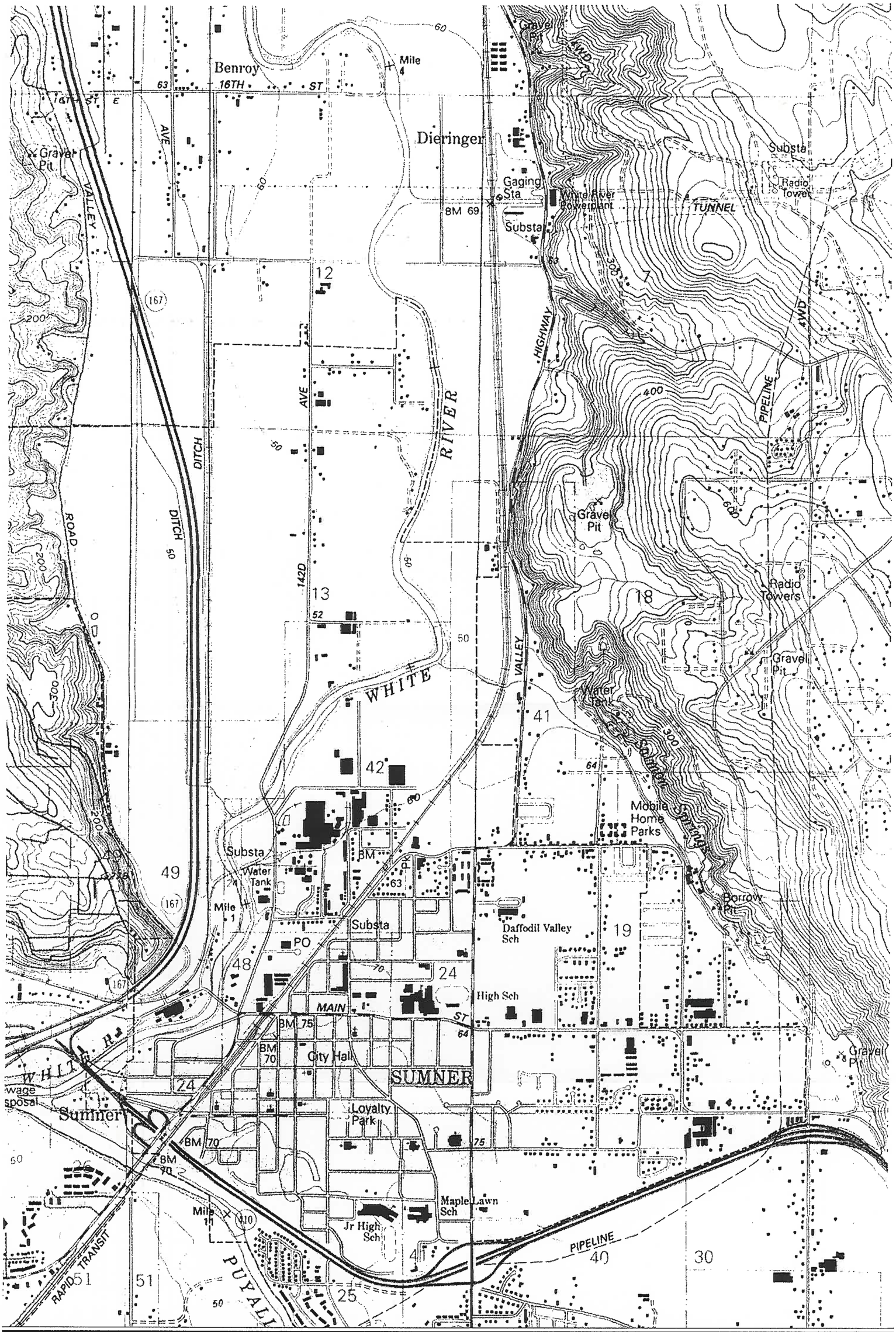

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Figure 2.3
City of Sumner
Topography

According to the U.S. soil Conservation Service, the general soil type in the Sumner valley area is classified as alluvial sediment. This type of soil is considered poor load bearing soil and highly susceptible to earthquake liquefaction due to the extremely high groundwater table in the valley areas. The soil types identified on the eastern hillside region are "Kapowsin" and "Alderwood," gravelly loams generally found on till plains. These classifications are composed of several primary soils, each with various characteristics and limitations. The soil type identified along the base of the eastern and western hillsides is classified as "Xerochrept," a till soil with high strength, which allows the areas to form steep cliffs.

Groundwater observation wells in the Sumner valley have shown that the groundwater levels range from 8 to 11 feet below the surface during dry-weather periods and 2 to 8 feet below the surface during wet-weather periods. Historically, excavations in the Sumner valley require trench dewatering and foundation support to properly construct deep to moderately deep underground gravity sanitary sewer and pump station improvements.

2.5 CLIMATE

Climate and weather are critical factors in wastewater system planning, design, and engineering. With respect to wastewater system planning, the amount of precipitation impacts the amount of infiltration and inflow within a system. Infiltration and inflow is defined as surface and/or groundwater that enters the sanitary sewer collection system and contributes to the total wastewater volume.

Summers in Sumner are mild and warm (average daytime temperature in the mid 70s) and winters are comparatively mild (average daytime temperature in the 40s). Precipitation is usually in the form of rain, with occasional snow in the winter. The City of Sumner averages 42 inches of precipitation annually with monthly variations from a low of 0.95 inches in August to a high of 6.65 inches in November. The prevailing wind is southerly to southwesterly most of the year. The following table indicates average precipitation and temperature for each month.

Table 2-2. City of Sumner Average Temperature and Precipitation

Month	Average Temperature (°F)	Average Precipitation (inches)
January	42.4	5.51
February	45.6	4.35
March	47.7	4.20
April	52.4	3.97
May	57.5	2.39
June	63.5	1.96
July	70.6	1.18
August	68.8	0.95
September	62.7	1.45
October	51.4	3.10
November	46.7	6.65
December	40.5	5.91

2.6 INDUSTRY

The City of Sumner has a number of industries such as Sonoco, Golden State Foods, and Western Wood Preserving that are located north of Elm Street. The City has also recently seen a rapid increase in the construction of warehouse-type facilities and businesses in the light industrial zoned area along 142nd Avenue East between the Stuck River and the northern Pierce County line. A copy of the current industrial user survey for the City of Sumner's collection system is included in Appendix A of this report.

The City of Sumner is served by both Union Pacific and Burlington Northern railway lines; however, the area is currently oriented toward automobile/truck access.

2.7 WATER SUPPLY

The City of Sumner owns and operates the water system for the city limits and the area of Pierce County south of the Puyallup River to approximately 96th Street East. Water supply is provided from four separate springs located within the City's watershed and two artesian wells. The spring sources are Sumner, Weber No 1, Weber No. 2, and County springs. The City's well sources are Cemetery and South. The protected watershed is located along the eastern edge of the city limits. Cemetery well is located near the southwestern edge of the city limits and South well is located beyond the current city limits south of State Route 410.

There are a number of private wells within the region. The exact number and location of private wells have not been defined.

3. POPULATION PROJECTION AND LAND USE DESIGNATIONS

3.1 INTRODUCTION

Population and land use information contains within this chapter is the basis for projecting wastewater volumes and sizing the collection system facilities discussed in Chapter 4. Wastewater volumes were projected using two independent methods:

- Service Area Population Method: Calculating the total service area wastewater flow based upon the number of residents within the Sumner urban growth area (UGA).

- Land Use Method: Calculating the total service-area wastewater flow based upon the type of land use and the percent build-out of land within the Sumner UGA.

The Service Area Population Method is a common tool for determining wastewater flow from a city or service area.

The Land Use Method is also a common method for determining the volume of wastewater generated within a portion of the service area or basin. By adding all individual basin flows together, the total flow from the City can be determined.

The Land Use Method was used to estimate wastewater flow and size the collection system facilities. The Service Population Method was used to verify the results of the hydraulic modeling program.

3.2 POPULATION

Since incorporation in 1891, the residential population of Sumner increased from 1,200 residents at the turn of the century to 8,900 residents in 1999, as shown in Table 3-1. The average annual growth rate has been approximately 3.2 percent since 1990. The City's Planning Department estimates a continued average annual growth rate of 3.5 percent over the next 25 years.

Table 3-1. City Population

Year	City Population	Population Change per Decade	Average Annual Population Change (%)
1950	2,816	–	–
1960	3,155	339	1.1
1970	4,325	1,170	3.2
1980	4,936	611	1.3
1990	6,459	1,523	2.7
1999	8,900	2,441	3.2

Table 3-2 is the population estimates for the City of Sumner through the year 2025 based upon data provided by the City of Sumner Planning Department.

Table 3-2. City Population Projection

Year	City Population	Population Change	Average Annual Population Change (%)
2000	9,211	331	3.5
2005	10,570	1,359	3.5
2010	12,554	1,983	3.5
2015	14,910	2,366	3.5
2020	17,708	2,798	3.5
2025	21,031	3,323	3.5

3.3 LAND USE, ZONING, AND SERVICE AREA

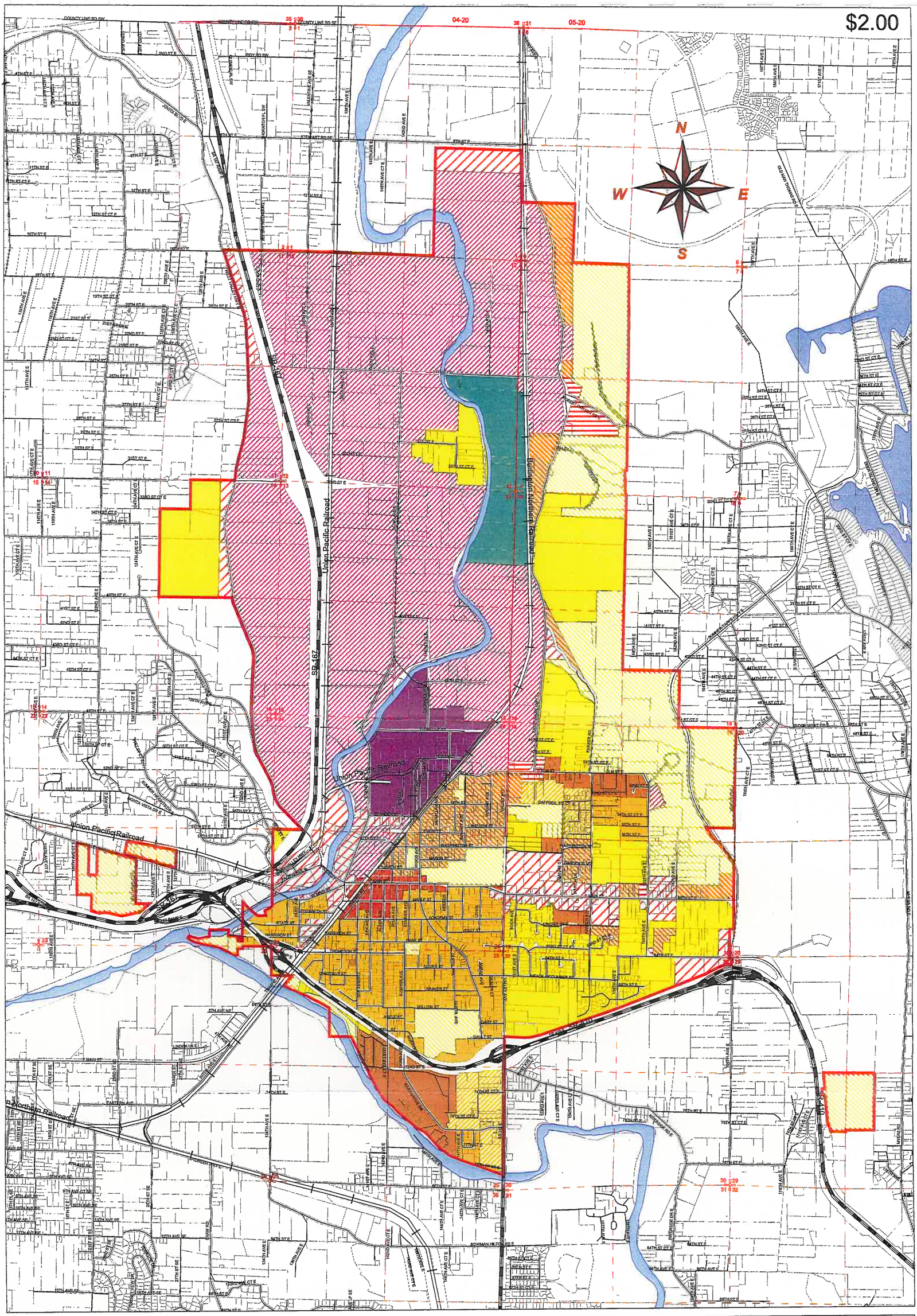
The City of Sumner established the Sumner UGA in 1997 in cooperation with Pierce County and surrounding communities. The Land Use Section (Section Q) of the *Sumner Comprehensive Plan Update* was developed in accordance with the Growth Management Act to address land use within the City. The Land Use Section has also been developed in conformance with countywide planning policies.

Existing land use includes residential, commercial, and industrial development, as shown in zoning and land use figures provided by the City of Sumner (see Figures 3.1 and 3.2). Table 3-3 summarizes the current zoning classifications.

Table 3-3. Current Zoning Classifications

Abbreviation	Description
LDR12	Low Density Residential – 12,000 sq. ft. lots single family residences – 2.72 units per acre
LDR8.5	Low Density Residential – 8,500 sq. ft. lots single family residences – 3.84 units per acre
LDR7.2	Low Density Residential – 7,200 sq. ft. lots single family residences – 4.54 units per acre
LDR6	Low Density Residential – 6,000 sq. ft. lots single family residences – 5.45 units per acre
MDR	Medium Density Residential – 10 units per acre includes trailer parks
HDR	High Density Residential – 20 units per acre includes apartment, condos, and townhouses
GC	General Commercial
NC	Neighborhood Commercial
CDB	Central Business District
M1	Light Manufacturing
M2	Heavy Manufacturing
AG	Agriculture includes forest lands and mining

$2.00



City of Sumner
Zoning Map

EXHIBIT A
Adopted February 2000
Per Ordinance No. 1916

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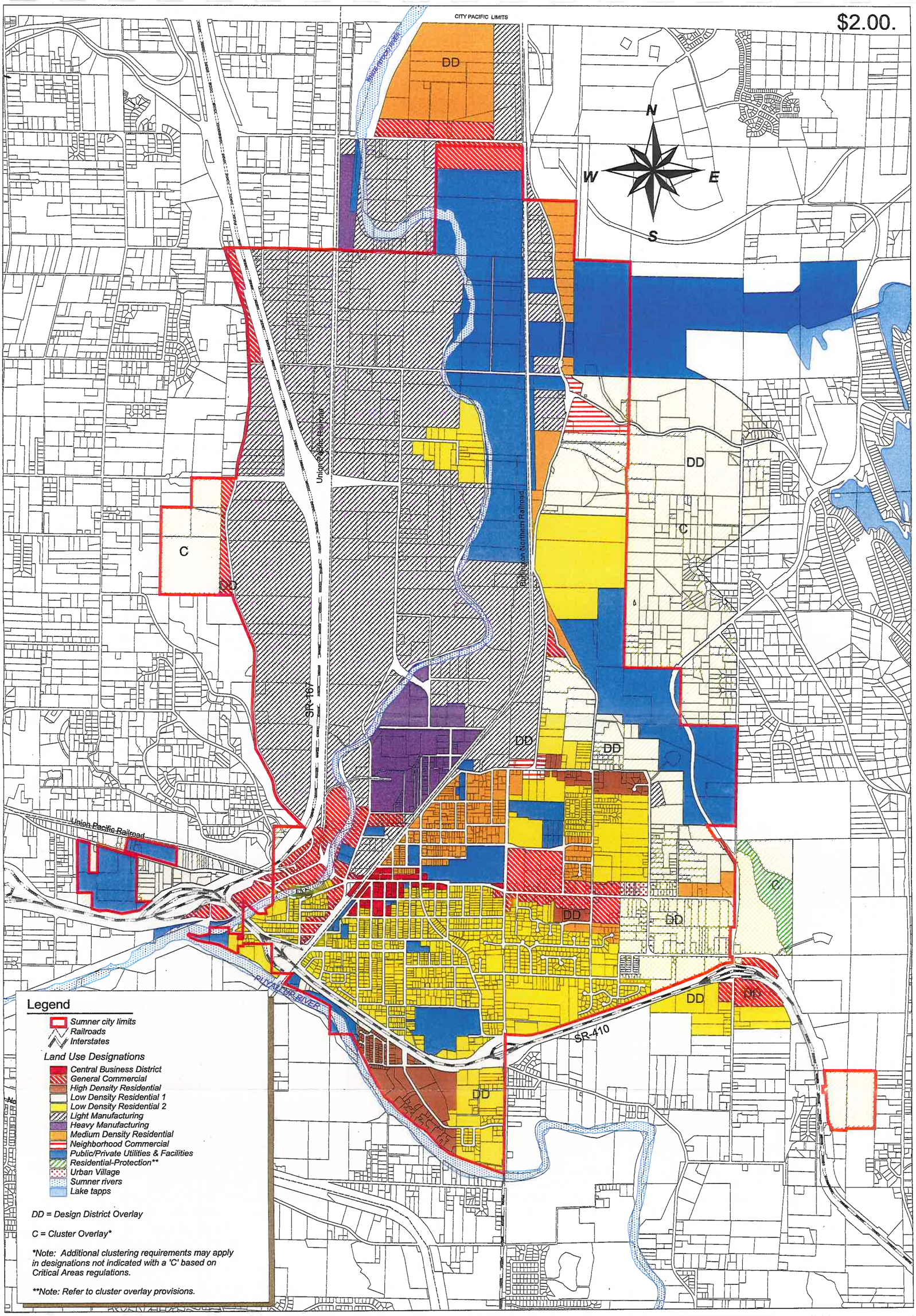
DISCLAIMER
The City of Sumner does not make any warranties or representations with regard to the accuracy of this map. No reliance should be placed upon this map for the location of any easement, street, road, highway or boundary line or other matter shown on this map, and no liability is assumed by the City of Sumner for the correctness thereof.

LEGEND

- Roads
- Rail Roads
- Interstates
- City Limits
- Rivers
- Lake Tapps

- Agriculture
- Central Business District
- General Commercial
- Neighborhood Commercial
- M1 - Light Industrial
- M2 - Heavy Industrial
- High Density Residential
- Medium Density Residential
- Low Density Residential - 6,000
- Low Density Residential - 7,200
- Low Density Residential - 8,500
- Low Density Residential - 12,000



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City of Sumner

DISCLAIMER
The City of Sumner does not make any warranties or representations with regard to the accuracy of this map. No reliance should be placed upon this map for the location of any easement, street, road, highway or boundary line or other matter shown on this map, and no liability is assumed by the City of Sumner for the correctness thereof.

Plotted on 4-13-00

Figure 3 - Land Use Map

COMPREHENSIVE PLAN
Amended

Source:
Sumner Community Development Dept.
1999

Wastewater flows generated in areas of the UGA that lie outside of the current zoning map were calculated using the land use designations taken from the City of Sumner *Comprehensive Land Use Plan* listed in Table 3-4. These areas include the following portions of the UGA:

- Along 166th Avenue East south of SR 410.
- The area bounded by East Valley Highway on the west, 166th Avenue East on the east, the City of Sumner watershed on the south, and 16th Avenue East on the north.
- The area bounded by 8th Street East on the south, the Pierce County line on the north, the Stuck River on the west, and East Valley Highway on the east.
- The area bounded by 148th Avenue East on the east, 137th Avenue East on the west, 16th Street East on the south, and 8th Street East on the north.
- The area bounded by Sumner-Tapps Highway on the west, 171st Avenue East on the east, 64th Street on the south, and 55th Street on the north.

Table 3-4. Land Use Classification

Abbreviation	Description
LDR1	Average of LDR12 and LDR 8.5 – 3.28 units per acre
LDR2	Average of LDR7.2 and LDR6 – 5.50 units per acre

The land use designation of the area owned by the City of Sumner bounded by the Stuck River on the west, East Valley highway on the east, 8th Street East on the north, and 40th Street East on the south was categorized as public land-use designation rather than the current agricultural zoning classification.

4. WASTEWATER FLOW PROJECTIONS

4.1 INTRODUCTION

Chapter 4 develops flow projections that are used to size individual capital facilities within the wastewater collection system. To project wastewater flow volumes, it was necessary to establish the following:

- Identify the existing peak day flow generated in the City of Sumner's service area.

- Estimate the components of the existing peak day flow, including residential/commercial and industrial wastewater flow, and system infiltration and inflow (I/I).

- Simulate the existing peak day wastewater flow conditions using the Land Use Method, and compare these wastewater flow projections to existing flow data at the wastewater treatment plant.

- *Land Use Method* – Wastewater flow projections were prepared by multiplying a given wastewater flow per acre (based upon land use) by the size of a basin. Wastewater flows using the Land Use Method are generated as a product of the system hydraulic analysis conducted in Chapter 5. The hydraulic analysis computes wastewater flow projections for the entire service area and for individual basins contained within the service area. The Land Use Method of wastewater flow projection was used to size the City of Sumner's collection system facilities.

- Determine the existing per capita peak day wastewater flow originating from residential/commercial users. The per capita peak day wastewater flow is used to validate projected future wastewater flows simulated by the Service Area Population Method.

- *Service Area Population Method* – Wastewater flow projections for the entire service area were established by multiplying the number of people in the service area by an estimated peak day wastewater volume per capita. The number of people within a service area is directly proportional to the volume of wastewater discharged into the wastewater collection system and ultimately to the wastewater treatment plant.

- Systems that have a large percentage of commercial and industrial land use must also be considered independently from the service area population since employed personnel most likely live outside of the community but contribute to the community's wastewater flow during the business day. The City of Sumner has experienced recent industrial and business development along 142nd Avenue between the Stuck River and the northerly Pierce County line. Development of this commercial and industrial land will affect the total wastewater volumes generated within the service area.

Future wastewater flow projections calculated using the Population Method were compared to projections using the Land Use Method to validate the system hydraulic analysis.

4.2 EXISTING PEAK DAY WASTEWATER FLOW

The City of Sumner's wastewater treatment plant operational reports were investigated to determine the existing peak day flow. The peak day wastewater flow was then used to verify the land use flow projection calculated by the hydraulic modeling program.

On January 2, 1997, the Sumner wastewater collection system experienced a peak day flow of 2.70 mgd (see Operational Report, Appendix B).

4.2.1 Peak Day Wastewater Components

The components of the existing peak day flow were estimated using the City of Sumner's I/I reports, water usage records, and industrial survey information. The components were estimated in order to calculate an existing service area wastewater flow for the City of Sumner's collection system (Section 4.5). The existing peak day flow is comprised of residential/commercial and industrial wastewater flows along with system infiltration and inflow.

The peak day I/I and industrial flow component information is summarized below:

- The City of Sumner's estimated peak storm I/I component is 1.6 mgd (see Appendix B).
- The industrial flow component is 0.15 mgd, based upon the City of Sumner's water records and industrial survey (Appendix D).

Using the above information, an existing peak day wastewater flow volume was determined using the following formula:

(Peak Day Residential/Commercial Wastewater Flow) = (2.7 mgd) – (1.6 mgd) – (0.15 mgd)

Peak day residential/commercial wastewater flow was then estimated to be 0.95 mgd. The per capita peak day flow has been calculated in Section 4.5 using this information.

4.3 LAND USE METHOD

Chapter 3 established the land-use components used to project wastewater flow in the City of Sumner wastewater collection system. The following steps were used to project total collection system flow:

- Separate the City of Sumner's wastewater collection system into smaller service areas defined by the City's existing pump station basins.
- Estimate the volume of wastewater flow from each of the land-use components.
- Estimate the volume of I/I flowing into the system from each of the pump station basins.
- Analyze the City's collection system using a computer program specifically written to produce a hydraulic model for a wastewater collection system based on land use. Parametrix selected "HYDRA" for the modeling program. Details of the computer model are contained in Chapter 5.

4.3.1 Collection System Basins

The total collection system was subdivided into basins in order to assess the existing and future capacities of the collection system facilities within the individual basins. Parametrix selected the land area that can be served by an existing pump station as a basin.

The boundaries for the area flowing into each pump station were identified using the City of Sumner's facilities map shown in figure 4.1. Using AutoCAD, the total area contained within each of these basin boundaries was determined. Table 4-1 summarizes each of the City's pump station boundary areas.

Table 4-1. Pump Station Boundary Areas

Basin	Area (ac)
Tacoma	44.7
North	126.7
Van Tassel	94.5
Jansen	14.3
16th	266.2
WWTP	173.0
Cherry	283.9
South	199.6
Parker	258.1
142nd	791.0
16th PS-1	18.2
16th PS-2	67.4

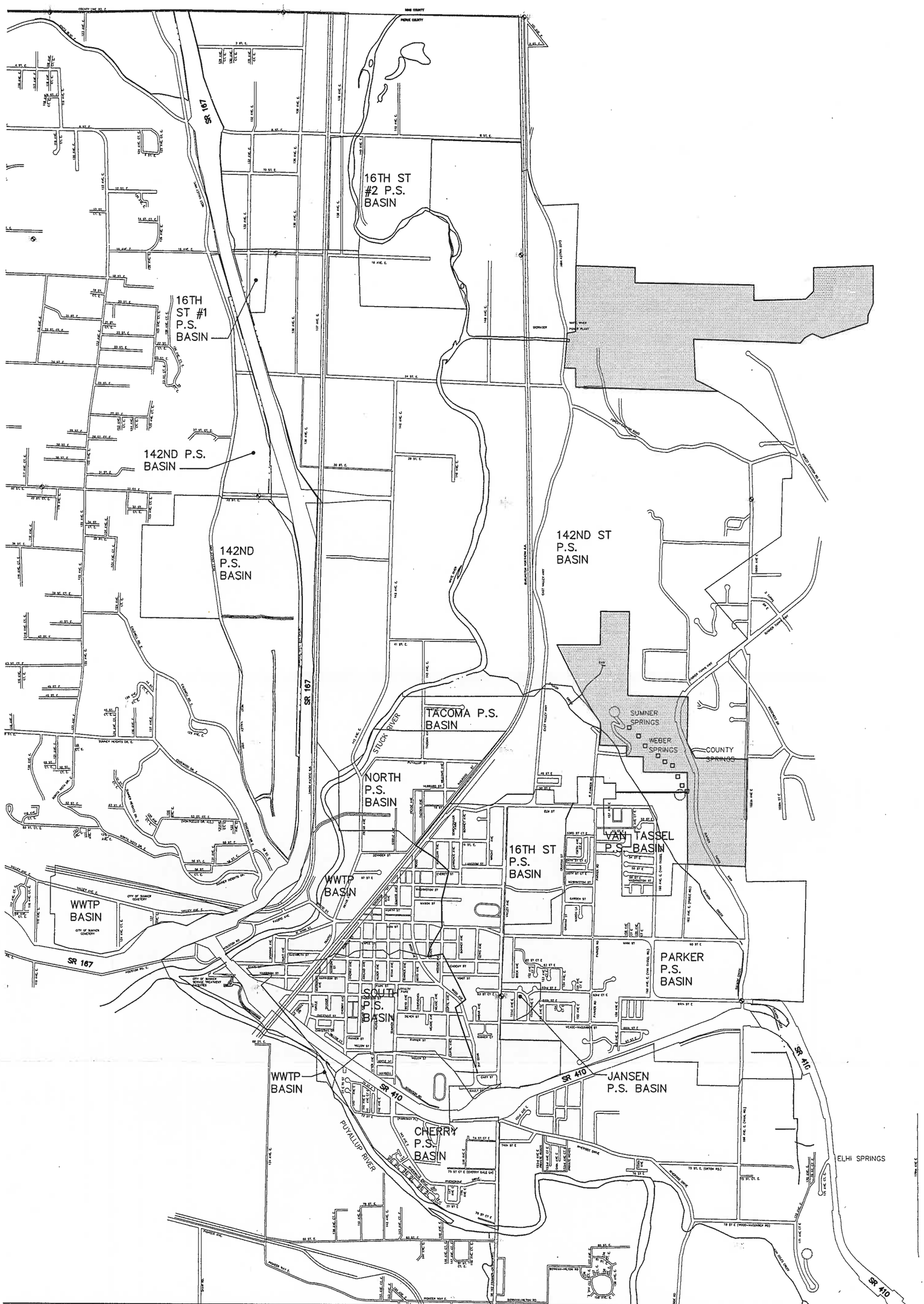

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Figure 4.1
Collection System Basins

4.3.2 Land Use Wastewater Flow Estimates

While Chapter 3 provided the method to establish the flow volume projection, this chapter will estimate the actual volume of peak day wastewater produced for each of the land uses on a per acre basis.

Table 4-2 summarizes the flow per acre from each of the land-use designations.

Table 4-2. Wastewater Flow Estimates Based Upon Land Use

Land Use[(a)]	Flow (gpad)
LDR12	625
LDR1	***750***
LDR8.5	880
LDR7.2	1,050
LDR2	***1,150***
LDR6	1,250
MDR	2,300
HDR	4,600
GC	1,500
NC	1,500
CBD	1,500
M1	1,300
M2	1,300
AG	250
UV	***Variable***

[(a)] For land-use abbreviations, see Tables 3.3 and 3.4.

Peak day wastewater produced from residential land-use classifications were calculated using the following assumptions and equation:

- 85 gpcd = daily wastewater production
- 2.7 capita per single-family-housing unit
- Peak Day Wastewater Production (gpad) = 230

(Units per Acre) x (Wastewater Gallons per Capita per Day) x (Capita per Unit)

The contribution of I/I was assumed to be a separate component of the wastewater flow.

For comparison purposes, the Department of Ecology's *Criteria for Sewage Design* standards are 100 gpcd with a minimum of 3 people per unit. These design standards include normal infiltration and inflow. The *1989 Sewer Collection system comprehensive Plan* established design standards of 100 gpcd and 2.5 people per unit.

For the complete calculation of land-use flows, please refer to the spreadsheet in Appendix A of this report.

4.4 STORMWATER INFILTRATION AND INFLOW ESTIMATES

The I/I estimates are based upon the City of Sumner's annual I/I report. The City of Sumner assumes the difference between wet- and dry-weather pump station run time constitutes the total storm-induced I/I for the collection system. Collection system I/I estimates were used, along with pump station basin areas, to determine a per acre I/I distribution for each of the pump station basins.

The City of Sumner's wastewater collection system conveys stormwater in the form of I/I to the wastewater treatment plant during wet-weather conditions.

Stormwater infiltration is groundwater that seeps into the wastewater collection system through pipe cracks, faulty joints, and faulty manholes. The quantity of water that may infiltrate into a sewer system is rather indeterminate and will generally increase with the age of the sewer system.

Stormwater inflow consists of water that may enter the wastewater collection system through illegal connections such as roof gutters, area drains, catch basins, and unplugged clean-out openings.

4.4.1 Total Infiltration and Inflow

The total infiltration and inflow for the City of Sumner's collection system was estimated by comparing the wet- and dry-weather pump station run times taken from the City's I/I report.

The wet- and dry-weather pump station run times for the years 1996, 1997, and 1998 were compiled into a spreadsheet (see Appendix B). The difference between the wet- and dry-weather flows for the sum of all the pump stations was assumed to be the total peak I/I.

This analysis assumes that the total peak day I/I is the difference between wet and dry weather, but infiltration may exist during the summer due to the high localized groundwater table and the age of the existing system. Summertime infiltration would have to be identified in a detailed I/I study outside the scope of this report.

As outlined in Appendix B, the total peak I/I for the City of Sumner's collection system was calculated at approximately 1.6 mgd.

4.4.2 Infiltration and Inflow Distribution

A spreadsheet was prepared (see Appendix B) comparing the pump station run times for wet and dry weather to determine an appropriate distribution of I/I throughout the City of Sumner's individual pump station basins as summarized below:

- The difference between the high wet-weather and low dry-weather flows was assumed to be the I/I contribution from that pump station basin.

- The sum totals of I/I from the individual pump station basins were assumed to be the total collection system I/I.

- Percent of I/I contribution from each station was determined by dividing I/I flow per each basin by a total I/I flow of all basins.

- Three years of data was combined to determine an average value of I/I (mgd) for each pump station basin.

Table 4-3 is a summary of the I/I percentage and total I/I from each pump station per day. For a more complete calculation, see Appendix B of this report.

Table 4-3. Wastewater Pump Station Infiltration and Inflow Estimate

Station	Average I/I as a Percent of Total Basin I/I (%)	I/I (mgd)
Tacoma	2.0	0.03
North	3.0	0.05
Van Tassel	4.0	0.06
Jansen	1.0	0.02
16th and WWTP	37.0	0.60
Cherry	10.0	0.16
South	16.0	0.26
Parker	27.0	0.43
Total I/I in City System (mgd):	**100%**	**1.61 mgd**

Infiltration and inflow records were not available at the time of preparation of this plan amendment for 160th Street, 16th Street PS No. 1, 16th Street PS No. 2, and 142nd Street Pump Stations previously listed in Table 2-1. The pump stations listed are new, and the City does not have sufficient records on winter and summer flows to be able to conclude a significant impact from I/I. The City does not appear to experience noticeable I/I in these systems. Apparently, the collection pipelines connected to these pump stations are just beginning to serve customers in the 142nd Street industrial area. It is anticipated that as more sanitary sewer users access the system and gravity collection systems are extended to industrial properties that I/I will increase to these pump stations. An I/I value of 500 gpad was assumed for any properties not currently being served by the City's wastewater collection system.

Using the information from Tables 4-1 and 4-3, a distribution of I/I on a per acre per day basis was determined for each of the collection system basins. Table 4.4 summarizes this distribution.

Table 4-4. I/I Distribution

Basin	Area (ac)	I/I (mgd)	I/I (gpad)
Tacoma	44.76	0.071	1,600
North	126.72	0.070	550
Van Tassel	94.52	0.053	600
Jansen	14.27	0.012	800
16th and WWTP[(a)]	439.17	0.829	1,900
Cherry	283.90	0.132	500
South	199.62	0.090	500
Parker	258.15	0.516	2,000

[(a)] Due to the lack of pump station data for the WWTP basin, the basin area was combined with the 16th Street basin to determine an I/I distribution.

4.5 SERVICE AREA POPULATION METHOD

The service area population wastewater flow was calculated to verify the future wastewater flow projected through the Land Use Method by the hydraulic modeling program. To project total population flows for the City of Sumner, a current population flow was established according to the following formula:

- January 2, 1997, peak-day flow of 2.7 mgd
- Three-year average I/I of 1.6 mgd
- 1998 City of Sumner Population of 8,900
- December 1998 peak-industrial flow of 0.15 mgd

$$\frac{(\textit{Total Peak Average Wastewater Flow}) - (\textit{Total Stormwater I / I Flow}) - (\textit{Industrial Flow})}{(\textit{Population})} = \frac{(2.7\ mgd) - (1.6\ mgd) - (0.15\ mgd)}{8{,}900}$$

The current peak day wastewater flow based on population is 104 gpcd, representing residential and commercial projected flow.

4.6 TOTAL PROJECTED WASTEWATER FLOW

The existing peak day estimated wastewater flow in the service area was calculated using a computer program that features hydraulic modeling capabilities. The computer program used by Parametrix, Inc. to perform the hydraulic modeling is "HYDRA," which uses the Land Use Method to determine total peak day wastewater flow generated throughout the service area. Specific details of the HYDRA program are contained within Chapter 5.

The HYDRA model calculates the theoretical peak-day flow and the peak instantaneous flow expressed in gallons per minute. The result of the HYDRA model is then compared to actual historical wet-weather wastewater flow at the Sumner treatment plant to verify that the engineering assumptions included within the model are reasonable. If the results of the HYDRA model are substantially different than actual wastewater flows at the treatment plant, the land-use-wastewater flow assumptions entered into the model have to be modified.

Parametrix, Inc. also compared the results of the HYDRA model to the wastewater flow projections calculated using the Population Method as discussed earlier. Comparison of the wastewater flows also assumed that build-out of the service area would be equal to the population increase experienced by the City over the next 25-year planning period. The results of the flow projections are included in Table 4-5.

Table 4-5. Wastewater Flow Projections (peak day)

Source	Average Annual Growth Rate (%)	Current Peak Service Flow (mgd)	Projected Peak Flow (mgd)
HYDRA Flow Simulations	Land Use	3.1	5.5 (build-out)[a]
WWTP Base Flow [b]	3.5	2.7	6.4 (year 2025)
WWTP Base Flow [b]	3.0	2.7	5.7 (year 2025)
Population[c]	3.5	2.7	5.3 (year 2025)

[a] Using existing peak day flow and projecting flow increases to match the projected population increase of 3.5 percent per year, the collection system will reach build-out peak day flow in 23 years. Assumes correction of excessive I/I to approximately 500 gpad.

[b] Assumes existing WWTP peak day flow projected forward by growth rate listed. Assumes that the current rate of I/I is not reduced.

[c] Population projected flow was determined using a projected population of 21,033 (year 2025), a total service area of 4,336 acres, and an industrial flow of .964 mgd. The industrial flow volume for this calculation was taken from the hydraulic model.

Upon review of the differing flow projections, it appears that the wastewater flow assumptions based on land use are reasonable.

5. SYSTEM EVALUATION

5.1 INTRODUCTION

The condition and capacity of the City's existing collection system facilities is evaluated in this chapter. This evaluation has been separated into the following sections:

- Identified System Deficiencies: Identify deficiencies in the existing collection system not attributed to a capacity deficiency.
- Hydraulic Capacity: Calculate the hydraulic capacity of the existing collection system and compare the conveyance capacity to existing and future wastewater flow conditions.
- Collection System Extension: Address extension of the City's wastewater collection system into portions of the UGA that are not currently being served.
- Recommended System Improvements: Recommend improvements to the existing collection system that will correct existing deficiencies and provide sufficient capacity for service to existing and future wastewater customers.

5.2 IDENTIFIED SYSTEM DEFICIENCIES

Existing collection system deficiencies are indicators of inadequate capacity, overloaded pipe segments, or needed system repairs. During an interview with City personnel, known system deficiencies were identified in the existing collection system facilities, including:

- Areas of periodic/repetitive maintenance
- Collection pipeline problems
- Pump station problems
- Hydraulic intertie of Parker, Van Tassel, and 160th Street Pump Stations

5.2.1 Collection Pipeline Deficiencies

Interviews were conducted with City personnel to identify deficiencies within the collection system pipeline. A map was prepared showing deficiency locations and severity. Also included were areas that required ongoing periodic maintenance, such as jetting or areas that experienced surcharging during wet weather. Figure 5.1 shows these identified areas. Table 5-1 lists the approximate locations and collection pipeline deficiencies as reported by City personnel.

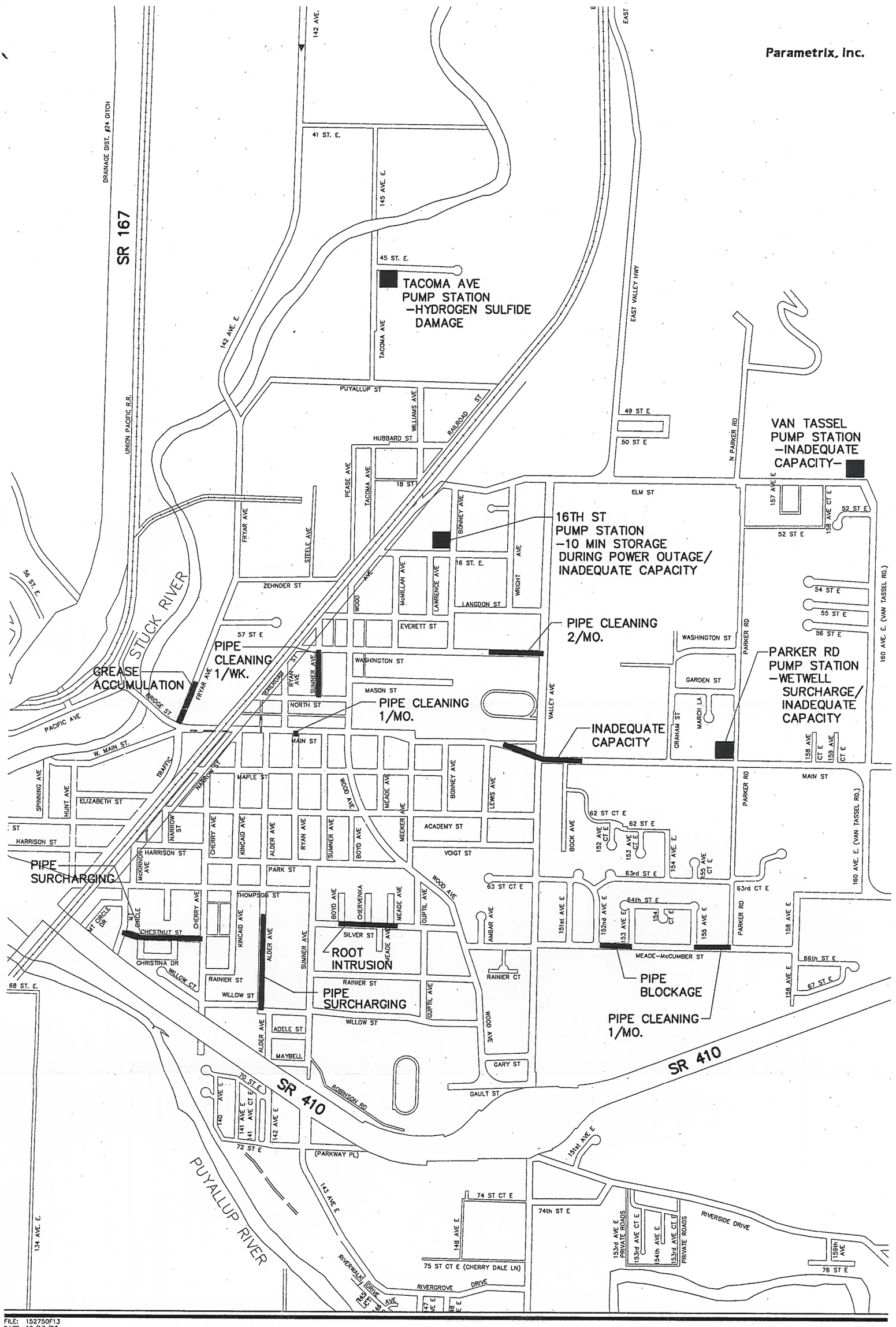

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Figure 5.1
City of Sumner
Identified Deficiencies

Table 5-1. System Collection Pipeline Deficiencies		
Street	**Cross Street Locations**	**Deficiency**
Chestnut	McKinnon and Cherry	Pipeline Wet Weather Surcharge
Alder	Willow and Thompson	Pipeline Wet Weather Surcharge
Valley	Main	Pipeline Wet Weather Surcharge
Fryar	North of Bridge Street	Belly in pipeline, grease accumulation
Main	East of Ryan	Solids disposition, jetting
Sumner	North and Washington	Solids disposition, jetting 1/week
Mead-McCumber	East of Parker	Solids disposition, jetting 1/month
Mead-McCumber	East of 152nd Avenue	Solids disposition, blockage
Washington	West of Valley	Solids disposition, jetting 1/quarter
Elm	E. Valley Highway	Shattered pipes
Silver	East of Sumner	I/I, roots

5.2.2 Identified Pump Station Problems

It is the City personnel's opinion that the pump stations considered to be problems are Parker, North, Tacoma, and 16th Street. The following problems were identified by City personnel during the interview process:

- 16th Street Pump Station wet well overflows after a 10 minute power outage.
- Hydrogen sulfide (H_2S) corrosion problems at the Tacoma Pump Station.
- Capacity is inadequate at the Parker Pump Station.
- Grease accumulation occurs in the wet well at the North Pump Station.
- Capacity is inadequate at the Van Tassel Pump Station.

5.2.3 Identified System Improvements

City personnel also identified additional improvements for the wastewater collection system to improve system reliability. The following items are the improvements identified by personnel during the interview process:

- Install onsite generators at South, North, Tacoma, and Cherry Street Pump Stations.
- Install either level or flow meters in the existing pump stations to increase the City's ability to monitor the system better (currently only 142nd Street, 16th Street PS-1, and 16th Street PS-2 have both capabilities).
- Improve system wiring and standardize where possible at all pump stations. This will also allow for development of a spare parts inventory.

- Update and standardize older motor starters and electrical controls.
- Redesign Jansen Pump Station control panel and piping to provide a quick disconnect for existing motor removal.
- Install isolation valves to isolate flow entering all stations.
- Install valves between Parker and Van Tassel gravity mains to control surcharging.
- Improve site access to South and Cherry Pump Stations.

5.2.4 Pump Station Basin Intertie

Parametrix and City personnel have also identified a hydraulic intertie in the system (see Figure 5.2). A system of gravity overflow pipe segments link the Parker, Van Tassel, and 160th Pump Stations hydraulically.

During peak wet-weather flows, these overflow pipes allow excess flow in the Parker Pump Station basin to enter the Van Tassel basin. Excess flows from the Van Tassel basin then enter the 160th Street Pump Station basin, which then pumps wastewater back to the Parker basin through a 4-inch force main. During peak wet-weather flows, wastewater is pumped in a circle causing excessive pump run times and an assumption that these pump stations are actually experiencing a higher volume of I/I than may actually exist.

5.3 HYDRAULIC CAPACITY

The hydraulic capacity of the existing wastewater collection system was analyzed using the computer software program "HYDRA." HYDRA simulated existing and future wastewater flows based upon engineering assumptions entered into the computer program. By comparing the existing collection system capacity with simulated existing and future flows, capacity deficiencies in the collection system can be identified.

HYDRA was developed by Pizer, Inc. of Washington. It is a flexible program developed for analysis of storm and wastewater systems. Its menu-driven format allows AutoCAD and GIS integration, and the command files are user-friendly. Flow criteria and development scenarios can be developed in several ways, and each pipe segment can be analyzed for gravity or pressure flow conditions. Pump stations may be modeled for one-, two-, or three-pump scenarios. For this analysis, firm pumping capacity was assumed at each station. Firm pumping capacity assumes the largest pump at each station is out of service. For example, on a duplex system it was assumed only one pump was operating.

The pump station basis areas were divided into smaller sub-basins, and link data from the City's existing facilities maps was compiled. A "link" is the upstream manhole and the reach, or length, of pipe downstream to the next manhole. The link data includes length, ground elevation upstream and downstream, invert elevations upstream and downstream, pipe diameter, and pipe material.

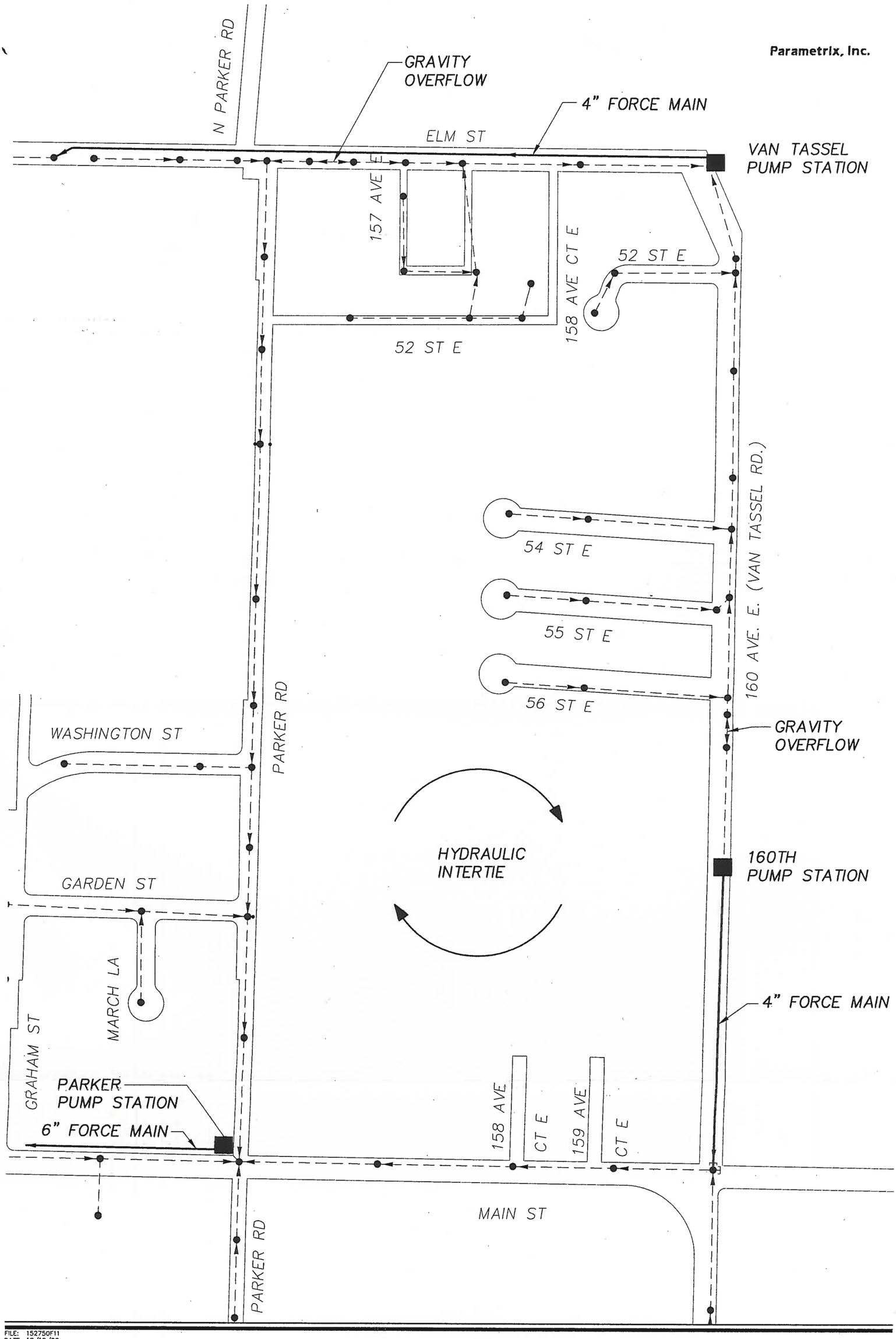

Figure 5.2
Parker-Van Tassel-160th Street Basin Intertie

The system data is entered through command and design parameter menus according to the requirements of the HYDRA program. HYDRA utilizes various commands for sanitary sewer analysis and modeling. Existing and proposed pipe criteria must be defined. Among these criteria are:

- Pipe roughness parameters
- Flow depth to pipe diameter (d/D)
- Minimum pipe slope
- Minimal flow velocity
- Flow injection method

HYDRA uses two different methods to "inject" flows into the system. These flows can be calculated by either population (per capita) or by land use (zoning).

In the population flow method, the number of people living within a region of the sewer system is entered along with an average flow per person per day (generally 80-100 gallons/day). HYDRA then compares the per capita data with the "link" date to determine the amount of flow through each pipe.

In the land-use flow method, each of the City's zoning codes is assigned a flow per acre value. These flows are based on the average number of houses that could be built within an acre of land, the average number of people per house, and the average flow per person. HYDRA then compares the land-use data with the links data to determine the amount of flow through each pipe. As previously discussed in Chapter 4, the method selected by Parametrix for this analysis was the Land Use – Sewer Service Basin Intersection Method.

The intersection of the established land use with the delineated sub-basin is then considered by HYDRA to be the flow from that sub-basin. HYDRA uses an established or input diurnal curve to "inject" the flow into the system. These flows are injected at select points, called nodes, within the sewer system and HYDRA calculates travel time to the link. The process then repeats until the total flow of the system reaches the "outfall" point. The last pipe segment into the treatment plant was chosen as the outfall point for this analysis.

The HYDRA model for the City of Sumner does not evaluate every segment of a wastewater collection system but models all of the main trunks of the system. Main trunks are considered pipe segments 8 inches in diameter or greater connected to individual collection lines serving less than 20 acres, and collection pipeline that could be extended to serve portion of the UGA that are not being services. These segments were generally located along the northern and eastern edges of the City's existing system.

5.3.1 Existing Collection System, Existing Wastewater Flows

The initial hydraulic analysis of the City of Sumner wastewater collection system identified system deficiencies that are attributed to capacity. The hydraulic analysis assumed existing wastewater flow conditions simulated by the HYDRA computer program. Existing flows were simulated by estimating the current percent of land build-out for each portion of the service area.

Parametrix established the percent of build-out within each of the land-use areas through visual inspection of City of Sumner aerial photographs that were prepared by Nies Mapping Group in the summer of 1999.

The hydraulic analysis of the current wet-weather flow conditions identified surcharging in the following basins and pipe segments (see Figure 5.3):

- Parker Pump Station surcharged the following segments due to inadequate station capacity:
  - North along Parker Road from Main to Garden Street.
  - The first pipe segment south of the pump station at Main and Parker Road.
  - The segments at the intersection of 63rd Street East and Parker Road.
  - The pipe segment from Parker Road east along 63rd Street East.
  - The segments west along Main Street between Parker Road and Graham Street.
  - The segments from Parker Pump Station east along Main to 160th Avenue East, then south to 64th Avenue East, then east to the end of the analysis.
- 16th Street Pump Station surcharged the following segments:
  - From the pump station both north and south along Bonney Avenue due to inadequate pump station capacity.
  - East along 16th Street East to Wright Avenue, then south through the high school, then east to Valley, then south to 63rd Street Court East due to contribution from the Parker Pump Station.
  - East along Wright Avenue to Valley, then north to Elm, then east to the end of the analysis due to the existing pipe capacity and contribution from the Van Tassel Pump Station.

The hydraulic analysis also identified the following pump stations with existing capacity less than existing peak day wet-weather wastewater flows.

- Parker Pump Station:
  - Firm pumping capacity of the station is 285 gpm (0.64 cfs)
  - Existing peak day wet-weather flows entering the station are estimated to reach 954 gpm (2.13 cfs)
- 16th Street Pump Station:
  - Firm pumping capacity of the station is 700 gpm (1.56 cfs)
  - Existing peak day wet-weather flows entering the station are estimated to reach 1,332 gpm (2.97 cfs)

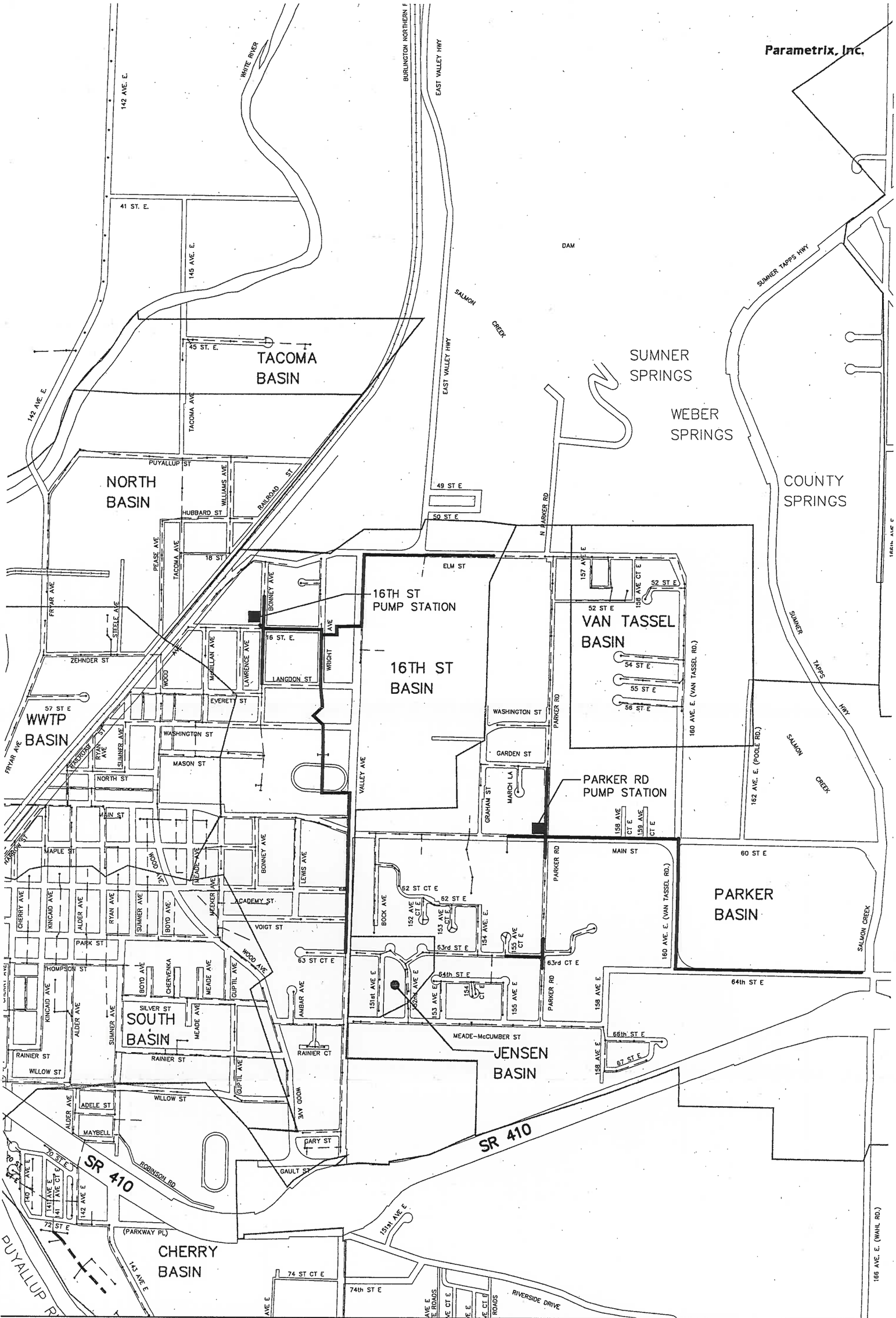

Figure 5.3
System Surcharging Under Existing Flow Conditions
City of Sumner

- Van Tassel Pump Station

  - Firm pumping capacity of the station is 135 gpm (0.30 cfs)

  - Existing peak day wet-weather flows are estimated to reach 321 gpm (0.72 cfs)

- HYDRA was also instrumental in analyzing pipeline segments identified by City personnel as potential problems. The following areas of concern are described earlier in this chapter (Section 5.2.1):

  - HYDRA did not indicate any surcharging of the pipe segments along Alder north of Willow as reported by City personnel. It is likely that surcharging is being caused by an obstruction in the pipe.

  - HYDRA indicates a reverse slope situation in the pipe segment along 158th Avenue and Mead-McCumber. The available City data/map may be incorrect and verification may be necessary. The segments downstream of this site have been described as needing jetting monthly, which may indicate that a reverse slope condition does exits.

  - HYDRA did not indicate any surcharging along Chestnut between McKinnon and Cherry at existing flow conditions. It is likely that the reported line surcharging is being caused by an obstruction in the pipe.

  - City personnel indicated the pipe segment along Washington requires frequent jetting and shows signs of surcharging. HYDRA indicated surcharged all along these segments due to undersized pipe segments downstream from the Sumner Presbyterian Church north to Wright Avenue, then west along 16th Street to the pump station. Routine surcharging of the downstream pipe segments could result in solids deposition in the Washington pipe segments.

5.3.2 Existing Collection System, Future Wastewater Flows

The second phase of the hydraulic analysis identified deficiencies in the existing collection system assuming future build-out of the service area (UGA).

When analyzing service area for future build-out conditions, the I/I allowance for 16th Street, the Wastewater Treatment Plant, and Tacoma and Parker Pump Station basins were all assumed to be 500 gpad. This assumption is based upon the premise that these basins will undergo I/I investigation, maintenance, and repairs to correct the existing system deficiencies, thereby lowering each basin's estimated I/I per acre.

Pump stations with insufficient capacity for future wastewater flows are:

	Existing Capacity (cfs)	Projected Future Flow (cfs)
Parker	0.63	3.98
Van Tassel	0.30	0.81
16th Street	1.56	3.11
Cherry Street	1.19	2.63

	Existing Capacity (cfs)	Projected Future Flow (cfs)
South	2.48	3.89
Tacoma	0.39	0.83
142nd Street	5.08	11.52
16th PS-1	0.17	0.08
16th PS-2	0.23	0.35

Gravity collection mains with insufficient capacity for future wastewater flows are:

- The 10-inch pipe segments east along 16th Street beginning at the 16th Street Pump Station to Wright Avenue, then south along Wright Avenue to between Langdon and Washington Streets.

The areas identified by City personnel with deficiencies or routine maintenance problems were again reexamined with the following conclusions:

- HYDRA did not indicate any surcharging of the pipe segments along Alder north of Willow even under future build-out flow conditions indicating an obstruction may exist in the pipeline.

- HYDRA did not indicate any problems along Chestnut between McKinnon and Cherry at future build-out flow conditions indicating an obstruction may exist in the pipeline.

- The surcharging in the 10-inch pipe segment along Washington Street, near Wright Avenue, increased with the increasing flows as expected due to the undersized pipe segments downstream.

5.3.3 Future Collection System Extensions, Future Wastewater Flows

A product of the hydraulic analysis included the configuration and sizing of future collection system improvements necessary to serve portions of the UGA not currently connected to the City of Sumner wastewater system. Existing system capacity information generated in Sections 5.3.1 and 5.3.2 was used to decide where collection system extensions could occur with the least amount of impact to downstream collection system facilities. As shown on Figures 5.4 and 5.5, extensions of the City's collection system are recommended where existing collection pipelines have sufficient hydraulic capacity to accommodate wastewater flows generated by build-out of the UGA. Once the collection system configurations were established as shown on Figures 5.4 and 5.5, the HYDRA computer program was used to size the various gravity pipelines based upon the wastewater flow volumes anticipating build-out of the individual basins. Through this iterative process, the following was determined:

- The region west of SR 167 near the City's cemetery (Cemetery Basin) should be connected to the existing collection system across Bridge Street.

- The area at the southeastern edge of the City's service area (Parker Basin), south of SR 410, should be connected to the existing system directly to the Parker Pump Station.

- The area east of Sumner-Tapps Highway between 64th Street East on the south and 55th Street East on the north (Parker Basin) should connect to the existing system directly to the Parker Pump Station.

Parametrix, Inc.

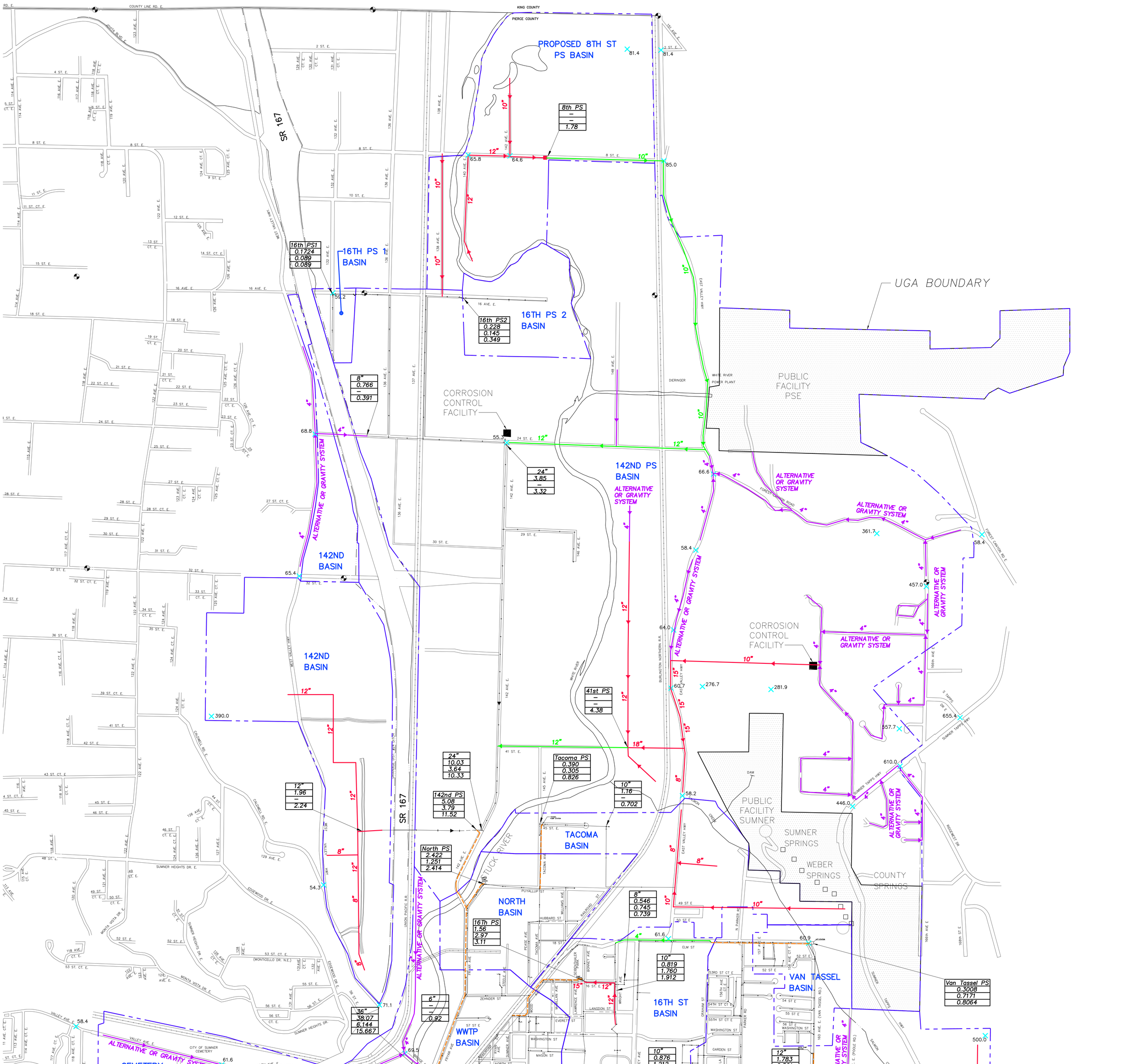

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Figure 5.4
UGA - Impacts on
Existing Collection System - Alt. No. 1
City of Sumner

Parametrix, Inc.

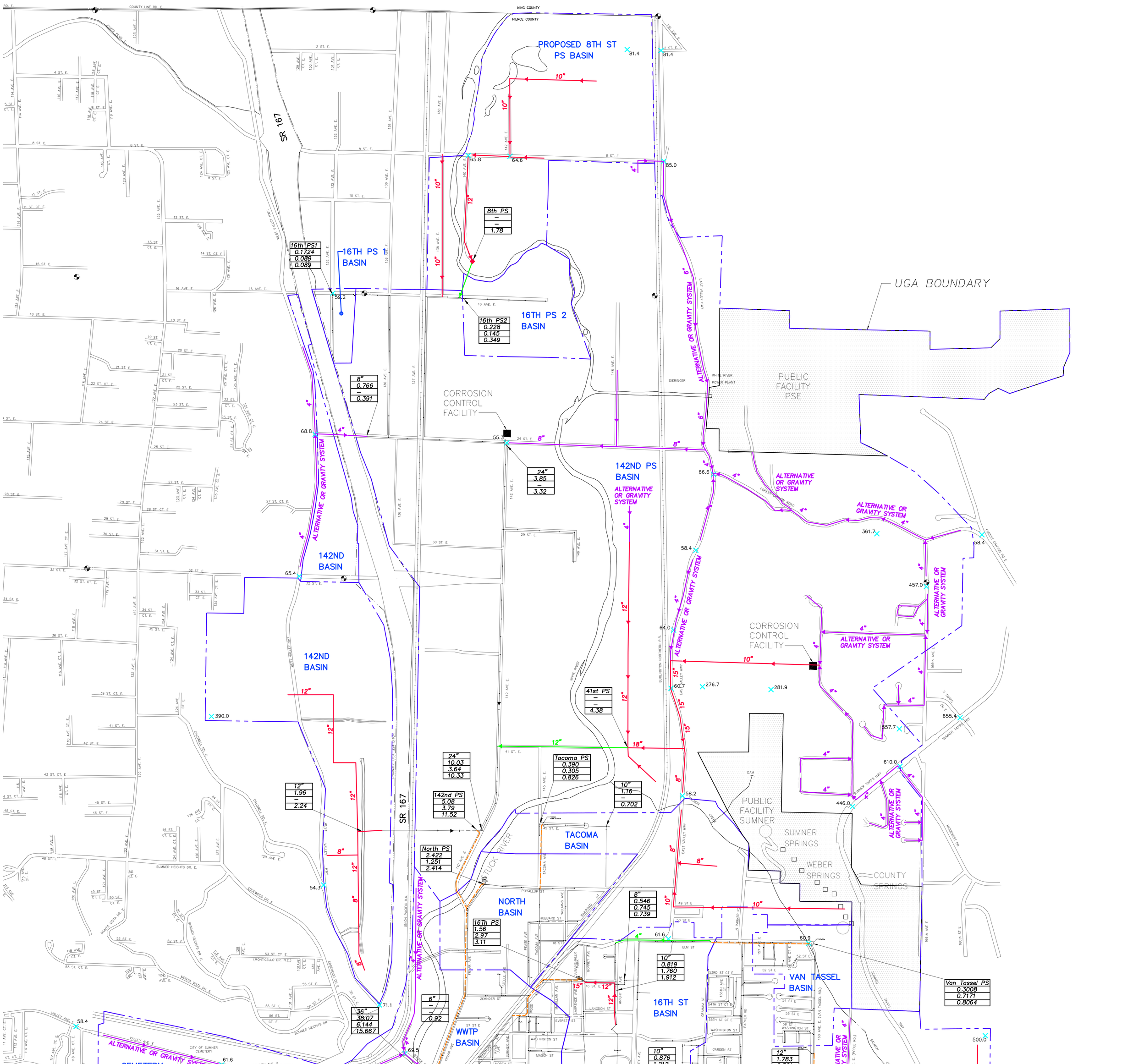

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Figure 5.5
UGA Build-Out - Impacts on Existing Collection System - Alt. No. 2
City of Sumner

Placeholder

Placeholder

- The area (Tacoma Basin) bounded by Elm Street on the south, Salmon Creek on the north, the Burlington North Railway line on the west, and the City's watershed on the east should connect to the existing system through the Tacoma Pump Station basin.

- The area bounded by the Stuck River on the west, Salmon Creek on the south, the City's UGA boundary on the east, and the Pierce County line on the north should connect to the existing system through the 142nd Street Pump Station basin.

There were two alternatives proposed to serve the basin(s) east of the Stuck River. These alternatives are fully described below.

5.3.3.1 *Alternative 1 – Collection System Extension*

Providing sewer service to the UGA through the Alternative 1 configuration would involve the installation of two major pump stations (see Figure 5.4). Preliminary design estimates place the location of these pump stations at 41st Street East and 8th Street East.

Service throughout the region would be established using a combination of gravity and alternative collection methods in combination with the two above-mentioned pump stations.

The 8th Street East Pump Station would service the area both north and south of 8th Street. Flows to the pump station would be through conventional gravity sewers to the pump station. Wastewater would then be pumped south along East Valley Highway through a 10-inch force main to 24th Street East. Additional flows between the pump station and 24th Street East would be collected into the 10-inch force main through use of alternative collection technology.

At the intersection of 24th Street East and East Valley Highway, collected flows from the area north of Forest Canyon Road along with the area approximately ½ mile south of this intersection would combine with the force main using alternative collection technology.

The wastewater flows would then continue through a 12-inch force main west across the Stuck River using the existing pedestrian bridge and into the 24-inch gravity sewer located along 142nd Avenue East.

The 41st Street East basin would include the remaining area south of Forest Canyon Road to the existing sewer system basins. Flows along the eastern hilltop region would be collected through a series of gravity sewers to a major trunk line directed to the East Valley Highway. Any flows collected north of this point along East Valley Highway should be collected through alternative collection technologies. The combined wastewater would then flow south to 41st Street East through gravity trunk lines.

Flow from the wastewater collection system south of 41st Street East but north of Salmon Creek would be collected through gravity sewers. The two flows would combine at the intersection of 41st Street East and East Valley Highway and continue west to the second pump station.

All collected wastewater would then be pumped through a 12-inch force main across the Stuck River and into the 24-inch gravity main located along 142nd Street East.

5.3.3.2 *Alternative 2 – Collection System Extension*

Alternative 2 required the same number of major pump stations as in Alternative 1 (see Figure 5.5). The primary difference is routing the 8th Street East Pump Station force main south by southeast into the 142nd Street basin at 16th Avenue East.

The flows collected along East Valley Highway would again be collected through alternative collection technology, but under this scenario the required force main is 6 inches minimum rather than 10 inches as shown in Alternative 1. The wastewater would continue south to the intersection of East Valley Highway and 24th Street East.

The flows from north of Forest Canyon road and the small area south of the Forest Canyon Road and East Valley Highway intersection would again combine and flow west along 24th Street East. Again there is a reduction in the required force main from a 10-inch minimum to an 8-inch minimum.

There would be no changes to the design criteria of the 41st Street East Pump Station basin.

Either of these alternatives assume that all flow from the areas shown must be routed through the 142nd Street Pump Station. Routing any additional significant flow from the UGA into the existing system, other than 142nd Street Pump Station, created pipeline and pump station surcharging and overloading in the system. Either alternative will work, and final system configuration has been left to the City.

5.3.3.3 *Alternative Collection System Technology*

Alternative forms of wastewater collection are recommended for portions of the City of Sumner service area. As previously identified in Chapter 5 and as shown on Figures 5.4 and 5.5, isolated portions of the City's service area have been identified as being served by conventional gravity collection or alternative forms of wastewater collection. Both options have been identified to allow the City of Sumner the option of considering either technology at the time of design and/or ULID formation. By listing both options, the Department of Ecology (DOE) will accept either technology. If alternative forms of wastewater collection are not listed or conversely conventional gravity is not listed, then DOE will require that the City use the collection technology listed within the planning document.

Using the following criteria, alternative forms of wastewater collection are proposed for isolated portions of the City of Sumner.

- Cost-effective in areas with limited wastewater flow or in areas zoned for low-density development.

- Extends the life of the City's wastewater treatment plant. Alternative forms of wastewater collection have substantially less wet-weather flow than conventional gravity because of limited I/I influence. Some forms of alternative collection can even have lower organic load being discharged to the City's wastewater treatment plant since pretreatment occurs at the individual buildings.

- Results in lower ULID cost than a gravity alternative. Alternative sanitary sewer collection lines represent approximately 20 to 40 percent of the cost of an alternative form of collection system. The remainder of the capital costs related with alternative collection is associated with the installation of the portion of the utility that is installed on private property.

As previously denoted in Figures 5.4 and 5.5, only certain portions of the City's collection system were identified for the use of either conventional gravity or alternative collection. Those portions of the service areas identified were selected based upon:

- areas with limited parcel sizes conducive to lower wastewater flow generation,
- areas isolated from the rest of the wastewater collection system and difficult to serve with conventional gravity,
- areas requiring construction of multiple pump stations and force mains to accommodate installation of a conventional gravity system,
- areas zoned for low density housing or land use that typically has lower wastewater generated on a per-acre basis,
- areas with difficult construction challenges. Construction challenges specific to the City of Sumner include:
    - The presence of high groundwater that substantially increases the cost of deep sewer line installation due to dewatering and trench safety costs.
    - Soils that have limited foundation characteristics which could result in pipe settlement over time, affecting the liquid-carrying capability of the pipeline.
    - Road reconstruction and traffic control challenges resulting from conventional gravity sewer installation due to the depth and width of the sewer line trench.
    - Construction equipment and sewer material stockpiling.
    - Areas that present difficult permitting requirements such as installing sewer lines under a water body or wetland. Alternative forms of wastewater collection are typically under positive pressure and can readily be installed using trenchless technology under sensitive areas, which eliminates some of the permitting requirements associated with conventional sewer line construction.

Available Alternative collection Systems

There are four primary alternative collection systems that are employed throughout Washington State when conventional gravity conveyance is not cost effective and/or viable. These alternative forms of wastewater collection and conveyance are defined in the Department of Ecology manual titled *Criteria for Sewage Works Design*, prepared in December 1998. The four primary means of conveyance include:

- Septic Tank Effluent Pump System (STEP)
- Small Diameter Gravity System (SDG)
- Grinder Pump System
- Vacuum Collection System

Septic Tank Effluent Pump System (STEP)

A STEP system works somewhat like a conventional septic tank. A vessel, or STEP tank, is installed at each structure and provides pretreatment as it separates the solids from the liquid stream of conventional raw sewage. The liquid portion of the wastewater stream is then conveyed by a pump system to a small diameter pipeline in the public right-of-way and into a municipality's wastewater treatment facility.

Because the majority of the solid matter has been removed from the wastewater, very small diameter pipelines can be utilized, as small as 2-inch diameter or larger, depending on the hydraulic capacity needed. Since most of the solids have been removed, minimum scouring velocities in the pipelines are not required. Other alternative forms of collection and conventional gravity pump stations and force mains require a minimum pipeline velocity of 2 ft/sec to eliminate plugging. A STEP system also includes the advantage of offering pretreatment within each STEP tank. The organic load from a STEP tank includes a reduction of suspended solids of approximately 85 percent and a reduction of BOD_5. or biochemical demand of approximately 30 percent.

Small Diameter Gravity System (SDG)

A SDG system is essentially the same as a STEP system with one exception. Those homes that are substantially higher than the pressure gradient in the pressure pipeline do not require installation of a pump to convey wastewater to the municipality's treatment facility. Each tank above the hydraulic grade line is commonly equipped with a filter to ensure that solids do not enter into a small diameter pipeline. Since SDG uses a tank for pretreatment, minimum scouring velocities, required in other alternative systems, are not necessary. It is common practice to combine SDG tanks and STEP tanks on common pipelines.

Grinder Pump System

A grinder system utilizes pipeline sizes that are similar to a STEP, typically a 2-inch minimum diameter and larger depending on the hydraulic capacity needed. Primarily, the difference between a grinder system and STEP/SDG is that the entire raw solid and liquid wastewater components are macerated through the grinder pump and then conveyed through small gravity pipelines to the treatment facility. Since the system grinder conveys all solids introduced to the wastewater system, a minimum scouring velocity of 2 ft/sec must be maintained in the pipelines to ensure that plugging of the pipeline does not occur.

Vacuum Collection System

A vacuum system differs substantially from STEP, SDG, and grinder pump systems. The previously described technologies use positive pressure to convey wastewater from individual users to the wastewater treatment plant. A vacuum system uses a negative pressure or a vacuum to pull the wastewater to a centralized pump station. After the wastewater arrives at the pump station, it is then conveyed to the treatment plant using a conventional positive pressure pump. Vacuum lines are similar to other alternative systems in constructability as vacuum lines use a minimum 4-inch-diameter line size that can be constructed in a narrow trench at depths typically ranging from 4 to 7 feet. Vacuum systems also employ a solenoid pit at each multiple structure. The vacuum pit is the mechanical device that receives the sewage and then allows the sewage to be conveyed by pipeline to a centralized vacuum pump station.

Alternative System Evaluation

Based upon review of the characteristics of the City of Sumner's service area, the following recommendations for selection of an alternative technology should gravity not be viable for certain uses are within the service areas.

- A combination of STEP and SDG should be considered in areas where gravity is not viable. It is assumed that the City owns the small diameter collection mains within public right-of-way and that individual homeowners are responsible for ownership and operation of STEP tanks on private property. This recommendation was based upon the following criteria:

  - STEP/SDG can be designed for 24 hours of emergency storage in the event of a power outage or need of mechanical repair. Even though power outages are infrequent within the Sumner Valley, the storage volume allows property owners time to make repairs to their systems should individual mechanical parts need maintenance.

  - STEP/SDG has electrical components that are applicable for residential or commercial applications.

  - STEP/SDG reduces both wet weather wastewater flow volumes and organic load to the wastewater treatment plant. This advantage allows the City to increase the number of users within the service area without exceeding the allocated plant capacity for the Sumner service area.

  - STEP/SDG does not require a minimum scouring velocity within the pipelines. Lack of scouring velocity allows the City to connect users to the sewer pipeline as the need arises without concern of pipe plugging. Other alternatives require a minimum number of users be connected to the pipeline to assure that the minimum scouring velocity of 2 ft/sec is maintained.

- A grinder system could be used for certain portions of the collection system if the following requirements are achieved by the manufacturer:

  - Application to the Washington State Department of Labor and Industries Electrical Division.

  - 24-hour minimum storage requirements as stated in the "Criteria for Sewage Works Design" prepared by the Washington State Department of Ecology.

- A vacuum system has an initial higher cost than other forms of alternative collection. Based upon "a rule of thumb" provided by the manufacturer, a minimum of 350 equivalent dwelling units are required before vacuum is cost comparable to other collection alternatives. Most, if not all, of the isolated areas shown for alternative sewers will generate a sufficient number of customers to make a vacuum system cost affective.

5.3.4 Disadvantages Associated with Preferred Alternative Collection Systems

There are disadvantages to alternative forms of wastewater collection and specific disadvantages to the recommended alternative of STEP/SDG systems. The City needs to be aware of the following disadvantages when considering use of alternative collection systems.

- Responsibility for ownership and operation of the individual pump unit is placed on the property owner. This is a responsibility that is not common to a conventional gravity collection system and is an additional burden to the property owner. That burden, however, is offset by the lower ULID cost associated with construction of the pipeline within the public right-of-way.

- The City has a responsibility to assure that the STEP/SDG tanks are watertight and free of infiltration and inflow. An inspection program will need to be established that guarantees privately installed tanks and pumps meet City requirements. To assure that I/I is not introduced into the STEP/SDG system over time, the City may also need to conduct a periodic review of the STEP/SDG tank.

- The wastewater originating from a STEP/SDG system is septic. Discharge to a gravity collection line can result in odors and corrosion caused by the release of hydrogen sulfide. Odor control and corrosion control must be addressed when considering this alternative.

5.3.4 Policies Associated with Alternative Collection Systems

All wastewater systems require the municipality to adopt certain policies regarding ownership and maintenance responsibilities. Alternative collection systems being different than conventional gravity systems require special consideration from the City staff, elected officials, and the sewer users. Key issues that should be considered include:

- Will the City allow alternative forms of wastewater collection to be considered within the service area?

- If the City considers alternative forms of wastewater collection (i.e., STEP/SDG), will the City or the property owner be responsible for ownership, operation, and maintenance of the onsite pumping unit?

- If the City allows alternative sewers to be used, will the sewer user be able to select between alternative collections on conventional gravity?

6. WASTEWATER SYSTEM IMPROVEMENTS

6.1 INTRODUCTION

Chapter 6 presents the recommended wastewater collection system improvements that address identified existing system deficiencies resulting from poor system conditions or lack of adequate system hydraulic capacity. These recommendations provide a planning guide to establish future capital improvement plans, preparation of city budgets, and implementation scheduling.

6.2 RECOMMENDED SEWER SYSTEM IMPROVEMENTS

Recommended improvements are necessary to correct system deficiencies previously discussed in Chapter 5. Improvements include:

- Existing System Capacity Improvements
- Existing Collection Upgrades

System improvements shown on Figures 5.4 and 5.5 that are necessary to expand the City's wastewater collection system into unserved areas of the UGA are not discussed in this chapter. It is assumed that these improvements will be constructed as part of a developer extension or formation of a ULID.

6.2.1 Existing System Capacity Improvements

Improvements to the existing collection system facilities include system expansion to provide adequate capacity to serve existing and future wastewater customers. These improvements include:

- Parker Pump Station/Basin Improvements:
  - Expansion of Parker Pump Station from a 285 gpm (0.635 cfs) station to a 1,800 gpm (4.0 cfs) facility. Expand and extend the force main from Parker. The existing 6-inch force main should be replaces with a 10-inch force main and extended from its present terminus at Valley Avenue west along Main then north to Wood Avenue.
  - Increase the size of the gravity inlet pipe to Parker Pump Station to 21 inches minimum.
  - Direct additional expansion in the agricultural area south of Mead-McCumber to Valley Avenue.
- 16th Street Pump Station/Basin Improvements:
  - Increase 16th Street Pump Station capacity from 700 gpm (1.56 cfs) to 1,400 gpm (3.12 cfs).
  - Increase the gravity inlet pipe size to 15 inches at the 16th Street Pump Station.
  - Extend the 4-inch force main for the Van Tassel Pump Station from west of Parker Road to Wright Avenue along Elm Street.

- Increase the gravity pipe size from 10 to 12 inches, along 16th Street and Wright Avenue to south of Langdon.

- Cherry Street Pump Station Improvements:

  - Expand Cherry Street Pump Station capacity from 535 gpm (1.19 cfs) to 1,330 gpm (2.63 cfs)

- South Street Pump Station Improvements:

  - Expand South Pump Station to meet the increased Cherry Pump Station capacity. Increase this station from 1,500 gpm (3.34 cfs) to 1,750 gpm (3.90 cfs).

- Van Tassel Pump Station Improvements:

  - Expand Van Tassel Pump Station capacity from 135 gpm (0.30 cfs) to 365 gpm (0.81 cfs).

- Tacoma Pump Station Improvements:

  - Expand Tacoma Pump Station capacity from 175 gpm (0.39 cfs) to 370 gpm (0.83 cfs).

  - Evaluate the City-identified hydrogen sulfide damage to determine if station replacement is a more cost-effective option.

- 142nd Street Pump Station Improvements:

  - Expand 142nd Street Pump Station capacity from 2,280 gpm (5.08 cfs) to 5,170 gpm (11.52 cfs).

- 16th Street Pump Station No. 2 Improvements:

  - Expand 16th Street Pump Station No. 2 from 103 gpm (0.23 cfs) to 157 gpm (0.35 cfs).

6.2.2 Existing Collection Upgrades

System improvements requested by the City of Sumner public works staff or recommended by Parametrix, Inc. include

- Parametrix Recommended System Upgrades:

  - Parker/Van Tassel/160th Streets Hydraulic Intertie:

    Eliminate the hydraulic intertie for the Parker, Van Tassel, and 160th Street Pump Stations. This improvement must be completed after the previously discussed upgrade of the Parker Pump Station and force main.

- Sanitary Sewer Main Rehabilitation/Replacement Program:

  Currently, the City of Sumner has approximately 179,000 lineal feet of existing sanitary sewer main. Using information from the Whitacre and Associates 1956 *Study and Preliminary Plans for*

Sewerage and Sewage Treatment Plant Facilities. This report contained a General City Map showing the existing and proposed City of Sumner collection system.

Parametrix established that 81,029 lineal feet of the City's collection system existed or was constructed in 1956. This means 45 percent of the existing system will be at, or beyond, the normal 50-year useful life expectancy of the installed collection pipes on or before the year 2006.

If the City of Sumner were to initiate a 45 percent main rehabilitation/replacement program over the next 50 years, it would require the rehabilitation or replacement of 1,620 lineal feet each year.

For main replacement, the average cost per lineal foot for an 8-inch main is approximately $300. Different rehabilitation methods can be broken into costs per lineal foot. Following is a summary of the different possible methods and an estimate of the associated costs:

- Cast-in-Place (CIP) Pipe Lining $75.00/lf
- Fold and form Pipe Lining $55.00/lf
- Link Pipe Stainless Steel Sleeve $1,500 for 12 inches to $2,000 for 36 inches
- CIP Spot Repair $1,500 for 3 feet to $2,000 for 30 feet
- Line Grouting
  - Sealing $15-$20 per joint
  - Side Sewer Grouting $300 per side sewer

Using an average cost per lineal foot for rehabilitation, or repair of $200 per lineal foot, the yearly cost for this program would be approximately $324,000, which may be fiscally difficult for the City to achieve.

- Infiltration and Inflow Program:

  Throughout the system analysis and as a result of interview with City staff, the presence of stormwater infiltration and inflow will have an increasing importance on the City's system. We therefore make the following additional recommendations:

  - Increase the I/I testing program throughout the City. Conduct wet-weather/dry-weather flows analysis to determine in which basins to concentrate initial I/I reduction efforts.
  - Expand close-circuit video inspection and smoke testing beginning within the oldest sections of the City.

- City of Sumner System Upgrades:

  The following is a list of improvements requested by City personnel that are appropriate for this general sewer plan. The list includes only the requested improvements that have not been addressed in prior sections of the chapter. Improvements include:

  - Install flow meters on all pump stations.
  - Install on-site generators at South, North, Tacoma, and Cherry pump stations.
  - Schedule replacement of older motor starters and electrical controls. Standardize installations to develop a spare parts inventory.
  - Upgrade electrical services at Cherry and 16th Street Pump Stations to include a neutral conductor. Currently these stations are wired for delta ground, which creates hazards for City personnel. Parker Pump Station was also identified with this wiring problem, but was not included because it has been recommended for replacement.
  - Refurbish Jansen Pump Station with quick disconnect pumps and motors.

6.3 PRIORITIZATION OF RECOMMENDED IMPROVEMENTS

Recommended Collection System Improvements were prioritized to assure that the most critical projects are completed first. The highest priority projects are improvements to existing pump stations and pipelines that eliminate hydraulic surcharging caused by existing wet-weather peak day flows. The next level of priorities are:

- Ongoing identification and elimination of excessive sources of I/I.
- Improvements to system reliability identified by the City of Sumner staff.
- Pump station and pipeline improvements that eliminate surcharging caused by future wet-weather peak day flow.
- Elimination of hydraulic surcharging caused by existing wet-weather peak day flows:
  - Parker Road Pump Station and force main expansion or replacement.
  - Van Tassel Pump Station and force main expansion or replacement.
  - Tacoma Pump Station expansion or replacement.
  - Increase 10-inch gravity pipe segments to 12-inch segments east along 16th, then south along Wright Avenue to south of Langdon.
  - 16th Street Pump Station expansion.

- Identification and elimination of excessive I/I.
  - Infiltration and Inflow Program.
  - Remove Parker/Van Tassel/160th Street hydraulic intertie.
  - Sanitary sewer main rehabilitation program.
- System Upgrades:
  - Install onsite generators at the pump stations at South, North, Tacoma, and Cherry Streets.
  - Improve site access to the South Street and Cherry Street Pump Stations.
  - Install flow meters at all pump stations.
  - Improve system wiring and standardize at all pump stations.
  - Update older motor starters and electrical controls.
  - Refurbish Jensen Pump Station with quick disconnect pumps and motors.
- Pump station improvements for future wet-weather peak day flow:
  - Expand Cherry Street Pump Station capacity.
  - Expand South Street Pump Station capacity.
  - Expand 142nd Street Pump Station capacity.
  - Expand 16th Street Pump Station #2 capacity.
- Expansion of the 142nd Street Pump Station:
  - The existing 880-acre industrial area has been expanded to approximately 3,280 acres.
  - It has been assumed that industrial zoned areas will contribute an average peak flow of 1,300 gallons per acre day to the 142nd Street Pump Station. Actual peak day flows could be difficult depending on the actual buildings constructed.
  - It is recommended that the City of Sumner delay any planned expansions for this pump station until a more complete record of the actual industrial wastewater flows have been recorded.

6.4 CAPITAL IMPROVEMENT PROGRAM

The Capital Improvement Program shown on Table 8-1 has been developed to clarify the cost and priority of each of the improvements previously listed. The 1999 project cost for each improvement is shown, along with the projected period of construction. The project costs have been adjusted based upon a 3.5 percent inflation rate.

Table 6-1. Capital Improvement Projects

CIP Number	Capital Improvement Project	1999	Time Frame for Project 2000	2001 - 03	2004 - 08	2009 - 11	2012 - 14	2015 - 17	2018 - 20	Total
	System Capacity Improvements									
1	*Parker Pump Station*									
a.	Replace the existing 6" F.M. with 10" F.M. extend along Main St. to Wood - mh #73 approximately 4000 LF	$676,000.00	$676,000.00							$676,000.00
b.	Increase pump station capacity from 285 gpm to 1800 gpm	$500,000.00		$500,000.00						$500,000.00
2	*Van Tassel Pump Station*									
a.	Increase station capacity from 135 gpm to 365 gpm	$284,000.00		$284,000.00						$284,000.00
b.	Extend 4" force main approximately 1800 LF from existing outlet east of East Valley Hwy west along Elm Street to Wright Avenue	$184,400.00	$184,400.00							$184,400.00
3	*Tacoma Pump Station*									
a.	Increase station capacity from 175 gpm to 372 gpm.	$284,000.00			$337,300.00					$337,300.00
4	*16th Street Pump Station*									
a.	Increase approximately 1400 LF of 10" gravity sewer main located along 16th Street east to Wright Avenue, then south along Wright Avenue to between Langdon and Washington Streets to 12" gravity main.	$271,700.00			$334,000.00					$334,000.00
b.	Increase capacity of 16th St PS from 700 gpm to 1400 gpm	$637,500.00				$900,000.00				$900,000.00
5	*Cherry Street Pump Station*									
a.	Increase station capacity from 534 gpm to 1180 gpm	$673,000.00							$1,340,000.00	$1,340,000.00
6	*South Pump Station*									
a.	Increase station capacity from 1115 gpm to 1750 gpm	$692,000.00							$1,377,000.00	$1,377,000.00
7	*142nd Street Pump Station*									
a.	Increase capacity from 2,300 gpm to 5,200 gpm	$810,000.00							$1,612,000.00	$1,612,000.00
b.	Install a parallel 14" force main from existing station to outfall at W Main and Bridge Street	$715,000.00							$1,420,000.00	$1,420,000.00
8	*16th Street PS #2*									
a.	Increase capacity from 100 gpm to 160 gpm	$27,000.00							$53,800.00	$53,800.00
	Sub Total Capacity Improvements	**$5,754,600.00**	**$860,400.00**	**784,000.00**	**671,300.00**	**900,000.00**	**0.00**	**0.00**	**5,802,800.00**	**$9,018,500.00**

Table 6-1. Capital Improvement Projects

CIP Number	Capital Improvement Project	1999	Time Frame for Project 2000	2001 - 03	2004 - 08	2009 - 11	2012 - 14	2015 - 17	2018 - 20	Total
					System Reliability Improvements					
9	*Pipe Main Rehabilitation/Replacement Program @ 1,620 LF/year*	$8,100,000.00	$324,000.00	$1,041,641.00	$1,154,887.00	$1,280,443.00	$1,419,650.00	$1,573,992.00	$1,745,113.00	$8,539,726.00
10	*Remove Parker - Van Tassel - 160th Street Hydraulic Intertie*	$54,800.00		$58,700.00						$58,700.00
11	*Infiltration and Inflow Program - Flow*									
a.	Flow Monitoring	$80,000.00	$80,000.00		$95,015.00		$116,800.00		$138,700.00	$430,515.00
b.	Smoke Testing	$30,000.00	$30,000.00		$35,630.00		$45,330.00		$52,020.00	$162,980.00
c.	Video Inspection	$40,000.00	$40,000.00		$47,500.00		$60,440.00		$69,360.00	$217,300.00
12	*Flow and Level Meter Installation at Pump Stations*									
a.	Install flow meters, level meters or both in stations to increase City personnel's system monitoring capabilities	$190,500.00				$268,719.00				$268,719.00
13	*Install On-site Generators at South, North, Tacoma and Cherry Street Pump Stations*	$307,200.00		$340,600.00						$340,600.00
14	*Electrical Upgrade for Cherry and 16th Street Pump Stations*	$23,800.00		$27,300.00						$27,300.00
15	*Installation of Pump Station at Sumner-Tapps & 64th Street E*	TBD	Developer Extension							
a.	FM installation from pump station to Parker pump station	TBD	Developer Extension							
16	*Installation of Pump Station at 41st St E*	TBD	Developer Extension							
17	*Installation of Pump Station at 8th St E*	TBD	Developer Extension							
	Sub Total Reliability Improvements	**$8,826,300.00**	**$474,000.00**	**$1,468,241.00**	**$1,333,032.00**	**$1,549,162.00**	**$1,642,220.00**	**$1,573,992.00**	**$2,005,193.00**	
	TOTAL ESTIMATED IMPROVEMENT COST	**$14,580,900.00**	**$1,334,400.00**	**2,252,241.00**	**2,004,332.00**	**2,449,162.00**	**1,642,220.00**	**1,573,992.00**	**7,807,993.00**	**$19,064,340.00**

7. WASTEWATER TREATMENT PLANT CAPACITY IMPACTS

7.1 INTRODUCTION

This chapter compares the capacity of the City's treatment plant with simulated flows generated in the collection system analysis. The comparison evaluates whether continued growth and expansion of the collection system could exceed the existing or future treatment plant capacity. Specific capacity questions that were addressed included:

- Can the collection system continue to grow at 3.5 percent per year until Sumner has completed treatment plant expansion scheduled for late 2002 or early 2003?
- Will the treatment plant have enough capacity to provide service through the end of the collection system-planning process?

7.2 SUMNER WASTEWATER TREATMENT PLANT

A discussion of Sumner's existing and future treatment plant capacity has been separated into the following sections:

- Anticipated treatment plant expansion.
- Existing wastewater treatment plant capacity.
- Future projected wastewater flow.

The City of Sumner owns and operates a secondary treatment plant located at the confluence of the Puyallup and Stuck Rivers. The treatment plant treats wastewater from Sumner, City of Bonney Lake, and certain portions of unincorporated Pierce County. Currently, the treatment plant has a permitted maximum month flow capacity of 2.62 mgd.

Anticipated Treatment Plant Expansion

In 1996, the combined maximum month flow (MMF) reached 2.36 mgd or 90 percent of the plant's hydraulic capacity. This MMF value prompted the City to begin the process of plant expansion.

The planning document reports completed to date for the plant expansion include:

- Kennedy Jenks, *Comprehensive Facility Plan*, January 1999.
- Gray & Osborne pre-design report, *Wastewater Treatment Facility Final Comprehensive Facility Plan Addendum No. 1*, February 2000.

The process for expansion of the wastewater treatment plant is currently in the design stage. Preliminary design estimates indicate that the MMF treatment plant capacity will be increased from 2.62 to 4.59 mgd. The City of Sumner's allocated capacity for its service area will increase from 1.39 mgd (present) to 2.45 mgd (future) based upon 53.3 percent of the total treatment capacity.

The following table summarizes the City of Sumner's anticipated schedule for expanding the wastewater treatment plant.

Table 7-1. Treatment Plant Expansion Schedule	
Project Landmark	**Date**
Treatment Plant Design Completion	January 2001
Loan Application for Construction Submittal	February 2001
Construction Begins	2001-2002
Construction Completed	2002-2003

Existing Wastewater Treatment Plant Capacity

To understand if the collection system can continue to serve new customers and expand into unserved portions of the UGA, the available wastewater treatment plant capacity must be determined. Comparing the most recent treatment plant inflow MMF to the permitted plant capacity indicates the approximate available treatment capacity.

Rainfall records, plant flows, and indications of available plant capacity are shown in Table 7-2.

Table 7-2. Sumner Wastewater Treatment Plant MMF					
Month – Year	**Average Rainfall (in)**	**Actual Rainfall (in)**	**MMF (mgd)**	**Plant Capacity (mgd)**	**% of Plant Capacity**
February 1996	4.35	8.17	2.36	2.62	90.1%
December 1996	5.51	7.04	2.30	2.62	87.8%
January 1997	5.91	7.70	2.59	2.62	98.9%
December 1998	5.51	9.00	2.22	2.62	84.7%
January 1999	5.91	7.22	2.20	2.62	84.0%
November 1999	6.65	9.74	1.92	2.62	74.0%
March 2000	4.20	3.25	1.76	2.62	67.2%

The maximum monthly flow for the 1999 wet-weather period indicates that the plant is operating at approximately 74 percent of permitted hydraulic capacity. The treatment plant has typically been operating at 74 to 85 percent of MMF capacity since1998.

It should be noted that there has been a reduction in MMF since the 1996 to 1997 wet-weather period in spite of continued above-average rainfall. The reason for this reduction has not been explored. It is understood that the City has initiated an I/I reduction program, which could be an explanation for the reduction.

Future Projected Wastewater Flows

Future projected wastewater flows were generated as a product of this report. In Section 7.3, the anticipated generation of wastewater within the collection system is compared to the capacity of the 2002 - 2003 treatment plant expansion. This comparison must be completed to understand if there is sufficient capacity to allow for continued growth within the service area.

The wastewater projection contained in the report is based upon the simulated flows from the Hydra computer model used to analyze the collection system. This simulated flow was compared to the wastewater projections included within the *Final Comprehensive Facility Plan* as prepared by Kennedy Jenks. The flow comparison is presented to validate simulated flows generated by the Hydra Computer Model.

Wastewater flows were included for the City of Sumner Service Area only as shown in Table 7-3. Wastewater flows anticipated for the City of Bonney Lake and portions of Pierce County were not included in the table.

Table 7-3. MM Wastewater Flow Comparison 2023

Report Flow/2023	Projected Wastewater Flow/Year	Projected Wastewater
Sewer Comprehensive Plan (Parametrix)	2.5 mgd/2023[a]	2.5 mgd
WWTP Pre-design Report (G&O)	2.4 mgd/2017[b]	2.5 mdg[c]

(a) MMF was calculated by dividing the peak day simulated flow of 5.5 mgd by the simulated peaking factor of 2.2, 5.5 mgd/2.2 = 2.5 mgd

(b) City of Sumner 2017 tatal wastewater flow contribution, Table 2-2 *Final Comprehensive Facility Plan* prepared by Kennedy Jenks. The 2.4 mgd estimate also includes an area outside of the UGA addressed in this report as the Future Southern Service Area.

(c) The *Final Comprehensive Facility Plan* as prepared by Kennedy Jenks, Section 1.3.1.3 listed the projected growth rate oat 1 percent per year after 2017.

7.3 COLLECTION SYSTEM GROWTH COMPARED TO EXISTING WASTEWATER TREATMENT PLANT CAPACITY

To understand if the collection system can continue to grow at 3.5 percent per year, we must examine if the WWTP has sufficient capacity to handle the additional wastewater flows until expansion is complete, 2002 – 2003.

Since 1998, the existing treatment plant has been operating between 74 to 85 percent of permitted hydraulic capacity. It is assumed that the plant will operate at or below 85 percent of capacity (2.23 mgd) and that the treatment plant expansion will be completed in late 2002 or early 2003. Therefore, the projected MMF could increase by approximately 11 percent or to a total MMF of 2.47 mgd by the time plant expansion is completed.

The Sumner wastewater treatment plant should have sufficient capacity for continued collection system growth if the following remains true:

- Wastewater Treatment Plant expansion is completed by 2003.

- Average growth rate does not exceed 3.5 percent.
- The City continues aggressive reduction of system I/I.
- The City of Bonney Lake is made aware of the capacity limitation and also strives to limit flow until the plant expansion is completed in 2002 – 2003.
- The City experiences rainfall events that are substantially greater than average.

The City may need to curb growth to prevent exceeding the permitted capacity of the wastewater treatment plant if any of the above conditions change.

7.4 EXPANDED WWTP CAPACITY

To determine if the expanded WWTP will have sufficient capacity for the collection system projections, the future wastewater treatment plant flow projections, and the 2002 – 2003 expanded WWTP capacity must be compared.

Appendix A of the G&O Pre-design Report states that the 2017 treatment plant will be 4.59 mgd.

The report additionally states that Sumner will pay for 53.3 percent of the total expansion cost. Therefore, it is assumed that Sumner will have 53.3 percent of the allocated capacity, or 2.45 mgd.

Through the use of the HYDRA modeling program, Parametrix projects an UGA build-out MMF of 2.5 mgd in approximately 23 years. Therefore, the plant could have sufficient capacity for UGA build-out if the following remains true:

- The industrial flows experienced from the 142nd Street basin are approximately equal to or less than simulated flows (1,300 gpad).
- The City reduces I/I flows in all basins to approximately 500 gpad or less.
- Projected growth averages approximately 3.5 percent per year.
- The size of areas designated for alternative collection systems are not reduced.

7.5 SUMMARY

Evaluation of the treatment plant and its relationship to continued growth and expansion within the service area includes the following:

- Growth within the collection system can continue at approximately 3.5 percent per year until the treatment plant expansion is completed.
- Capacity of the 2002 to 2003 expanded treatment plant capacity may be adequate to provide service until the end of the collection system planning period (approximately 2023).

The City of Sumner should take the following steps to ensure that the expanded treatment plant will have sufficient capacity for the collection system planning period:

- Continue aggressive identification of collection system I/I.
- Reduce average system I/I to a goal value of 500 gpad or less.
- Encourage alternative collection system technologies where appropriate to reduce I/I, potentially organic load.

It is recognized that the City of Sumner represents 53.3 percent of the total wastewater treatment plant MMF. Regardless of the City of Sumner's level of effort, the treatment plant capacity may still be exceeded prior to 2023 if similar steps are not taken by the City of Bonney Lake and unincorporated Pierce County.

It is further recommended that the City of Sumner begin coordination with the City of Bonney Lake and unincorporated Pierce County to establish system-wide I/I reduction goals.

8. FUTURE SOUTHERN SERVICE AREA

8.1 INTRODUCTION

Under the Growth Management Act (GMA), a municipality is not allowed to serve an area outside of its UGA boundary. However, the City has expressed a desire to extend service to the region south of the current UGA boundary. Policy and regulatory issues are presented below and should be considered for wastewater collection service to the region south of SR 410. The recommendations provided should be used as a planning guide should the City consider establishing service to this region.

8.2 SERVICE AREA EXPANSION

The City has issued two previous plans indicating a desire to extend service south of SR 410. They are the *1989 Sumner Sewer Collection System Comprehensive Plan* and the *1998 Sumner Comprehensive Plan.*

In 1979, the City of Sumner entered into a contract with the United States Environmental Protection Agency (EPA) for the expansion of the wastewater treatment plant. This contract indicated extension of the City of Sumner's service area south beyond the current UGA boundary (SR 410). The contract established the City's southern service boundary as the Puyallup River and 78th Street East. Through this contract, the City received federal money for 75 percent of the construction cost.

The City has also expressed a desire to extend service to the region south of the current UGA boundary for the following reasons:

- The City's current UGA boundary has been maximized towards the north, east, and west. Any future UGA expansion by the City of Sumner would likely be south.
- The County currently has not made any provisions for providing sewer service to the region.
- The region, although zoned for Agriculture or Rural 5, is experiencing residential construction at higher densities grandfathered prior to establishment of the GMA.
- There is the possibility for failure of on-site wastewater treatment systems.
- The City of Sumner prefers expansion of the wastewater collection system before residential and commercial development is completed.

8.3 SERVICE AREA SIZE

Each of the above reports and contracts indicate a different service area size and shape as listed below and shown in Figure 8-1.

- 1979 EPA Contract: The service area boundary was identified as the Puyallup River and 78th Street East (Wood-McCumber Road).
- 1989 Sewer Comprehensive Plan: The *1989 Sewer Comprehensive Plan* prepared by Parametrix identified both the northern and southern service area extensions with the service area extending south of SR 410 to 96th Street East.
- 1998 City of Sumner Comprehensive Plan Joint Planning Area: This plan included a region described as a "Joint Planning Area."

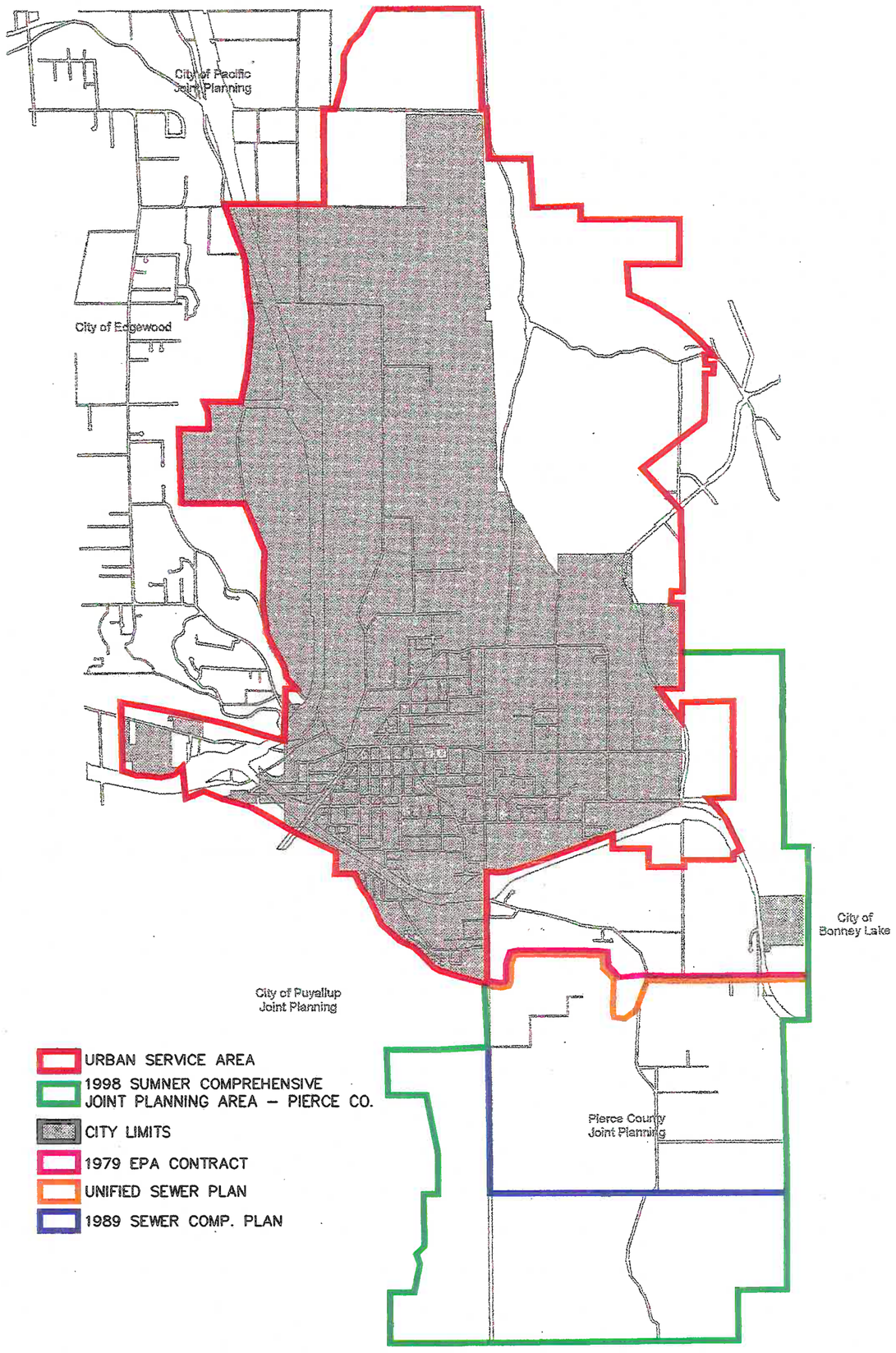

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Figure 8-1
Southern Expansion Boundaries
Comprehensive Plan
City of Sumner

8.4 PROCESS FOR EXTENSION OF SERVICE AREA

8.4.1 Growth Management Act

In 1990, the State legislature adopted the Growth Management Act (GMA), which limited the ability of a municipality to provide utility service to areas outside of an established urban growth boundary.

The GMA was adopted to increase coordination among state and local governments, improve data sharing, and resolve conflicts. Its intent was to curb land-hopping development and to prevent the loss of natural resources.

The Revised Code of Washington (RCW) 35.13.005 states:

> *"No city or town located in a county in which urban growth areas have been designated under RCW 36.70A.110 may annex territory beyond an urban growth area."*

Therefore, any annexation plans for the region south of the current UGA boundary cannot take place until the boundary is extended to include the southern region. The City may be able to influence growth (zoning) and building standards in the region until extension of the UGA occurs.

8.4.2 Joint Planning Areas

Due to the limitations imposed by the GMA, the City should go through Pierce County Regional Council's Joint Planning Areas to address concerns about future sewer service. Instituted in 1993, the Joint Planning Area policy was created to facilitate and accomplish joint planning in areas of mutual concern.

The framework for the establishment of a Joint Planning Area has been set forth in Pierce County Resolution 93-127 (see Appendix E). Through this process, the City of Sumner will be able to establish the following criteria for the region:

- Determination of exact boundaries for the joint planning area.
- Current and future land use designations.
- Environmental standards and policies.
- Development and design standards.
- Delineation of growth tiers and connection with transition plans for level of service standards and provision of service.
- Development of a transition plan allowing for capital facilities and utilities planning.
- Identification, discussion, and resolution of mutual concern, including annexation issues.

Pierce County Planning stated that establishment of Joint Planning Areas is currently the subject of a newly formed subcommittee. As the City to seeks resolution of the ultimate southern UGA limits, it becomes a joint effort by the City Council and the County. The location of the final UGA and service area limits affects all subsequent decisions and collection system design.

To avoid this region becoming difficult to serve with sanitary sewer at some point in the future, it is recommended that the City of Sumner proactively seeks to establish both zoning and construction criteria through collaboration with Pierce County Regional Council and County agencies. To accomplish this, the City must formally begin the process of requesting a Joint Planning Area assignment for this region.

8.4.3 Establishment of Joint Planning Area

The process for establishing a Joint Planning Area requires an interlocal agreement between the City of Sumner and Pierce County. The interlocal agreement must include the following information:

- The duties and responsibilities for the signatory agencies.
- A process for outside review of the agreement.
- The agreement duration.
- The process for amendment and termination of the agreement.
- A process for resolution of any conflict.
- The type of issues of mutual concern covering everything from establishment of boundaries through the process of annexation.

Establishment of an interlocal agreement includes a 19-step process, which has been included in Appendix E. Currently, establishing a joint planning effort for a single issue takes 3 to 6 months and multiple issues takes 6 to 18 months to establish.

8.5 POTENTIAL WASTEWATER SYSTEM IMPACTS

In order to understand potential impact of expanding the collection system south of the current UGA boundary, the projected wastewater flows and impacts to the WWTP are presented.

8.5.1 Southern Region Projected Wastewater Flow

Table 8-1 indicates the additional acreage that could be added to the City's service along with additional MMF for each of the proposed expansion areas.

Table 8-1. Potential Maximum Month Flows (MMF)

Proposed Expansion Region	Area (ac)	Additional Maximum Month Flow (mgd)[a]
1979 EPA Contract	600	0.49
1989 Sewer Comprehensive Plan	1,500	1.23
1998 Sumner Comprehensive Plan[b]	2,300	1.88

[a] Average wastewater flow was assumed to be 1,300 gpad with I/I flow of 500 gpad and a peak factor of 2.2.

[b] Joint Planning Area

At build-out conditions, the potential additional MMF would be between 0.50 and 1.88 mgd depending upon the final size and shape of the expansion area selected.

8.5.2 Future Treatment Plant Capacity

The addition of the southern service area to the City's UGA impacts the available capacity at the City's treatment plant. Gray & Osborne, who is currently designing the WWTP expansion, reports that the treatment plant is to be expanded to accommodate a MMF of 4.59 mgd for the year 2017.

The City of Sumner's portion of the 2002 – 2003 expanded treatment plant's MMF capacity is approximately 53.3 percent (Sumner's expansion cost), or 2.45 mgd of flow from the City. Parametrix has projected that the build-out MMF for the existing UGA boundary will be approximately 2.5 mgd in the year 2023. Therefore, the City of Sumner's apportionment of the 2002 – 2003 expanded treatment plant capacity will be expended on providing service to the existing UGA boundary.

Any expansion of the collection system service area into the southern region will require the City to eventually construct additional treatment plant capacity.

8.5.3 Available Land for Treatment Plant Expansion

Land must be available for expansion of the treatment plant. The following section will examine available land on or around the existing wastewater treatment plant. To estimate the area available for future treatment plant expansion, the following assumptions have been made:

- No land buffers due to river setback requirements.
- No land buffers due to odor control measures.
- Buildable condition of 100 percent of the available land.

The existing wastewater treatment plant covers approximately 3.6 acres of the 8.8 acres the City owns around the treatment plant (see Figure 8.2). The 2002 – 2003 proposed wastewater treatment plant expansion should cover an additional 2 acres. Therefore, the City will have approximately 3.2 additional acres available for any additional treatment plant expansion in the future.

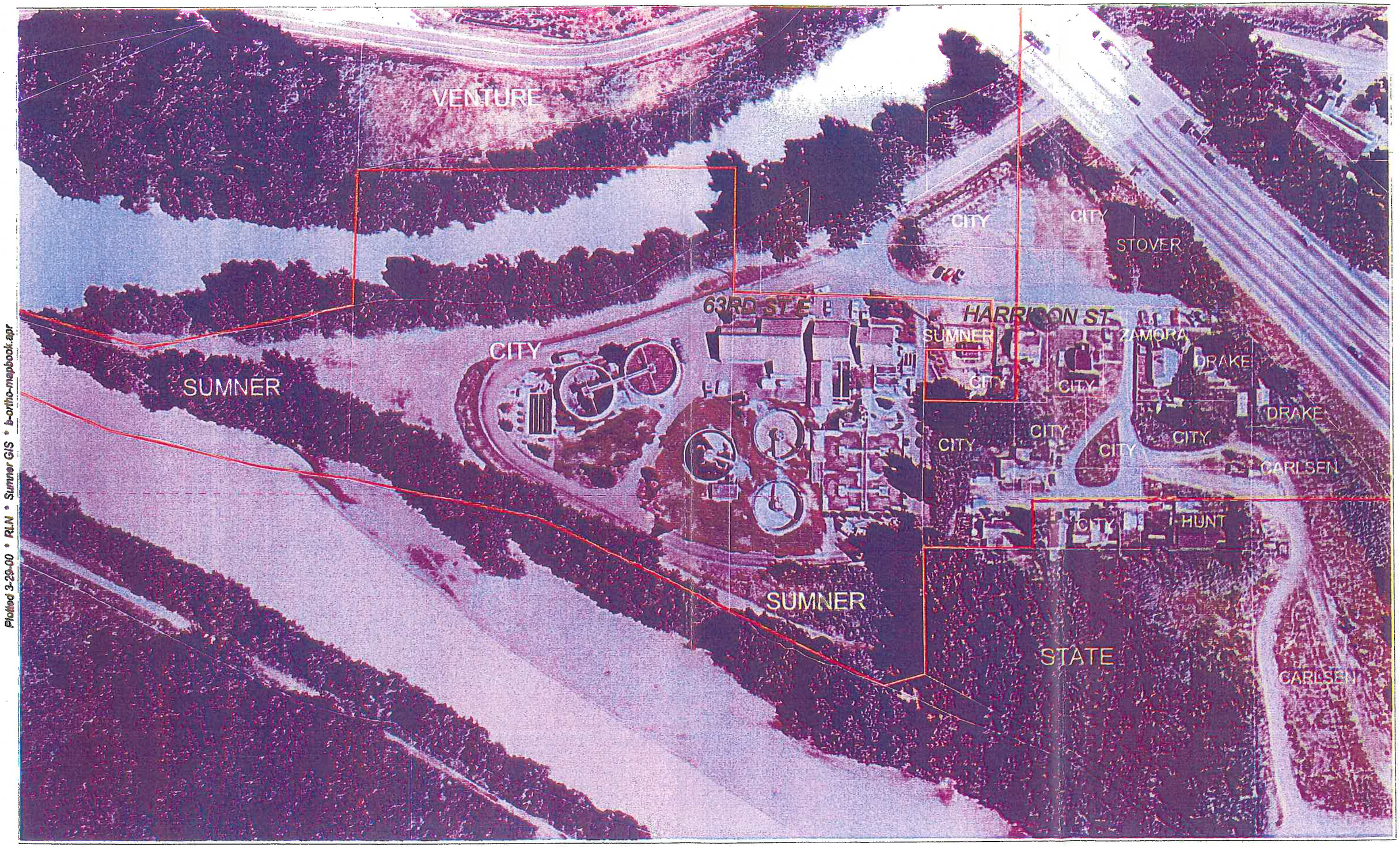
In addition to City-owned land, the State owns approximately 2 acres of land that adjoins the City's treatment plant site and other private parties own the remaining bordering land.

Based upon the availability of additional City, State, and privately-held land, the City should not have any problems with future expansion plans associated with serving the service area.

8.6 SUMMARY

It is recommended that the City of Sumner determine the desired size and shape of any future southern service area before pursuing the interlocal agreement with Pierce County for a Joint Planning Area.
The City should also consider which of the following issues they wish to resolve with the County prior to applying for the agreement:

- Land-use patterns
- Zoning designations
- Development standards
- Design standards
- Environmental standards and policies
- Level of service standards
- Service provider (who will provide which service)
- Growth tiers
- Public lands
- Essential public facilities
- Capital facilities
- Project review and approval for developments
- Annexation and transition timeline



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SUMNER

DISCLAIMER
The City of Sumner does not make any warranties or representations with regard to the accuracy of this map. No reliance should be placed upon this map for the location of any easement, street, road, highway or boundary line or other matter shown on this map, and no liability is assumed by the City of Sumner for the correctness thereof.

ORTHOPHOTO MAPPING

Photo date: July 1999.
Photo Scale: 1" = 600'
+/- 2.5' horizontal accuracy.

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Not all of these issues must be agreed upon prior to execution of the agreement with Pierce County. It is recommended that the City enters into the interlocal agreement addressing issues of immediate concern, and negotiate the remaining items in the future. Issues of immediate concern include:

- Zoning designations
- Growth tiers
- Development standards
- Design standards
- Level of service

9. FINANCING PLAN

9.1 INTRODUCTION

The financing plan discusses the need to generate additional sewer revenues to implement the improvements discussed within this report. Recommended collections system improvements include additional system capacity and upgrades. The financing plan also considers improvements necessary to expand the capacity at the City's wastewater treatment plant as outlined in the *Wastewater Treatment Facility Final Comprehensive Facility Plan Amendment No. 1* as prepared by Gray & Osborne (G&O). Both sewer and treatment improvements need revenues to be implemented, which will have an impact on the sewer fees currently levied by the City. To have an understanding of the total impact to the City sewer utility fees, sewer and treatment plant improvements must be considered together.

It is assumed that funding for capital improvements will be generated through sewer fees. Sewer fees currently levied by the City of Sumner include:

- A sewer utility rate that is charged on a monthly basis, and
- A one time System Development Charge (SDC), which is levied at the time that sewer service is provided.

9.1.1 Sewer Utility Rate

Prior to 1999, the City of Sumner's sewer utility rate was based upon a fixed charge per equivalent residential unit (ERU). This flat rate structure contained an annual adjustment for inflation based upon the Engineering News Record (ENR) Rate Index. In 1998, the City of Sumner generated approximately $1,230,000 (see Table 9-1) based upon a flat rate sewer fee of $23.45/ERU.

Table 9-1. City of Sumner Sewer Revenue

Year	Total Revenue Collected	Bonney Lake Charge	Sumner Sewer Revenue
1998	$1,533,000	$303,000	$1,230,000
1999	$1,505,000	$442,000	$1,063,000

In January 1999, the City of Sumner changed the flat rate billing structure to a combined fee structure. The combined fee structure consisted of a base rate and usage (water consumption) fee. The following is a summary of the 1999 fee structure:

- Base Rate = $5.15/ERU
- Usage Fee = $2.47/100 ft^3 of water usage

The change in the rate structure reduced the City's revenue stream from 1998 as shown in Table 9-1.

In January 2000, the City increased the sewer fee structure to the following:

- Base Rate = $5.31/ERU
- Usage Fee = $2.95/100 ft^3 of water usage

The 2000 change in the sewer utility rates has not been in effect long enough to determine the impacts on the annual sewer revenues.

An estimate of potential 2000 revenues was conducted by comparing the 1999 utility rates with the 2000 utility rates based upon the average water consumption of a typical single-family home. The comparison indicated that the City could have a revenue increase of approximately 16 percent resulting from the changes in the 2000 utility rate. The total 2000 annual sewer revenue is estimated at approximately $1,240,000, which is similar to the revenues generated by the City in 1998.

9.1.2 System Development Charge (SDC)

The City of Sumner charges each new customer a one time SDC at the time of connection to the sanitary sewer system. The SDC allows the City to generate additional revenue to finance capital system improvements. Currently, the City of Sumner's SDC for connection to the collection system is $2,011 per equivalent residential unit (ERU). Table 9-2 summarizes revenues generated over the last three years.

Table 9-2. System Development Charge Revenues

Year	Total SDC Revenue	Number of New ERUs
1997	$357,447.05	201.2
1998	$234,582.53	125.3
1999	$698,123.94	358.0

Rates for SDC change each year (October 1) due to inflation or institution of rate adjustments.

9.2 RECOMMENDED SYSTEM IMPROVEMENTS

The system improvements summarized in the following tables have been identified in two separate engineering reports. The recommended collection system improvements were developed in Chapter 5 of this report and the recommended treatment plant improvements are listed in the *Wastewater Treatment Facility Final Comprehensive Facility Plan Amendment No. 1* as prepared by Gray & Osborne.

The recommended improvements have been separated into two categories, system capacity improvements and system upgrades, as listed in Table 9-3.

Table 9-3. Recommended Improvements and Costs Summary

Improvement Category	Estimated Project Cost (1999)
System Capacity Improvements	
Parker Pump Station	$1,176,000
Extend Van Tassel Pump Station Force Main	$184,400
Van Tassel Pump Station	$284,000
16th Street Pump Station	$637,500
Increase Gravity Pipe Mains from 10-inch to 12-inch in 16th Street Basin	$271,700
Tacoma Street Pump Station	$284,000
Cherry Street Pump Station	$673,000
South Street Pump Station	$692,000
142nd Street Pump Station	$810,000
Parallel 14-inch Force Main	$715,000
16th Street Pump Station #2	$27,000
Subtotal:	**$5,754,600**
Recommended System Upgrades	
Pipe Main Rehabilitation/Replacement	$8,100,000
Hydraulic Intertie Removal	$54,800
Infiltration Inflow (I/I) Program	$150,000
Flow Meter Installation at Each Station	$190,500
On-site Generator Installation	$307,200
Electrical System Upgrades	$23,800
Subtotal:	**$8,826,300**
TOTAL PROJECTED COST:	**$14,580,900**

In addition to the recommended improvements to the collection system, the City of Sumner is in the process of expanding the wastewater treatment plant's hydraulic capacity and improving the treatment process to meet more stringent NPDES discharge standards. The preliminary estimated cost for the treatment plant improvements is $16,609,384. The City of Sumner's portion of the improvements is 53.3 percent, of $8,852,802. Table 9-4 separates the City of Sumner's share of the treatment plant costs into improvements needed to increase capacity and improvements needed to meet current treatment plant discharge standards. The share of cost in each category was provided by the City of Sumner Public Works Department.

Table 9-4. Sumner Wastewater Plant Improvements and Costs Summary	
Improvement Category	**Estimated Project Cost (1999)**
Plant Capacity Improvements	$5,418,000
Plant Upgrades (discharge standards)	$3,435,000
TOTAL PROJECTED COST:	**$8,853,000**

Table 9-5 provides a summary of the total recommended improvement costs. The costs for collection and treatment are separated into 1) capacity improvements, or 2) upgrades to the collection system and treatment plant to meet new regulatory requirements.

Table 9-5. Total Recommended Improvement Cost		
	System Capacity Improvements	**Recommended System Upgrades**
Collection System Improvements	$5,754,600	$8,826,300
WWTP Improvements	$5,417,900	$3,434,900
TOTAL PROJECTED COST	**$11,172,500**	**$12,261,200**

9.3 EXISTING DEBT SERVICE

The City of Sumner currently is paying for existing debt service through sewer rates and other revenues. Because this outstanding debt has an impact on the existing sewer utility rate, it has been included in this report. The City of Sumner has three outstanding revenue bonds listed in Table 9-6 that are partially paid by sewer utility rates. The 1998 and 1993 bonds are for purchase of property to provide the City of Sumner the option of land applying treated effluent during the summer months to meet NPDES discharge permit limits. Approximately half of the land purchased is currently being used for a golf course owned by the City. The 1992 refunding bond was for sewer improvements throughout Sumner's service area.

Table 9-6. Existing Debt Service						
	Annual Payment in Thousands[(a)] 1999 Dollars					
Description	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
1998 Refunding Bond (Retires 2018)	$283	$281	$285	$283	$481	$481
1993 Revenue Bond	$64	$72	$68	$206	–	–
1992 Refunding Bond	$122	$110	$111	–	–	–
TOTAL ANNUAL BOND PAYMENTS:	**$469**	**$463**	**$464**	**$489**	**$481**	**$481**

(a) Annual bond payments were presented in Table 7-8 of the *Wastewater Treatment Facility Final Comprehensive Facility Plan Amendment No. 1* as prepared by Gray & Osborne.

According to financial staff at the City, Sumner receives approximately $200,000 in revenues from the golf course and an additional $40,000 in revenues for lease of the undeveloped portion of property.

9.4 FUNDING STRATEGIES

Two separate funding options were considered to generate capital to pay for the recommended improvements.

- *Funding Option 1 Assumptions:*
  - Capacity improvements will be paid by revenues generated from SDC.
  - Upgrades to the system will be paid through sewer utility rates.

  Option 1 also assumes that the existing debt will continue to be paid for by revenues generated by sewer rates, and revenues from the golf course and land lease.

- *Funding Option 2 Assumptions:*
  - Capacity improvements will be paid by revenues generated from SDC.
  - Upgrades to the system will be paid through sewer utility rates.

  Option 2 assumes that half of the existing annual debt payment will be paid for by revenues generated by SDC and that the remainder of the debt will be paid for by revenues from the golf course and land lease.

Funding Option No. 1

Funding Option No. 1 assumes that capacity improvements are paid by the System Development Charges as shown in Table 9-7. The City's SDCs would need to be increased approximately 15 percent from the current rate of $2,011 to $2,318 as shown.

Table 9-7. Funding Option No. 1 – Projected SDC Charge (1999 Dollars)

	Recommended Capacity Improvement	Projected SDC Charge
Treatment Plant	$5,417,900	$1,205[(a)]
Collection System	$5,754,600	$1,113[(b)]
TOTAL	**$11,172,500**	**$2,318**

(a) Capacity improvements of $5,427,900 divided by 4,495 ERUs. The 4,495 ERUs represent projected additional ERUs in a 20-year period.

(b) Capacity improvements of $5,754,600 divided by 5,170 ERUs. Total ERUs calculated by adding projected residential ERUs of 4,494 and commercial/industrial ERUs of 676 for the next 23-year period.

This analysis does not include any additional increase for inflation since the current rate structure contains an annual inflationary adjustment.

All system upgrades are paid for by sewer utility rates as shown in Table 9-8. It is also assumed that the existing debt payment that is partially paid for by rates would continue to be paid by rates. To implement the improvements identified for both the collection system and the treatment plant, the City would need to increase revenues by approximately 50 percent.

Table 9-8. Funding Option No. 1 – Projected Sewer Utility Rate Increase

	Capital Costs	Annual Cost	Additional O&M	Total Annual Cost	Percent Increase in Sewer Rates[a]
Treatment Plant	$3,434,900[b]	$153,000[c]	$103,000[d]	$256,000	21%
Collection System	$8,826,300[e]	$383,000[f]	–	$383,000	31%
TOTAL:	**$12,261,200**	**$536,000**	**$103,000**	**$639,000**	**52%**

(a) Percent increase in sewer rates determined by dividing total annual cost by projected 2000 revenues of $1,240,000

(b) City of Sumner/G&O estimates for recommended plant upgrades.

(c) Calculated by annual treatment plant debt payment of $393,000 (G&O report Table 7-10) multiplied by recommended percentage of total treatment plant improvement cost upgrades (38.8%).

(d) G&O projected additional annual O&M of $192,950 multiplied by City of Sumner's share of 53.3%.

(e) Parametrix estimates for recommended collection system upgrades, Table 9-3.

(f) Capital costs of $8,826,300 divided by planning period of 23 years.

The recommended rate change would result in a monthly sewer charge for a typical single-family home of approximately $35 to $38 per month.

Funding Option No. 2

Funding Option No. 2 assumes that capacity improvements are paid by the system development charges as shown on Table 9-9. The SDCs will also pay for half of the City of Sumner's current debt payment. This funding option assumes that at least half the value of the land purchased for land application would be considered applicable to addressing future plant capacity. The City's SDCs would need to be increased approximately 67 percent from the current rate of $2,011 to $3,362 as shown.

Table 9-9. Funding Option No. 2 – Projected SDC Charges

	Recommended Capacity Improvement	Projected SDC Charge
Treatment Plant	$5,417,900	$1,205[a]
Collection System	$5,754,600	$1,113[b]
50% of Current Annual Debt Payment	$235,000	$1,044[c]
TOTAL:		**$3,362**

(a) Capacity improvements of $5,427,900 divided by 4,495 ERUs. The 4,495 ERUs represent additional ERUs in a 20-year period.

(b) Capacity improvements of $5,754,600 divided by 5,170 ERUs. Total ERUs calculated by adding projected residential ERUs of 4,494 and commercial/industrial ERUs of 676 for the next 23-year period.

(c) Calculated by dividing recommended capacity improvement by 225 ERUs per year.

This analysis does not include any additional increase for inflation since the current rate structure contains an annual inflationary adjustment.

All system upgrades are paid for by sewer utility rates as shown in Table 9-10. Under this funding option, sewer utility rates would no longer need to support the existing debt payments not covered by golf course or lease revenues. To implement the improvements identified for both the collection system and the treatment plant, the City would need to increase utility rates by approximately 33 percent, which would be 19 percent less than Funding Option No. 1.

Table 9-10. Projected Sewer Rate Increase

	Capital Costs	Annual Cost	Additional O&M	Total Annual Cost	Additional Annual Revenue from SDCs	Percent Increase of Decrease(a)
Treatment Plant	$3,434,900[b]	$153,000[c]	$103,000[d]	$256,000	–	21%
Collection System	$8,826,000[e]	$383,000[f]	–	$383,000	–	31%
Existing Debt Service	–	–	–	–	$235,000[g]	(19%)
TOTAL:	**$12,261,200**	**$536,000**	**$103,000**	**$639,000**	**$235,000**	**33%**

(a) Percent increase in sewer rates determined by dividing total annual cost by projected 2000 revenues of $1,240,000.

(b) From City of Sumner/G&O estimates for recommended plant upgrades.

(c) Based upon G&O report Table 7-10. Calculated by multiplying annual treatment plant debt payment of $393,000 by recommended upgrades percentage of total treatment plant improvement cost (38.8%)

(d) From G&O treatment plant report Table 7-6. G&O projected additional annual O&M of $192,950 multiplied by City of Sumner's portion of 53.3%.

(e) Parametrix estimates for recommended collection system upgrades, Table 6-1.

(f) Capital costs of $8,826,300 divided by planning period of 23 years.

(g) Reduction of half of the annual debt service as determined in the SDC table.

The recommended rate change would result in a monthly sewer charge for typical single-family home of approximately $31 to $33 per month.

9.5 ADDITIONAL FINANCIAL ANALYSIS

To finalize the financial element of the sanitary collection system and treatment plant, it is recommended that the City of Sumner conduct a detailed financial analysis prior to implementing rate adjustments. A detailed financial analysis will confirm or deny the impacts of the recommended system improvements on the existing sewer rate fees.

The financial strategies that the analysis should consider include:

- A cash flow analysis that determines the effect on the recommended utility rate increase including:
  - Implementation of the recommended improvements to the wastewater treatment plant.
  - Implementation of the recommended improvements to the collection system.
- An analysis to determine if the current debt payment could be paid for by SDCs as listed in Funding Option No. 2.
- The effects of Initiative 695 upon any proposed rate increase.

A detailed financial analysis of the City of Sumner's rate structure has not been included at this time for the following reasons:

- The estimated construction cost for the wastewater treatment plant will adjust throughout the design stage. Construction cost estimates are more accurately determined in the financial analysis if prepared close to the beginning of construction.
- There has been sufficient time under the January 31, 2000, rate increase to assess the true financial effects.
- The City needs to determine if portions of the current debt payment can be supported by the SDCs.

9.6 SUMMARY

It is recommended that the City Council and the Utility Department consider Funding Option No. 2 that includes a combined SDC and sewer rate increase, along with payment of a portion of the current debt through SDCs. The option is more equitable to both existing and future collection system customers for the following reasons:

- Growth pays for growth – The future sewer system customers would pay for the capacity improvements necessary to provide them service.
- Existing pays for existing – The customers who have been using the system would be responsible to pay for the system upgrades that benefit all customers.

APPENDIX A

Demographic Information

ANNUAL CLIMATOLOGICAL SUMMARY

NAME: Sumner WWTP CITY: Sumner STATE: Wa. ELEV: LAT: 47 12 01 LONG: 122 15 16

TEMPERATURE (°F), HEAT BASE 64.9, COOL BASE 64.9

YR	MO	MEAN MAX	MEAN MIN	MEAN	DEP. FROM NORM	HEAT DEG DAYS	COOL DEG DAYS	HI	DATE	LOW	DATE	MAX >=90	MAX <=32	MIN <=32	MIN <=0
98	1	51.0	26.9	42.4	0.0	658	0	62.0	31	24.5	11	0	1	8	0
98	2	50.7	39.6	45.6	0.0	494	0	63.5	7	28.7	23	0	0	1	0
98	3	56.0	38.9	47.7	0.0	463	0	72.5	20	28.3	7	0	0	4	0
98	4	67.5	46.1	52.4	0.0	282	10	95.5	30	32.7	8	2	0	0	0
98	5	69.1	48.5	57.5	0.0	120	26	100.4	1	37.8	16	1	0	0	0
98	6	72.1	58.0	63.5	0.0	18	132	100.4	29	47.0	28	11	0	0	0
98	7	83.5	61.5	70.6	0.0	0	309	109.7	26	51.9	20	19	0	0	0
98	8	76.0	62.8	68.8	0.0	0	255	105.3	3	46.7	19	19	0	0	0
98	9	72.5	56.4	62.7	0.0	49	57	97.3	1	43.3	30	6	0	0	0
98	10	61.0	42.2	51.4	0.0	345	0	78.6	7	31.3	30	0	0	1	0
98	11	54.8	39.8	46.7	0.0	504	0	64.1	15	32.0	7	0	0	1	0
98	12	51.6	19.6	40.5	0.0	732	0	60.6	12	11.6	22	0	2	7	0
		63.8	45.0	54.1	0.0	3665	790	109.7	JUL	11.6	DEC	58	3	22	0

PRECIPITATION (in)

YR	MO	TOTAL	DEP. FROM NORM	MAX OBS. DAY	DATE	DAYS OF RAIN OVER .01	.1	1
98	1	0.00	0.00	0.00	1	0	0	0
98	2	0.00	0.00	0.00	1	0	0	0
98	3	0.00	0.00	0.00	1	0	0	0
98	4	0.00	0.00	0.00	1	0	0	0
98	5	0.00	0.00	0.00	1	0	0	0
98	6	0.00	0.00	0.00	1	0	0	0
98	7	0.00	0.00	0.00	1	0	0	0
98	8	0.00	0.00	0.00	1	0	0	0
98	9	0.00	0.00	0.00	1	0	0	0
98	10	0.42	0.00	0.17	31	4	1	0
98	11	10.85	0.00	3.09	25	24	16	3
98	12	9.00	0.00	1.94	27	17	14	1
		20.27	0.00	3.09	NOV	45	31	4

WIND SPEED (mph)

YR	MO	AVG.	HI	DATE	DOM DIR
98	1	1.8	31.0	17	S
98	2	1.5	27.0	10	S
98	3	1.1	21.0	23	S
98	4	1.1	27.0	11	SSW
98	5	0.9	17.0	17	SSW
98	6	0.9	21.0	15	SSW
98	7	0.8	14.0	12	W
98	8	0.7	15.0	5	W
98	9	0.7	29.0	17	N
98	10	0.6	19.0	8	SSW
98	11	1.2	34.0	23	S
98	12	2.0	35.0	25	S

ANNUAL CLIMATOLOGICAL SUMMARY

NAME: Sumner WWTP CITY: Sumner STATE: Wa. ELEV: LAT: 47 12 01 LONG: 122 15 16

TEMPERATURE (°F), HEAT BASE 64.9, COOL BASE 64.9

YR	MO	MEAN MAX	MEAN MIN	MEAN	DEP. FROM NORM	HEAT DEG DAYS	COOL DEG DAYS	HI	DATE	LOW	DATE	MAX >=90	MAX <=32	MIN <=32	MIN <=0
99	1	49.8	32.6	42.2	0.0	679	0	58.7	10	27.7	3	0	0	4	0
99	2	50.5	35.6	43.4	0.0	551	0	60.0	28	29.1	9	0	0	7	0
99	3	52.6	38.4	45.4	0.0	531	0	71.1	20	26.9	6	0	0	4	0
99	4	63.4	42.2	50.5	0.0	324	1	94.1	16	29.5	14	2	0	4	0
99	5	68.0	46.9	55.1	0.0	195	13	93.9	23	36.6	8	2	0	0	0
99	6	75.2	53.4	61.7	0.0	39	86	103.2	12	43.8	2	5	0	0	0
99	7	74.1	56.9	65.9	0.0	12	173	103.9	9	44.8	8	17	0	0	0
99	8	71.5	58.4	66.7	0.0	10	200	98.5	24	49.0	31	13	0	0	0
99	9	66.1	50.4	59.6	0.0	112	20	88.7	8	36.3	28	0	0	0	0
99	10														
99	11														
99	12														
		63.5	46.1	54.5	0.0	2453	494	103.9	JUL	26.9	MAR	39	0	19	0

PRECIPITATION (in)

YR	MO	TOTAL	DEP. FROM NORM	MAX OBS. DAY	DATE	DAYS OF RAIN OVER .01	.1	1
99	1	7.22	0.00	1.03	28	20	17	2
99	2	6.04	0.00	1.04	27	23	16	1
99	3	3.59	0.00	0.52	12	21	12	0
99	4	1.23	0.00	0.18	21	15	2	0
99	5	1.65	0.00	0.47	17	11	5	0
99	6	1.94	0.00	0.89	24	10	6	0
99	7	1.52	0.00	0.65	3	6	3	0
99	8	0.94	0.00	0.24	3	8	3	0
99	9	0.38	0.00	0.24	23	4	1	0
99	10	0.00	0.00	0.00	1	0	0	0
99	11	0.00	0.00	0.00	1	0	0	0
99	12	0.00	0.00	0.00	1	0	0	0
		24.51	0.00	1.04	FEB	118	65	3

WIND SPEED (mph)

YR	MO	AVG.	HI	DATE	DOM DIR
99	1	1.4	33.0	14	S
99	2	2.9	38.0	6	S
99	3	2.1	33.0	3	S
99	4	1.6	23.0	2	SSW
99	5	1.5	28.0	4	SSW
99	6	1.1	22.0	5	SSW
99	7	1.0	19.0	2	SSW
99	8	0.8	18.0	25	W
99	9	0.9	23.0	24	W
99	10	0.0	0.0	1	---
99	11	0.0	0.0	1	---
99	12	0.0	0.0	1	---

Yearly Rainfall (in) - Sumner WWTP

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOT
1991	4.01	5.69	4.26	7.37	1.74	1.57	0.25	1.49	0.45	1.33	6.37	3.11	37.64
1992	5.64	3.55	2.07	4.16	0.83	1.69	1.21	0.96	1.67	2.31	6.67	3.11	33.87
1993	3.91	0.48	4.67	6.04	3.57	2.77	1.82	0.37	0.09	2.06	1.50	3.86	31.14
1994	3.50	4.59	3.83	2.53	2.30	3.00	0.39	0.88	1.83	3.59	4.62	8.03	39.09
1995	3.69	4.38	5.29	2.40	1.43	2.18	1.63	1.20	2.71	5.03	11.48	5.46	46.88
1996	7.04	8.17	3.11	6.97	3.37	0.87	1.28	0.31	2.49	4.77	7.23	11.32	56.93
1997	7.70	3.13	6.91	3.88	3.97	2.71	1.56	1.44	3.06	5.81	4.50	3.37	48.04
1998	6.85	3.01	4.08	1.19	2.65	0.90	0.92	0.98	0.38	2.98	10.85	9.00	43.79
1999	7.22	6.18	3.59	1.23	1.65	1.94	1.52	0.94	0.38	~~0.01~~	---	---	24.66
MIN	3.50	0.48	2.07	1.19	0.83	0.87	0.25	0.31	0.09	0.01	1.50	3.11	31.14
MAX	7.70	8.17	6.91	7.37	3.97	3.00	1.82	1.49	3.06	5.81	11.48	11.32	56.93
AVG	5.51	4.35	4.20	3.97	2.39	1.96	1.18	0.95	1.45	3.10	6.65	5.91	42.17

City of Sumner
Flow Determination (GPAD)

Zoning	Lot size/ac	Road Deduct	# Units/acre	GPD/capita	Capita/unit	GPAD
LDR12	12000	10890	2.72	85	2.7	625.0
LDR85	8500	10890	3.84	85	2.7	880.0
LDR72	7200	10890	4.54	85	2.7	1050.0
LDR65	6500	10890	5.03	85	2.7	1150.0
LDR6	6000	10890	5.45	85	2.7	1250.0
MDR			10	85	2.7	2295.0
HDR			20	85	2.7	4590.0
GC*						1500
NC*						1500
CBD*						1500
M1*						1300
M2*						1300
AG						250

*For flow projections see attached North ULID Evaluation

DRAFT

NORTH SUMNER ULID EVALUATION

INTRODUCTION

Parametrix, Inc. was retained by the City of Sumner to provide a preliminary evaluation of the feasibility of providing sanitary sewers for a portion of the north end of Sumner, as shown on Figure 1. The overall objective of this evaluation was to develop implementable solutions and estimated costs for trunk sewer facilities. Specific tasks included:

- Complete a reconnaissance-level survey of the proposed pipeline alignment between 8th Street East and Puyallup Street to verify existing ground elevations.
- Establish total acreage in the North Sumner service area and estimate flows based on criteria outlined in the Sumner Comprehensive Plan.
- Develop pipeline/pump station alternatives for trunk sewer facilities for conveyance of wastewater from the ULID area to the City's existing sanitary sewer system.

DESIGN FLOWS

Projected wastewater flows per acre were outlined in the City's 1989 Sewer Collection System Comprehensive Plan based on land use. These flow estimates were reevaluated for the study area. Average design flows and peaking factors for each of the proposed land uses designated in the ULID are shown in Table 1.

Table 1
Projected Wastewater Flows by Land Use

Land Use	Avg. Design Flow (gpad)	Peaking Factor	Peak Design Flow (gpad)
Industrial (unplatted)	1,300	2.5	3,250
Industrial (platted)	1,300	3	3,900
Commercial	1,500	2.5	3,750
Public Facilities	1,500	2.5	3,750

Two peaking factors were used for industrial zoned land. For unplatted land, a peaking factor of 2.5 was utilized in that it assumes approximately 16.5 percent of the gross acreage will ultimately be used for roads and rights-of-way. This is equivalent to using a peaking factor of 3 where developable acreages are known.

3.2 Flow Projections

Depending upon actual land use, the actual flow produced by the development could vary from the assumed 1700 gal/acre/day. Table 1 shows representative flows for individual land uses. Because these flows are inclusive of right of way, they can be directly compared to the flow of 1,700 gal/acre/day.

TABLE 1
Wastewater Flows For Individual Land Uses

Land Use	Flow Rate
Single Family Residential	540-1,095 gal/acre/day[1]
Multifamily Duplexes, Townhouses, etc.	1,224 gal/acre/day
Multifamily Apartments	1,500-2,040 gal/acre/day[1]
Offices	1,000 gal/acre/day
Retail	300 gal/acre/day
Light Industrial	420 gal/acre/day[2]
Heavy Industrial	3,620 gal/acre/day
Process Industrial	30,000 gal/acre/day[3]

(1) The highest value in the range for single family residential and multifamily apartments will be used to be conservative.

(2) Light Industrial refers to industries in which no process water is used i.e. a clothing factory or assembly line.

(3) Industries which use process water, such as food processing or wood processing, have significantly higher flows. Process flows have been estimated at 30,000 gal/acre/day, however, this could differ depending upon the individual industry. An example of an industry which uses process water is Mazza Cheese of Sumner, WA. The plant produces an average flow of 107,000 gal/day with a maximum flow up to 180,000 gal/day. The plant occupies approximately 4.2 acres. This would be an average flow of 25,555 gal/acre/day and a maximum flow of 42,857 gal/acre/day.

To get an idea of how flow could vary based on aggregate land use, several development options have been outlined in Tables 2, 3, and 4. Total weighted flows are inclusive of right-of-way. Table 2 shows a mix of residential, retail, office and industrial use.

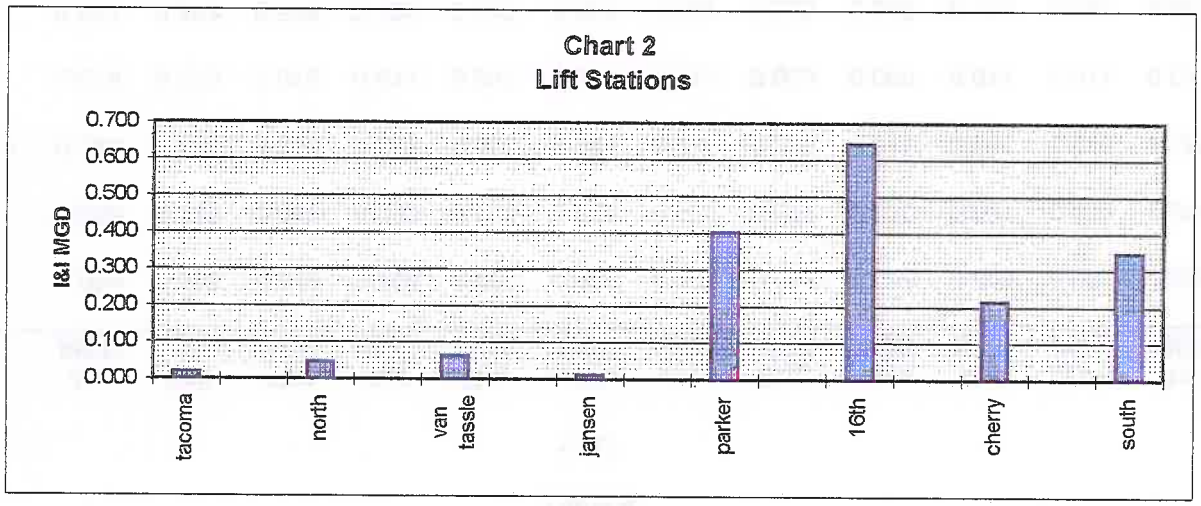
APPENDIX B

I/I Calculations, Pump Station, and Wastewater Treatment Plant Data

Table 2

1996

	Jan MGD	Feb MGD	Mar MGD	Apr MGD	May MGD	June MGD	July MGD	Aug MGD	Sept MGD	Oct MGD	Nov MGD	Dec MGD	I&I MGD
tacoma	0.010	0.010	0.008	0.009	0.008	0.009	0.010	0.009	0.010	0.009	0.010	0.027	0.019
north	0.050	0.056	0.027	0.033	0.034	0.022	0.026	0.026	0.019	0.023	0.043	0.068	0.049
van tassle	0.087	0.108	0.097	0.094	0.077	0.065	0.060	0.060	0.066	0.070	0.085	0.125	0.065
jansen	0.017	0.018	0.013	0.015	0.011	0.010	0.010	0.009	0.008	0.012	0.016	0.020	0.012
parker	0.554	0.488	0.350	0.400	0.375	0.285	0.270	0.249	0.254	0.288	0.416	0.651	0.402
16th	0.910	0.840	0.565	0.789	0.597	0.434	0.478	0.406	0.403	0.563	0.645	1.046	0.643
cherry	0.090	0.293	0.199	0.108	0.113	0.083	0.079	0.117	0.095	0.109	0.138	0.112	0.214
south	0.294	0.555	0.261	0.279	0.258	0.210	0.210	0.234	0.222	0.234	0.246	0.369	0.345
Q Pumpec	2.01	2.37	1.52	1.73	1.47	1.12	1.14	1.11	1.08	1.31	1.60	2.42	1.341
Q Plant	1.95	2.36	1.44	1.64	1.53	1.28	1.23	1.28	1.28	1.31	1.67	2.30	1.130
% of Plant	103%	100%	106%	105%	96%	87%	93%	87%	84%	100%	96%	105%	
rain	7.04	8.17	3.11	6.97	3.37	0.87	1.28	0.31	2.49	4.77	7.23	11.32	

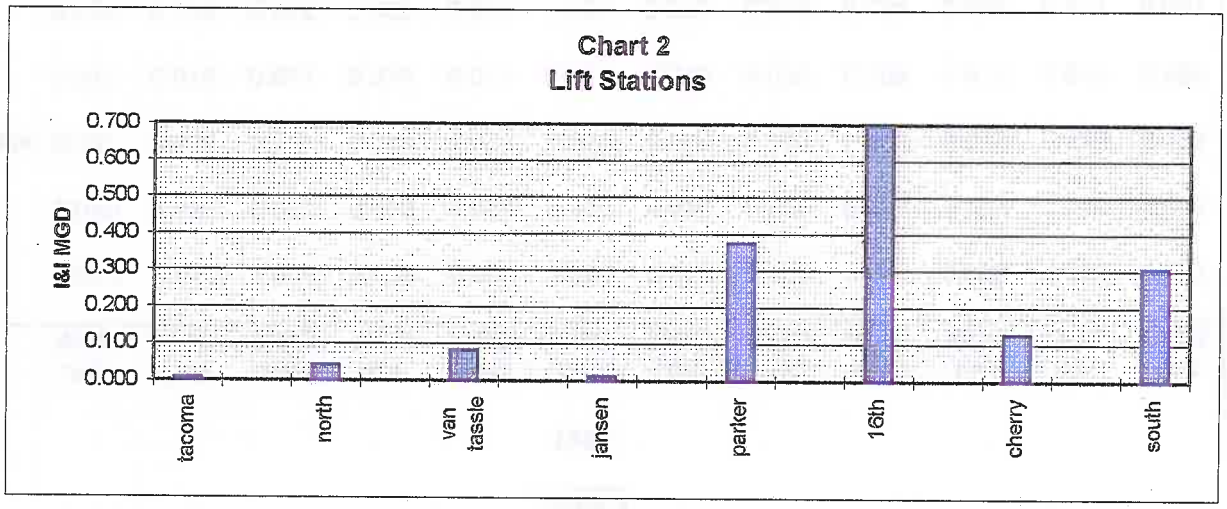


I&I = Max - Min

Table 2

1997

	Jan MGD	Feb MGD	Mar MGD	Apr MGD	May MGD	June MGD	July MGD	Aug MGD	Sept MGD	Oct MGD	Nov MGD	Dec MGD	I&I MGD
tacoma	0.009	0.006	0.010	0.008	0.007	0.006	0.004	0.004	0.005	0.009	0.006	0.006	0.006
north	0.058	0.036	0.049	0.033	0.033	0.032	0.022	0.017	0.020	0.037	0.032	0.034	0.041
van tassle	0.120	0.086	0.083	0.043	0.091	0.044	0.039	0.039	0.043	0.041	0.055	0.067	0.081
jansen	0.018	0.013	0.015	0.011	0.011	0.011	0.010	0.009	0.009	0.011	0.011	0.021	0.012
parker	0.631	0.393	0.508	0.359	0.346	0.358	0.342	0.295	0.300	0.404	0.482	0.667	0.373
16th	1.109	0.608	0.778	0.554	0.517	0.501	0.459	0.411	0.430	0.530	0.597	0.603	0.698
cherry	0.162	0.132	0.168	0.093	0.175	0.219	0.110	0.107	0.110	0.128	0.108	0.107	0.126
south	0.534	0.333	0.423	0.273	0.279	0.267	0.237	0.228	0.243	0.261	0.258	0.258	0.306
Q Pumped	2.64	1.61	2.03	1.37	1.46	1.44	1.22	1.11	1.16	1.42	1.55	1.76	1.531
Q Plant	2.59	1.84	1.99	1.47	1.38	1.38	1.26	1.16	1.26	1.38	1.47	1.51	1.430
% of Plant	102%	87%	102%	93%	106%	104%	97%	96%	92%	103%	105%	117%	
rain	7.70	3.13	6.91	3.88	3.97	2.71	1.56	1.44	3.06	5.81	4.5	3.37	

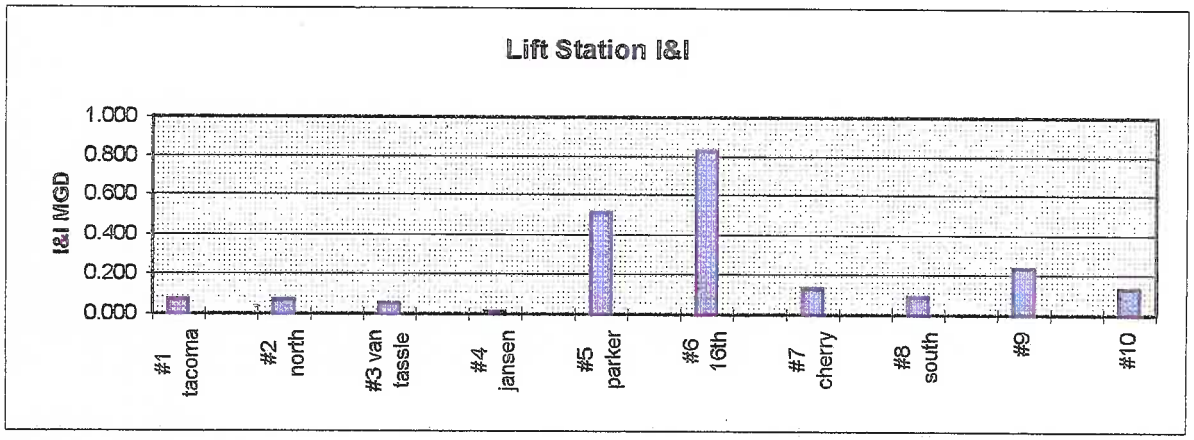


I&I = Max - Min

Table 2

1998

	Jan MGD	Feb MGD	Mar MGD	Apr MGD	May MGD	June MGD	July MGD	Aug MGD	Sept MGD	Oct MGD	Nov MGD	Dec MGD	I&I MGD
#1 tacoma	0.015	0.004	0.007	0.006	0.005	0.007	0.008	0.006	0.009	0.012	0.011	0.075	0.071
#2 north	0.043	0.023	0.040	0.063	0.030	0.034	0.081	0.092	0.063	0.022	0.041	0.087	0.070
#3 van tassl	0.068	0.043	0.078	0.066	0.075	0.062	0.059	0.069	0.059	0.068	0.093	0.096	0.053
#4 jansen	0.017	0.013	0.012	0.009	0.009	0.009	0.006	0.009	0.009	0.010	0.014	0.018	0.013
#5 parker	0.476	0.394	0.400	0.323	0.312	0.305	0.291	0.277	0.253	0.279	0.505	0.769	0.515
#6 16th	0.754	0.610	0.622	0.494	0.475	0.480	0.469	0.365	0.435	0.482	0.925	1.194	0.829
#7 cherry	0.111	0.093	0.163	0.055	0.073	0.187	0.146	0.103	0.129	0.121	0.139	0.162	0.133
#8 south	0.327	0.252	0.282	0.246	0.252	0.243	0.249	0.240	0.237	0.261	0.270	0.318	0.090
#9	0.136	0.011	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.236	0.002	0.235
#10	0.019	0.047	0.088	0.143	0.071	0.069	0.077	0.032	0.012	0.026	0.058	0.102	0.131
Q Pumped	1.81	1.43	1.60	1.26	1.23	1.33	1.31	1.16	1.19	1.25	2.00	2.72	1.557
Q Plant	1.90	1.52	1.71	1.56	1.40	1.43	1.44	1.40	1.32	1.25	1.72	2.22	0.970
% of Plant	95%	94%	94%	81%	88%	93%	91%	83%	91%	100%	116%	122%	
rain	6.85	3.01	4.08	1.19	2.65	0.90	0.92	0.98	0.38	3.07	10.85	9.00	



I&I = Max - Min

SUMNER

City of Sumner
Wastewater Treatment Plant
13114 63rd Street East
Sumner, WA 98390

Date: 5-18-99

To: Kathy Cupps, PE
Water Quality Program
Department of Ecology

From: Greg Kongslie, Foreman
City of Sumner, Wastewater Treatment Plant

Re: Improvement to identification and reduction of plant flows due to inflow and infiltration.

Dear Kathy,

Sumner has recently purchased three inline portable flow meters for inflow and infiltration identification. We have also purchased a video recording system to camera sewer lines throughout the Sumner sewer system. These purchases will allow us to better identify problems where groundwater and surface waters are entering the sewage collection system. Sumner has also purchased a grouting machine to seal leakage from cracks in sewer manholes where needed.

We have already identified numerous locations where I & I are occurring and have made repairs or are in the process of repairing these sources. We will continue to monitor and remove I & I sources throughout this year and proceeding years to minimize inflow and infiltration sources in Sumners collection system. We are planning to aggressively track and repair as many sources as time and labor permit. Sumner is dedicating more man hours to I & I tracking than it has in previous years. If we can stay focused to Inflow & Infiltration identification, reductions should be seen in future years wet weather flows. The greatest challenge to reduction in I & I will be the lack of labor to dedicate to this program. We will make it a priority to try to meet this challenge.

Sumner Sewer Department has mapped and assigned an identification number to all sewer manholes in the collection system. We are also developing a program to monitor and target I & I beginning with the portions of the collection system most influenced by groundwater intrusion.

We will know more to whether or not our efforts to reduction in plant I & I bear fruit in the next few years.

Please call me at (253) 863-7153 if you have any questions.

Sincerely,

Greg Kongslie

CITY OF SUMNER SEWAGE TREATMENT PLANT

ANNUAL INFILTRATION & INFLOW REPORT

JAN 1, 1999 TO DEC 31, 1999

	AVERAGE MONTHLY FLOW (MGD)			TOTAL MONTHLY RAINFALL			POPULATION SERVED		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
JAN	2.59	1.90	2.20	7.70	6.85	7.22	12850	11750	12605
FEB	1.84	1.52	2.12	3.13	3.01	6.18	12655	11550	13960
MAR	1.99	1.71	1.91	6.91	4.08	3.59	11720	11205	12890
APR	1.47	1.56	1.49	3.88	1.19	1.23	10245	11860	13135
MAY	1.38	1.40	1.40	3.97	2.65	1.65	10460	11800	12645
JUN	1.38	1.43	1.33	2.71	0.90	1.94	8765	12360	12335
JUL	1.26	1.44	1.31	1.56	0.92	1.52	9075	13080	11815
AUG	1.16	1.40	1.31	1.44	0.98	0.94	9235	11880	12595
SEP	1.26	1.32	1.28	3.06	0.38	0.38	10855	12080	12765
OCT	1.38	1.25	1.29	5.81	3.07	2.48	11495	11630	12700
NOV	1.47	1.72	1.92	4.50	10.85	9.74	10895	12770	14340
DEC	1.51	2.22	1.87	3.37	9.00	4.32	11670	13570	14180
MAX	2.59	2.22	2.20						
MIN	1.16	1.25	1.28						
AVG	1.56	1.57	1.62						

I/I = HIGH - LOW MONTH

	ADDITIONAL LINES ADDED		
	1997	1998	1999
JAN			
FEB			
MAR			3775
APR			1319
MAY			
JUN			1619
JUL			645
AUG			3628
SEP			
OCT			5101
NOV			927
DEC			
SUMNER (ft)	36274	4261	9408
BONNEY LAKE (ft)	3000	2746	0
PIERCE COUNTY (ft)	14599	0	7606
TOTAL FEET ADDED	53873	7007	17014
TOTAL MILES ADDED	10.2	1.33	3.22

INFILTRATION & INFLOW SUMMARY

YEAR	I/I	% OVER BASE	% OF DESIGN
1979	0.43	BASE	21.5%
1997	1.43	232.6%	54.6%
1998	0.97	125.6%	37.0%
1999	0.92	114.0%	35.1%

BASED ON FLOW OF
2.62 MGD.

City of Sumner Sewage Treatment Plant

Annual Treatment Facility Review Report For The Year 1999

Peak Design Flow 8.50 mgd
Average Interim Flow 2.62 mgd *
Average Final Design Flow 3.42 mgd

Design Population Equivalent 32000
Present Population Served 12850

Table 1, Monthly Average Loading

Month	Flow (MGD)	BOD (lbs/day)	TSS (lbs/day)
JAN	2.20	2521	2775
FEB	2.12	2792	2924
MAR	1.91	2578	2725
APR	1.49	2627	2585
MAY	1.40	2529	2458
JUN	1.33	2471	2330
JUL	1.31	2363	2208
AUG	1.31	2519	2353
SEP	1.28	2553	2401
OCT	1.29	2540	2327
NOV	1.92	2868	2719
DEC	1.87	2836	2692

Table 2, Maximum Monthly Average Loading (Highest Month)

	Month	MO. AVG.	Design Cap.	% of Design Cap.
Interim Flow (MGD)	JAN	2.20	2.62	84%
Interim BOD (lbs/day)	NOV	2868	5800	49%
InterimTSS (lbs/day)	FEB	2924	5200	56%
Final Flow (MGD)	JAN	2.20	3.42	64%
Final BOD (lbs/day)	NOV	2868	6400	45%
Final TSS (lbs/day)	FEB	2924	6400	46%

lbs/day = flow (mgd) * BOD , TSS (mg/l) * 8.34 lbs/gallon

Please note, if actual flow or waste load reaches 85 percent of design capacity, the permittee shall submit a plan and schedule in accordance with Supplemental Condition 51 of the permit.

* Final Limitations (2.62MGD < Flow < 3.42 MGD)
Final Criteria @ 3.42 MGD
BOD (lbs/day) 6400
TSS (lbs/day) 6400

City of Sumner

1998

Permit Violations Review

This review shall provide, on a monthly basis;

1. Effluent limits - date, parameter (including flow) , permit limit violated, reported value and 24 hour flow.

2. Raw sewage bypasses - date(s) , location, receiving water, duration (hours) and volume.

3. Inplant secondary treatment bypasses - date(s), duration (hours), total plant flow, volume bypassed, and treatment provided, e.g. primary treatment and disinfection.

Response

1. Effluent limits: None

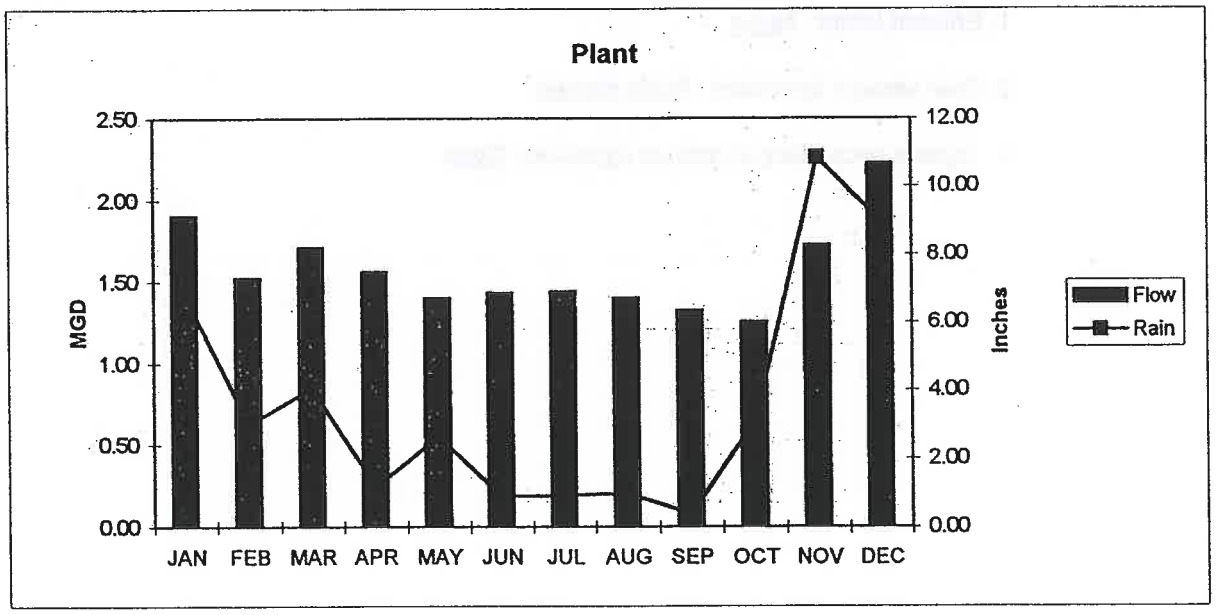
2. Raw sewage bypasses: None Known

3. Inplant secondary treatment bypasses: None

CITY OF SUMNER

1998 INFLOW & INFILTRATION (I&I) REPORT

	RAIN (in)	PLANT (mgd)	SUMNER (mgd)	B.L. (mgd)
JAN	6.85	1.90	1.04	0.86
FEB	3.01	1.52	0.79	0.73
MAR	4.08	1.71	0.95	0.76
APR	1.19	1.56	0.90	0.67
MAY	2.65	1.40	0.75	0.66
JUN	0.90	1.43	0.76	0.66
JUL	0.92	1.44	0.79	0.65
AUG	0.98	1.40	0.75	0.65
SEP	0.38	1.32	0.67	0.65
OCT	3.07	1.25	0.61	0.64
NOV	10.85	1.72	0.90	0.84
DEC	9.00	2.22	1.20	1.02

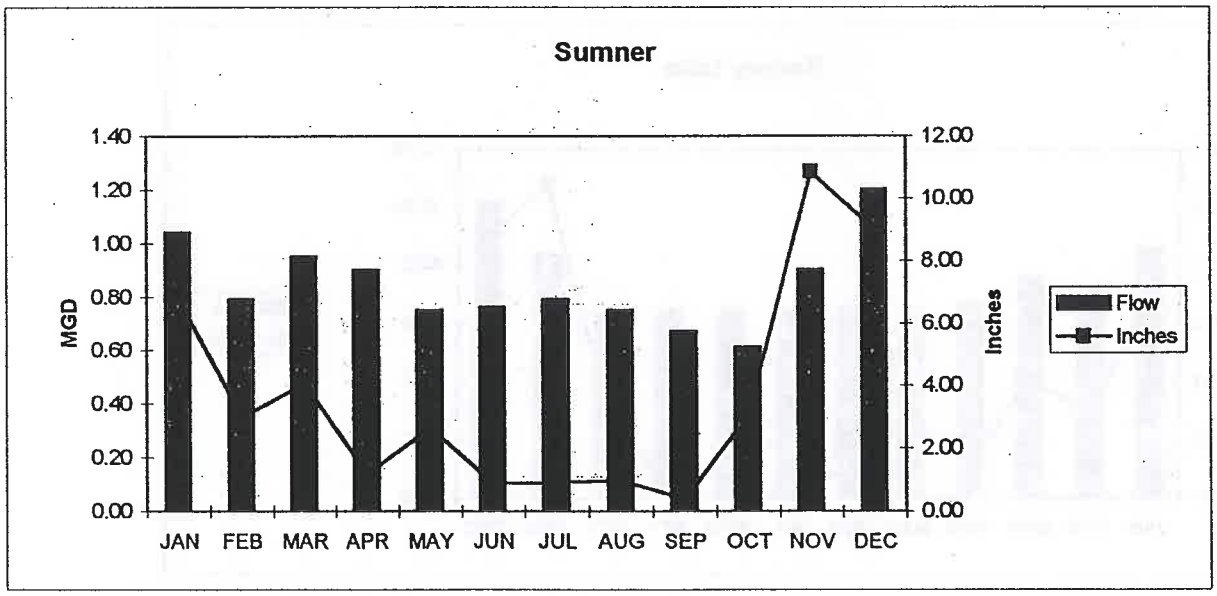


THE BAR GRAPH REPRESENTS PLANT FLOWS AS COMPARED WITH THE LINE GRAPH WHICH REPRESENTS RAINFALL.

CITY OF SUMNER

1998 INFLOW & INFILTRATION (I&I) REPORT

	RAIN (in)	PLANT (mgd)	SUMNER (mgd)	B.L. (mgd)
JAN	6.85	1.90	1.04	0.86
FEB	3.01	1.52	0.79	0.73
MAR	4.08	1.71	0.95	0.76
APR	1.19	1.56	0.90	0.67
MAY	2.65	1.40	0.75	0.66
JUN	0.90	1.43	0.76	0.66
JUL	0.92	1.44	0.79	0.65
AUG	0.98	1.40	0.75	0.65
SEP	0.38	1.32	0.67	0.65
OCT	3.07	1.25	0.61	0.64
NOV	10.85	1.72	0.90	0.84
DEC	9.00	2.22	1.20	1.02

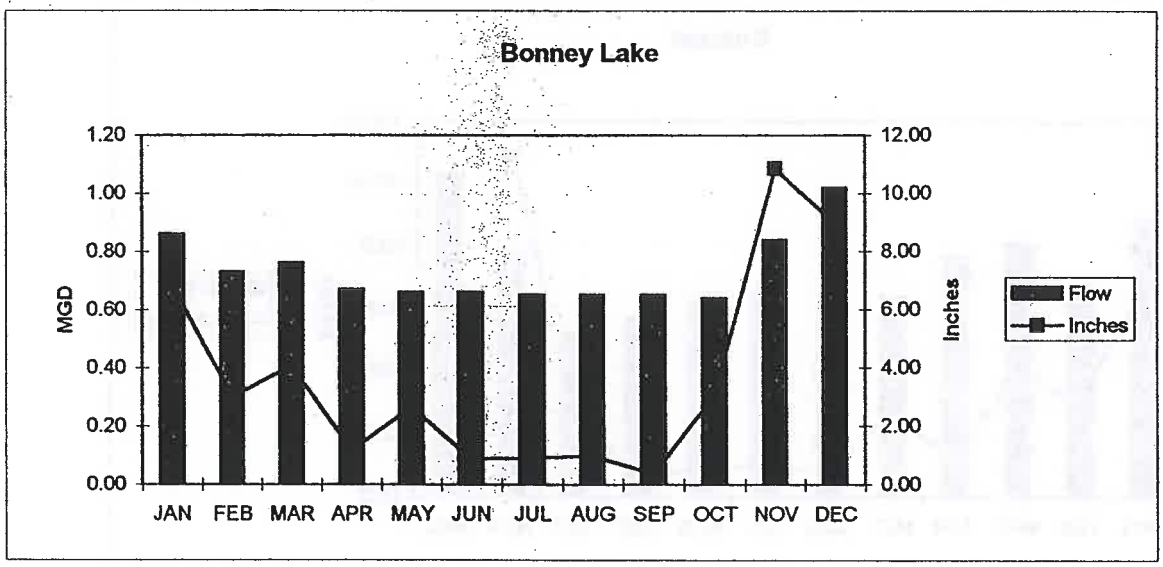


THE BAR GRAPH REPRESENTS SUMNER FLOWS AS COMPARED WITH THE LINE GRAPH WHICH REPRESENTS RAINFALL.

CITY OF SUMNER

1998 INFLOW & INFILTRATION (I&I) REPORT

	RAIN (in)	PLANT (mgd)	SUMNER (mgd)	B.L. (mgd)
JAN	6.85	1.90	1.04	0.86
FEB	3.01	1.52	0.79	0.73
MAR	4.08	1.71	0.95	0.76
APR	1.19	1.56	0.90	0.67
MAY	2.65	1.40	0.75	0.66
JUN	0.90	1.43	0.76	0.66
JUL	0.92	1.44	0.79	0.65
AUG	0.98	1.40	0.75	0.65
SEP	0.38	1.32	0.67	0.65
OCT	3.07	1.25	0.61	0.64
NOV	10.85	1.72	0.90	0.84
DEC	9.00	2.22	1.20	1.02

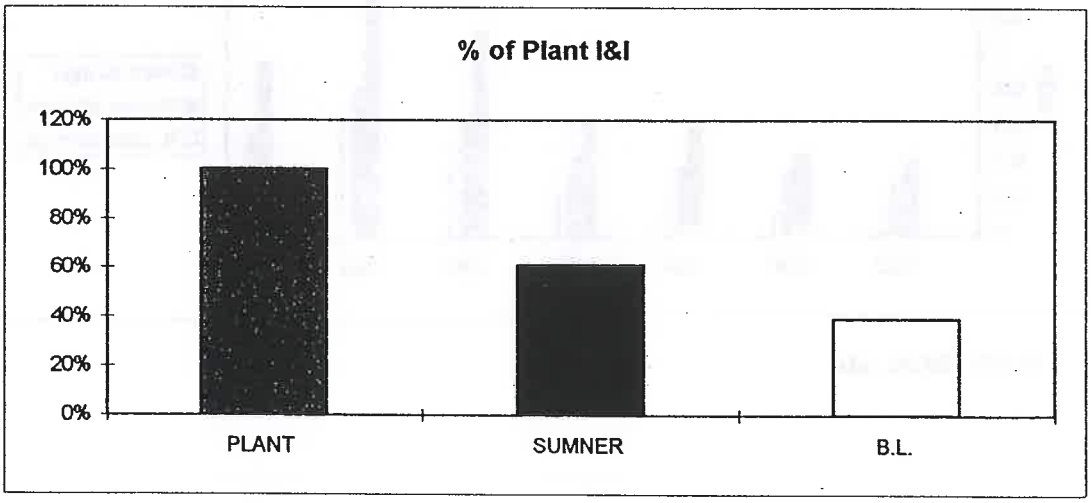


THE BAR GRAPH REPRESENTS BONNEY LAKE FLOWS AS COMPARED WITH THE LINE GRAPH WHICH REPRESENTS RAINFALL.

CITY OF SUMNER

1998 INFLOW & INFILTRATION (I&I) REPORT

	PLANT	SUMNER	B.L.
JAN	1.90	1.04	0.86
FEB	1.52	0.79	0.73
MAR	1.71	0.95	0.76
APR	1.56	0.90	0.67
MAY	1.40	0.75	0.66
JUN	1.43	0.76	0.66
JUL	1.44	0.79	0.65
AUG	1.40	0.75	0.65
SEP	1.32	0.67	0.65
OCT	1.25	0.61	0.64
NOV	1.72	0.90	0.84
DEC	2.22	1.20	1.02
Max	2.22	1.20	1.02
Min	1.25	0.61	0.64
I&I	0.97	0.59	0.38
% of Total I&I	100%	61%	39%

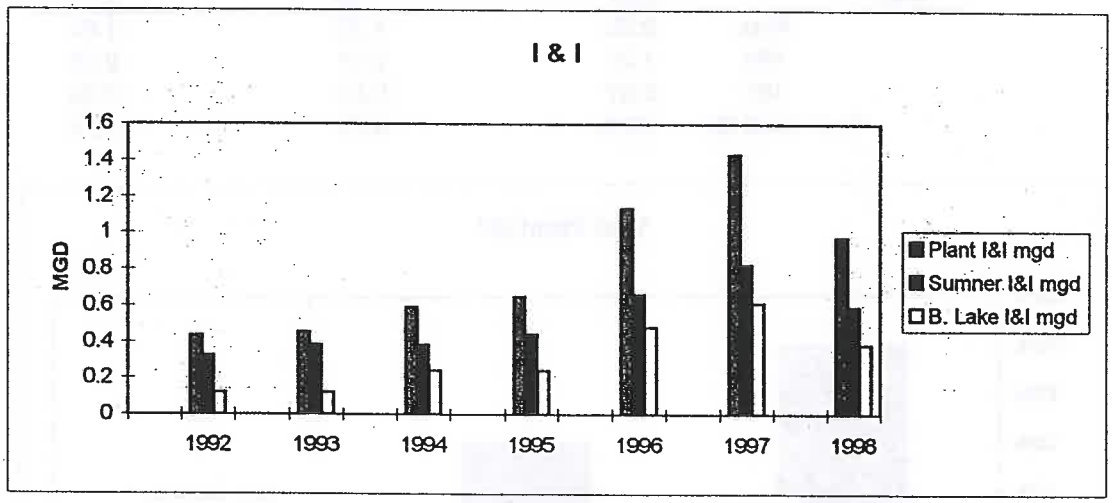


THE BAR GRAPH COMPARES SUMNER & BONNEY LAKES I&I TO THE TOTAL PLANT I&I FOR 1998

CITY OF SUMNER

1998 INFLOW & INFILTRATION (I&I) REPORT

Year	Plant I&I mgd	Sumner I&I mgd	B. Lake I&I mgd
1992	0.43	0.32	0.12
1993	0.45	0.38	0.12
1994	0.59	0.38	0.24
1995	0.65	0.44	0.24
1996	1.13	0.66	0.48
1997	1.43	0.82	0.61
1998	0.97	0.59	0.38

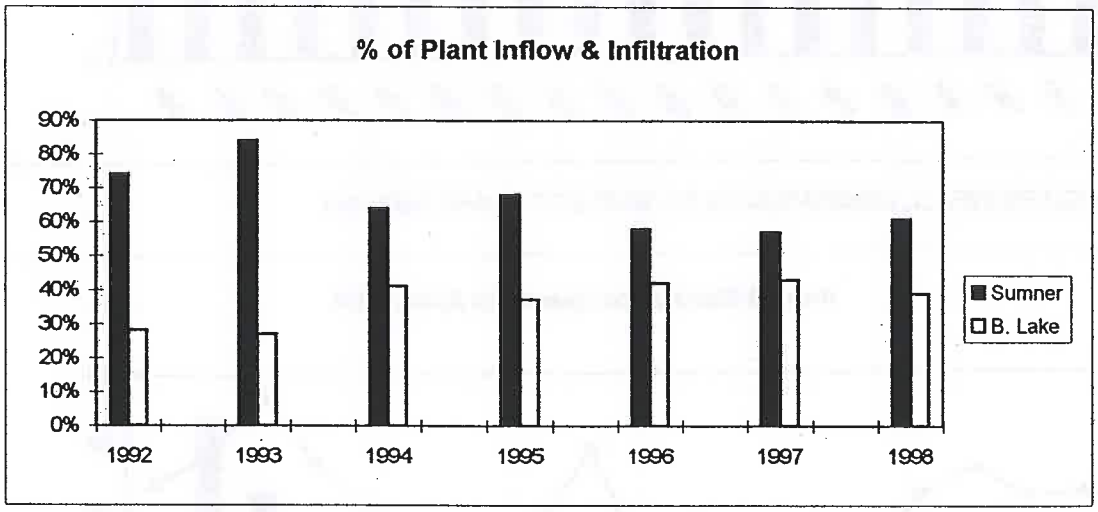


HISTORICAL I&I

CITY OF SUMNER

% of PLANT INFLOW & INFILTRATION (I&I)

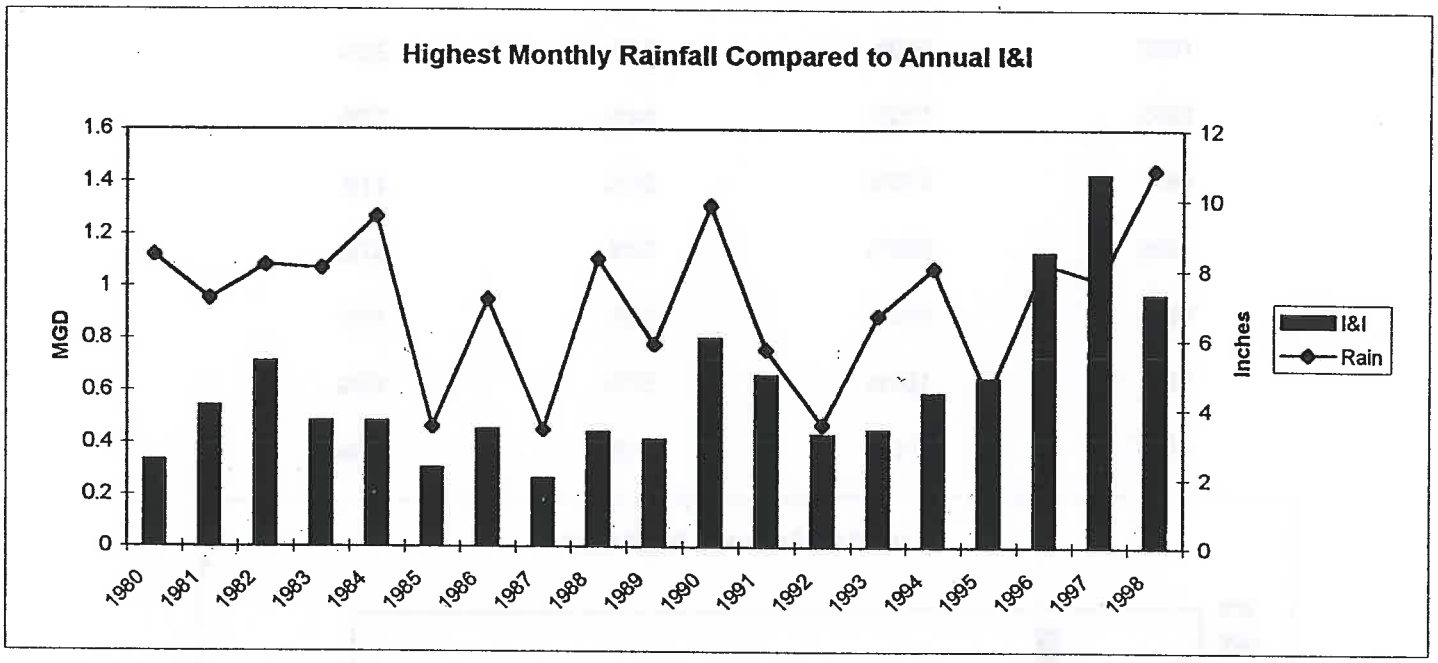
	Plant	Sumner	B. Lake
1992	100%	74%	28%
1993	100%	84%	27%
1994	100%	64%	41%
1995	100%	68%	37%
1996	100%	58%	42%
1997	100%	57%	43%
1998	100%	61%	39%



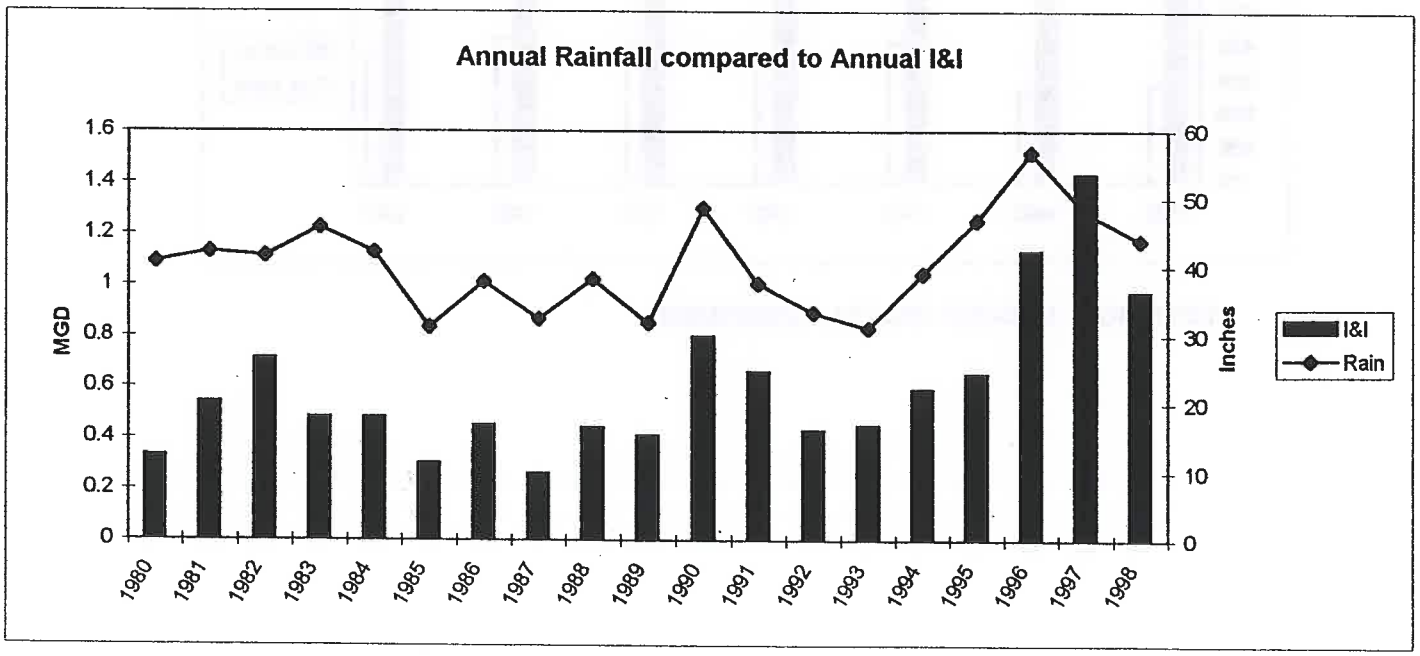
HISTORICAL I&I COMPARISON ASSESSMENT

CITY OF SUMNER

1998 INFLOW & INFILTRATION (I&I) REPORT



I&I TO HIGH RAINFALL COMPARISION TO REFLECT PLANT INFLOW



I&I TO ANNUAL RAINFALL COMPARISION TO REFLECT PLANT INFILTRATION

City of Sumner Rainfall Comparison

Month	96-97	97-98	98-99	99-00
October	4.77	5.81	2.98	2.48
November	7.23	4.50	10.85	9.74
December	11.32	3.37	9.00	4.32
January	7.70	6.85	7.22	3.42
February	3.13	3.01	6.18	3.98
March	6.91	4.08	3.59	3.25
Total	41.06	27.62	39.82	27.19
Average	6.84	4.60	6.64	4.53

Comparison total rain to winter 96-97				
	Year Total	96-97 Total	Percentage	
97-98	27.62	41.06	67%	
98-99	39.82	41.06	97%	
99-00	27.19	41.06	66%	

CITY OF SUMNER SEWAGE TREATMENT PLANT

ANNUAL INFILTRATION & INFLOW REPORT

JAN 1, 1999 TO DEC 31, 1999

	AVERAGE MONTHLY FLOW (MGD)			TOTAL MONTHLY RAINFALL			POPULATION SERVED			ADDITIONAL LINES ADDED		
	1997	1998	1999	1997	1998	1999	1997	1998	1999	1997	1998	1999
JAN	2.59	1.90	2.20	7.70	6.85	7.22	12850	11750	12605			
FEB	1.84	1.52	2.12	3.13	3.01	6.18	12655	11550	13960			
MAR	1.99	1.71	1.91	6.91	4.08	3.59	11720	11205	12890			3775
APR	1.47	1.56	1.49	3.88	1.19	1.23	10245	11860	13135			1319
MAY	1.38	1.40	1.40	3.97	2.65	1.65	10460	11800	12645			
JUN	1.38	1.43	1.33	2.71	0.90	1.94	8765	12360	12335			1619
JUL	1.26	1.44	1.31	1.56	0.92	1.52	9075	13080	11815			645
AUG	1.16	1.40	1.31	1.44	0.98	0.94	9235	11880	12595			3628
SEP	1.26	1.32	1.28	3.06	0.38	0.38	10855	12080	12765			
OCT	1.38	1.25	1.29	5.81	3.07	2.48	11495	11630	12700			5101
NOV	1.47	1.72	1.92	4.50	10.85	9.74	10895	12770	14340			927
DEC	1.51	2.22	1.87	3.37	9.00	4.32	11670	13570	14180			
MAX	2.59	2.22	2.20									
MIN	1.16	1.25	1.28									
AVG	1.56	1.57	1.62									

I/I = HIGH - LOW MONTH

SUMNER (ft)	36274	4261	9408
BONNEY LAKE (ft)	3000	2746	0
PIERCE COUNTY (ft)	14599	0	7606
TOTAL FEET ADDED	53873	7007	17014
TOTAL MILES ADDED	10.2	1.33	3.22

INFILTRATION & INFLOW SUMMARY

YEAR	I/I	% OVER BASE	% OF DESIGN
1979	0.43	BASE	21.5%
1997	1.43	232.6%	54.6%
1998	0.97	125.6%	37.0%
1999	0.92	114.0%	35.1%

BASED ON FLOW OF
2.62 MGD.

City of Sumner Sewage Treatment Plant

Annual Treatment Facility Review Report For The Year 1999

Peak Design Flow 8.50 mgd
Average Interim Flow 2.62 mgd *
Average Final Design Flow 3.42 mgd

Design Population Equivalent 32000
Present Population Served 12850

Table 1, Monthly Average Loading

Month	Flow (MGD)	BOD (lbs/day)	TSS (lbs/day)
JAN	2.20	2521	2775
FEB	2.12	2792	2924
MAR	1.91	2578	2725
APR	1.49	2627	2585
MAY	1.40	2529	2458
JUN	1.33	2471	2330
JUL	1.31	2363	2208
AUG	1.31	2519	2353
SEP	1.28	2553	2401
OCT	1.29	2540	2327
NOV	1.92	2868	2719
DEC	1.87	2836	2692

Table 2, Maximum Monthly Average Loading (Highest Month)

	Month	MO. AVG.	Design Cap.	% of Design Cap.
Interim Flow (MGD)	JAN	2.20	2.62	84%
Interim BOD (lbs/day)	NOV	2868	5800	49%
InterimTSS (lbs/day)	FEB	2924	5200	56%
Final Flow (MGD)	JAN	2.20	3.42	64%
Final BOD (lbs/day)	NOV	2868	6400	45%
Final TSS (lbs/day)	FEB	2924	6400	46%

lbs/day = flow (mgd) * BOD , TSS (mg/l) * 8.34 lbs/gallon

Please note, if actual flow or waste load reaches 85 percent of design capacity, the permittee shall submit a plan and schedule in accordance with Supplemental Condition 51 of the permit.

* Final Limitations (2.62MGD < Flow < 3.42 MGD)
Final Criteria @ 3.42 MGD
BOD (lbs/day) 6400
TSS (lbs/day) 6400

City of Sumner

1999

Permit Violations Review

This review shall provide, on a monthly basis;

1. Effluent limits - date, parameter (including flow) , permit limit violated, reported value and 24 hour flow.

2. Raw sewage bypasses - date(s) , location, receiving water, duration (hours) and volume.

3. Inplant secondary treatment bypasses - date(s), duration (hours), total plant flow, volume bypassed, and treatment provided, e.g. primary treatment and disinfection.

Response

1. Effluent limits: None

2. Raw sewage bypasses: None Known

3. Inplant secondary treatment bypasses: None

Yearly Rainfall (in) - Sumner WWTP

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOT
1991	4.01	5.69	4.26	7.37	1.74	1.57	0.25	1.49	0.45	1.33	6.37	3.11	37.64
1992	5.64	3.55	2.07	4.16	0.83	1.69	1.21	0.96	1.67	2.31	6.67	3.11	33.87
1993	3.91	0.48	4.67	6.04	3.57	2.77	1.82	0.37	0.09	2.06	1.50	3.86	31.14
1994	3.50	4.59	3.83	2.53	2.30	3.00	0.39	0.88	1.83	3.59	4.62	8.03	39.09
1995	3.69	4.38	5.29	2.40	1.43	2.18	1.63	1.20	2.71	5.03	11.48	5.46	46.88
1996	7.04	8.17	3.11	6.97	3.37	0.87	1.28	0.31	2.49	4.77	7.23	11.32	56.93
1997	7.70	3.13	6.91	3.88	3.97	2.71	1.56	1.44	3.06	5.81	4.50	3.37	48.04
1998	6.85	3.01	4.08	1.19	2.65	0.90	0.92	0.98	0.38	2.98	10.85	9.00	43.79
1999	7.22	6.18	3.59	1.23	1.65	1.94	1.52	0.94	0.38	2.48	9.74	4.32	41.19
2000	3.42	3.98	3.25	0.15	---	---	---	---	---	---	---	---	10.80
MIN	3.42	0.48	2.07	0.15	0.83	0.87	0.25	0.31	0.09	1.33	1.50	3.11	31.14
MAX	7.70	8.17	6.91	7.37	3.97	3.00	1.82	1.49	3.06	5.81	11.48	11.32	56.93
AVG	5.30	4.32	4.11	3.59	2.39	1.96	1.18	0.95	1.45	3.37	7.00	5.73	42.06

OPERATIONAL REPORT
SUMNER WWTP
13114 63rd St E
SUMNER, WA 98390
206-863-8300

Jan-97

		Wind			Flow (mgd)			Plant Influent												Plant Effluent														Chlorine		So_2
											Sumner				Bonney Lake											Secondary Clariers				Ammonia					
Day	Date	mph	dir	Rain (in)	Total Plant	Bonney Lake	Sumner	Temp C	D.O. (mg/l)	pH	B.O.D. (mg/l)	T.S.S. (mg/l)	B.O.D. (lbs/day)	T.S.S. (lbs/day)	B.O.D. (mg/l)	T.S.S. (mg/l)	B.O.D. (lbs/day)	T.S.S. (lbs/day)	B.O.D. (mg/l)	T.S.S. (mg/l)	B.O.D. (lbs/day)	T.S.S. (lbs/day)	D.O. (mg/l)	pH	BOD (mg/l)	BOD (lbs/day)	TSS (mg/l)	TSS (lbs/day)	Fecal Coli	D.O.B. #1-N	D.O.B. #2-S	D.O.B. #3-W	Turbid. (ftu)	(mg/L)	(lbs/day)	Lbs Used	Residual (mg/l)	Lbs Used
WED	1	0	WSW	1.10	4.90	2.21	2.69	11		7.0	52	84	1167	1885	166	198	3060	3649	103	135	4226	5534		6.9	16	654	16	654			3.0	2.0	6			50	0.010	24
THU	2	0	SSW	1.01	5.10	2.40	2.70	11		6.9	56	79	1261	1779	60	63	1201	1261	58	71	2462	3040		6.8	14	595	16	681	6350		1.5	1.5	9			70	0.020	18
FRI	3	0	S	0.02	4.55	2.09	2.46	11		7.0														6.9			15	569	4250		2.0	2.0	8	0.20	8	60	0.010	21
SAT	4	0	S	0.24	3.61	2.09	1.52	11		7.1														6.9			16	482	2750		2.5	1.0	10			90	0.000	30
SUN	5	0	NNW	0.00	3.16	1.65	1.51	11		7.1	125	106	1574	1335	165	177	2271	2436	146	143	3845	3771		6.9	13	343	10	264			2.5	1.0	10			90	0.000	19
MON	6	0	E	0.07	2.55	1.38	1.17	11	5.9	7.1	114	109	1112	1064	124	145	1427	1669	119	128	2540	2732	4.2	6.9	13	276	9	191	173		3.1	1.3	10	0.54	11	60	0.010	13
TUE	7	6	S	0.00	2.49	1.36	1.13	12		7.2	163	144	1536	1357	97	92	1100	1044	127	116	2636	2401		6.9	13	270	9	187	58				9			70	0.010	15
WED	8	0	SSW	0.00	2.34	1.28	1.06	13	5.5	7.3	150	159	1326	1406	134	177	1430	1890	141	169	2757	3295	6.0	6.9	16	312	12	234	10				13			70	0.020	14
THU	9	0	NE	0.08	2.36	1.19	1.17	12		7.2	162	182	1581	1776	161	173	1598	1717	161	177	3179	3493		6.9	17	335	11	217	236		3.0	1.0	14			70	0.010	14
FRI	10	0	NNE	0.02	2.27	1.13	1.14	13	4.7	7.4													4.5	7.0			14	265	790				18	0.68	13	70	0.010	12
SAT	11	2	NW	0.00	2.15	1.13	1.02	12		7.2														6.9			14	251			2.0	1.0	16			90	0.000	13
SUN	12	7	NE	0.00	1.98	0.94	1.01	12		7.4	125	106	1053	893	145	156	1137	1223	133	128	2190	2116		7.0	20	330	13	215			2.0	1.0	17			90	0.010	14
MON	13	0	NE	0.00	1.75	0.86	0.89	8	3.1	7.4	161	163	1195	1210	113	101	810	724	137	133	2006	1934	4.8	6.9	18	263	13	190	47		1.0	3.0	18	1.07	16	60	0.010	8
TUE	14	0	NE	0.00	1.71	0.82	0.89	12		7.4	145	136	1076	1009	130	115	889	786	138	126	1965	1796		7.1	16	228	12	171	8				14			65	0.020	8
WED	15	1	NE	0.00	1.62	0.78	0.84	12	3.5	7.1	169	157	1184	1100	136	162	885	1054	153	159	2069	2154	5.8	6.9	15	203	11	149	36		2.5	2.0	15			115	0.020	6
THU	16	1	SSW	1.07	2.00	0.83	1.17			7.4	151	137	1473	1337	136	143	941	990	145	139	2415	2327		6.9	14	234	14	234	7		2.0	1.5	15			30	0.030	11
FRI	17	0	SSW	0.75	2.93	1.20	1.73		5.5	7.1													4.8	7.2			20	489	29				18	0.75	18	60	0.020	17
SAT	18	0	E	0.16	2.78	1.20	1.58	11		7.1														6.9			14	325			2.0	1.0	17			80	0.010	17
SUN	19	0	NE	0.65	2.69	1.12	1.57	11		7.2	97	91	1270	1192	123	140	1149	1308	108	111	2419	2499		7.0	16	359	13	292			1.5	1.0	13			80	0.010	19
MON	20	0	E	0.29	3.04	1.23	1.81	11		7.3	84	95	1268	1434	122	119	1252	1221	99	105	2520	2655		7.0	19	482	16	406	69				15	0.17	4	100	0.010	18
TUE	21	0	ESE	0.17	2.79	1.28	1.51	12		7.3	149	190	1876	2393	88	84	939	897	121	141	2816	3289		7.0	12	279	12	279	150		2.0	0.5	14			65	0.010	20
WED	22	0	S	0.18	2.46	1.13	1.33	12	4.5	7.4	108	106	1198	1176	105	104	990	980	107	105	2187	2156	5.8	7.0	17	349	13	267	58				12			75	0.000	18
THU	23	10	S	0.01	2.19	0.99	1.20	12		7.5	136	159	1361	1591	120	115	991	950	129	139	2352	2541		6.9	17	310	13	237	55		2.0	1.0	12			75	0.020	15
FRI	24	0	W	0.00	2.10	0.94	1.16	12	2.8	7.5													5.5	7.0			12	210	18				14	0.39	7	75	0.025	13
SAT	25	8	N	0.00	2.02	0.94	1.08	12		7.5														7.0			14	236			1.5	0.5	12			80	0.010	18
SUN	26	0	NNW	0.00	1.95	0.93	1.02	12		7.4	141	117	1199	995	102		791		122		1991			7.0	20	325	16	260			1.5	0.5	14			70	0.000	19
MON	27	2	NE	0.42	1.83	0.87	0.96	12	4.8	7.0	130	128	1041	1025	175	203	1270	1473	151	164	2311	2498	5.0	7.0	19	290	16	244	25				18	0.59	9	30	0.010	20
TUE	28	0	SSW	0.08	1.91	0.87	1.04	12		7.4	183	118	1587	1023	136	144	987	1045	162	130	2574	2068		6.7	23	366	16	255	27				18			40	0.025	17
WED	29	1	NE	0.73	2.19	0.84	1.35	12	3.7	7.5	144	147	1621	1655	151	141	1058	988	147	145	2679	2643	4.8	6.9	18	329	16	292	41				19			50	0.000	21
THU	30	7	SSW	0.16	2.29	0.97	1.32	13		7.3	100	101	1101	1112	160	151	1294	1222	125	122	2395	2333		7.0	21	401	17	325	400				13			80	0.000	26
FRI	31	4	NW	0.49	2.63	1.08	1.55	12	4.1	7.4													4.7	6.9			19	417	200				11	0.29	6	70	0.020	22
Tot.				7.70	80.34	37.73	42.58						29062	29745			27469	28524			56531	57275				7533		9485								2180		520
Max.				1.10	5.10	2.40	2.70	13	5.9	7.5	183	190	1876	2393	175	203	3060	3649	162	177	4226	5534	6.0	7.2	20	739	19	761	4096	0.0	3.1	3.0	19	1.07	18	115	0.030	30
Min.				0.00	1.62	0.78	0.84	8	2.8	6.9	52	79	1041	893	60	63	791	724	58	71	1965	1796	4.2	6.7						0.0	1.0	0.5	6	0.17	4	30	0.000	6
Avg.				0.25	2.59	1.22	1.37	12	4.4	7.3	129	128	1321	1352	130	138	1249	1358	129	133	2570	2727	5.1	6.9	17	342	14	306	97		2.1	1.3	14	0.52	10	70	0.012	17
No.of Entries				31	31	31	31	29	11	31	22	22	22	22	22	21	22	21	22	21	22	21	11	31	22	22	31	31	23	0	18	18	31	9	9	31	31	31

Notes:

2nd & 3rd increase cl2

14th re-zero cl2 scale

20th <1ml residual eff BOD

23rd & 24th increase so2

30th tntc fecal sample using 50 ml sample

Underlined fecal results are estimated

High fecal counts in first week due to excessively high flows with cl2 rotometer at 100%

% REMOVAL	
BOD	TSS
87%	90%

City of Sumner
Growth Calculation for 2025

Projected Growth	1.035		
			Projected flow
1999	2.7	2,700,000	
2000		2,794,500	2,794,500
2001		2,892,308	2,892,308
2002		2,993,538	2,993,538
2003		3,098,312	3,098,312
2004		3,206,753	3,206,753
2005		3,318,989	3,318,989
2006		3,435,154	3,435,154
2007		3,555,384	3,555,384
2008		3,679,823	3,679,823
2009		3,808,617	3,808,617
2010		3,941,918	3,941,918
2011		4,079,885	4,079,885
2012		4,222,681	4,222,681
2013		4,370,475	4,370,475
2014		4,523,442	4,523,442
2015		4,681,762	4,681,762
2016		4,845,624	4,845,624
2017		5,015,221	5,015,221
2018		5,190,754	5,190,754
2019		5,372,430	5,372,430
2020		5,560,465	5,560,465
2021		5,755,081	5,755,081
2022		5,956,509	5,956,509
2023		6,164,987	6,164,987
2024		6,380,761	6,380,761
2025		6,604,088	6,604,088

Projected Growth	1.03		
			Projected flow
1999	2.7	2,700,000	
2000		2,781,000	2,781,000
2001		2,864,430	2,864,430
2002		2,950,363	2,950,363
2003		3,038,874	3,038,874
2004		3,130,040	3,130,040
2005		3,223,941	3,223,941
2006		3,320,659	3,320,659
2007		3,420,279	3,420,279
2008		3,522,888	3,522,888
2009		3,628,574	3,628,574
2010		3,737,431	3,737,431
2011		3,849,554	3,849,554
2012		3,965,041	3,965,041
2013		4,083,992	4,083,992
2014		4,206,512	4,206,512
2015		4,332,707	4,332,707
2016		4,462,689	4,462,689
2017		4,596,569	4,596,569
2018		4,734,466	4,734,466
2019		4,876,500	4,876,500
2020		5,022,795	5,022,795
2021		5,173,479	5,173,479
2022		5,328,684	5,328,684
2023		5,488,544	5,488,544
2024		5,653,200	5,653,200
2025		5,822,796	5,822,796

City of Sumner
I/I Assessment Calculations

Station	I&I (MGD)											
	1996 Flows				1997 Flows				1998 Flows			
	Low	High	I/I (mgd)	Percent	Low	High	I/I (mgd)	Percent	Low	High	I/I (mgd)	Percent
Tacoma	0.008	0.027	0.019	1.09	0.004	0.010	0.006	0.46	0.004	0.075	0.071	4.00
North	0.019	0.068	0.049	2.81	0.017	0.058	0.041	3.12	0.022	0.092	0.070	3.95
Van Tassel	0.060	0.125	0.065	3.72	0.039	0.120	0.081	6.16	0.043	0.096	0.053	2.99
Jansen	0.008	0.020	0.012	0.69	0.009	0.021	0.012	0.91	0.006	0.018	0.012	0.68
16th&WWTP	0.403	1.046	0.643	36.85	0.295	0.667	0.372	28.27	0.365	1.194	0.829	46.76
Cherry	0.083	0.293	0.21	12.03	0.093	0.219	0.126	9.57	0.055	0.187	0.132	7.45
South	0.210	0.555	0.345	19.77	0.228	0.534	0.306	23.25	0.237	0.327	0.090	5.08
Parker	0.249	0.651	0.402	23.04	0.295	0.667	0.372	28.27	0.253	0.769	0.516	29.10
TOTAL			1.745	100.00			1.316	100.00			1.773	100.00

Average I&I	1.61

Station	Average I/I	Rounded Values	I&I (mgd)	Basin Area (ac)	I&I (gpad)
Tacoma	1.85	2.00	0.032	44.76	719.99
North	3.29	3.00	0.048	126.72	381.47
Van Tassel	4.29	4.00	0.064	94.54	681.76
Jansen	0.76	1.00	0.016	14.27	1129.18
16th&WWTP	37.29	37.00	0.596	439.17	1357.55
Cherry	9.68	10.00	0.161	283.90	567.57
South	16.03	16.00	0.258	199.62	1291.52
Parker	26.80	27.00	0.435	258.15	1685.30
TOTAL	100.00	100.00	1.611	1461.13	

Station	1998 Low	1998 High	I&I (mgd)	Basin Area (ac)	I&I (gpad)
142nd	0.012	0.143	0.131	2081	62.95
Avg I&I			1.733	3542.13	489

APPENDIX C

Cost Estimates

City of Sumner
Sanitary Sewer Comprehensive Plan

Parametrix Inc. — **Date:** 11/9/99

Cost Estimate

Project: **10-inch Force Main - Parker Pump Station to MH B41**

By Cole Elliott

Checked

Number	Description	Quantity		Total	Extension
		Measure	Units		
1	Mobilization	1	LS	$15,000.00	$15,000.00
2	Traffic Control	1	LS	$10,000.00	$10,000.00
3	Shoring	1	LS	$10,000.00	$10,000.00
4	Dewatering	1	LS	$10,000.00	$10,000.00
5	Remove and Replace Sidewalk	2000	LF	$21.00	$42,000.00
6	Bedding	430	CY	$12.00	$5,160.00
7	Granular Borrow	600	CY	$12.00	$7,200.00
8	Pavement Removal and Replacement	50	SY	$14.00	$700.00
9	10" Force Main	2000	LF	$28.00	$56,000.00
10	Air Relief Valve	1	EA	$3,000.00	$3,000.00
11	Trimming and Cleanup	1	LS	$7,500.00	$7,500.00
		Subtotal			$166,560.00
		Contingencies (20%)			$33,312.00
		TOTAL			$199,872.00
		Sales Tax @ 8.6%			$17,188.99
	Engineering and Inspection (20%)				$39,974.40
	City Administration (5%)				$9,993.60
	Total Estimated Project Cost				$267,000.00

Parametrix Inc.

Date: 11/24/99

Sample Cost Estimate for 1000 LF of 8" Gravity Main Replacement

Project:

Cost Sheet

Cole Elliott

Number	Description	Est Quantity	Units	Unit Cost	Total
1	Mobilization (8%)	1	LS	$13,999.20	$14,000.00
2	Traffic Control	1	LS	$2,000.00	$2,000.00
3	Shoring	1000	LF	$4.50	$4,500.00
4	Dewatering	1000	LF	$16.75	$16,750.00
5	Bedding*	220	CY	$12.00	$2,640.00
6	Select Backfill**	2390	CY	$20.00	$47,800.00
7	Pavement Removal and Replacement	1000	LF	$17.00	$17,000.00
8	8" Gravity Main Removal	1000	LF	$7.00	$7,000.00
9	8" Gravity Main Installation	1000	LF	$30.00	$30,000.00
10	48" Manhole***	3	EA	$3,000.00	$9,000.00
11	6" PVC side sewer****	600	LF	$48.00	$28,800.00
12	Side sewer cleanouts	20	EA	$100.00	$2,000.00
13	Trimming and Cleanup	1	LS	$7,500.00	$7,500.00
		Subtotal			$188,990.00
		Contingencies (20%)			$37,798.00
		TOTAL			$226,788.00
		Sales Tax @ 8.6%			$19,503.77
	Engineering and Inspection (20%)				$45,357.60
	City Administration (5%)				$11,339.40
	Total Estimated Project Cost				$303,000.00

*Assumes .22 CY per LF of pipe main installed

**Assumes 2.39 CY per LF of pipe main installed

***Assumes three manhole in 1000 LF of pipe installed

****Parametrix assumed a maximum of 20 side sewers and ROW width of 60 feet with main in middle of road

Calculation of Project Cost per lineal foot	**$303.00**

Parametrix Inc.

Cost Estimate

Date: 11/9/99

Project: **Parker Pump Station Replacement**

Cole Elliott

Number	Description	Quantity		Total	Extension
		Measure	Units		
1	Mobilization	1	LS	$10,000.00	$10,000.00
2	Traffic Control	1	LS	$2,500.00	$2,500.00
3	Shoring	1	LS	$2,000.00	$2,000.00
4	Dewatering	1	LS	$3,000.00	$3,000.00
5	Excavation	500	CY	$4.00	$2,000.00
6	Bedding	40	CY	$12.00	$480.00
7	Select Backfill	460	CY	$17.00	$7,820.00
8	2 MGD Pump Station (est.)	1	LS	$400,000.00	$400,000.00
9	Pavement Removal and Replacement	20	SY	$14.00	$280.00
10	Force Main Reconnection and Relocation	1	LS	$2,000.00	$2,000.00
11	Restoration	1	LS	$2,000.00	$2,000.00
12	Trimming and Cleanup	1	LS	$1,000.00	$1,000.00
		Subtotal			$433,080.00
		Contingencies (20%)			$86,616.00
		TOTAL			$519,696.00
		Sales Tax @ 8.6%			$44,693.86
	Engineering and Inspection (20%)				$103,939.20
	City Administration (5%)				$25,984.80
	Total Estimated Project Cost				$694,300.00

APPENDIX D

City of Sumner Industrial Users Survey

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(Non-Residential Establishments)

SECTION A: GENERAL INFORMATION

A.1 Business Name: _____

A.2 Mailing Address: _____

_____

_____

A.3 Facility Address: _____

_____

_____

A.3 Contact Officials:

Name: _____

Title: _____

Phone No. _____

Fax No. _____

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

_____ _____

Signed Date

A.4 Provide a brief description of products and processes or services your firm conducts.

_____

_____

_____

_____

_____

A.5 Daily average sewer discharge: _____ gallons

water use: _____ gallons

(If unknown, average monthly water billing: $_____)

A.6 Is water used for any purpose other than domestic use (restrooms, employee showers, etc.); i.e. processing, product manufacture, cleaning, rinsing, cooling, boilers, facility wash-down, etc.

[ ] Yes [ ] No

A.7 Wastes are discharged to (check all that apply and provide quantities if known):

	Estimated Quantities: (gallons per day)
[ ] Sanitary Sewer	_____
[ ] Storm Sewer	_____
[ ] Surface Water	_____
[ ] Waste Haulers	_____
[ ] Evaporation	_____
[ ] Other (describe) _____	_____

Provide name and address of waste hauler(s), if used:

_____

_____

_____

Phone No. _____

A.8 Is an accidental spill prevention plan prepared for the facility? [ ] Yes [ ] No

A.9 Standard Industrial Classification (SIC) code number for your facilities: _____

A.10 Have any discharge permits (State or NPDES) or hazardous waste generator permits been issued for this facility? [ ] Yes [ ] No

If yes, give agency and permit number: _____----_____

SECTION B: FACILITY OPERATION CHARACTERISTICS

B.1 Number of employee shifts worked per 24-hour day is _____
Average number of employees per shift is:
_____ 1st _____ 2nd _____ 3rd

B.2 Starting time of each shift is:
am/pm_____ 1st am/pm_____ 2nd am/pm_____ 3rd

B.3 Is production seasonal? [ ] Yes [ ] No
If yes, briefly describe seasonal production cycle.

_____
_____
_____
_____

B.4 Are any process changes or expansions planned during the next three years:
[ ] yes [ ] no
If yes, attach a separate sheet to this form describing the nature of planned changes or expansions.

Note: The following information in this section MUST be completed for each product line.

B.5 Principal product produced:_____

B.6 Principal raw materials used:_____

_____

B.7 Catalysts, Intermediates, and process additives used: _____

_____

B.8 Production (type of discharge):
[ ] Batch [ ] Continuous
[ ] Both _____% Batch _____% Continuous

SECTION C: WASTEWATER INFORMATION

C.1 If you facility employs processes in any of the 34 industrial categories or business activities listed below, and any of these processes generate wastewater or waste sludge, place a check beside the category or business activity (check all that apply).

A. 34 Industrial Categories

1. [ ] Adhesives
2. [ ] Aluminum Forming
3. [ ] Auto & Other Laundries
4. [ ] Battery Manufacturing
5. [ ] Coal Mining
6. [ ] Coil Coating
7. [ ] Copper Forming
8. [ ] Electric & Electronic Components
9. [ ] Electroplating
10. [ ] Explosives Manufacturing
11. [ ] Foundries
12. [ ] Gum & Wood Chemicals
13. [ ] Inorganic chemicals
14. [ ] Iron & Steel
15. [ ] Leather Tanning & Finishing
16. [ ] Mechanical Products
17. [ ] Nonferrous Metals
18. [ ] Ore Mining
19. [ ] Organic Chemicals
20. [ ] Paint and Ink
21. [ ] Pesticides
22. [ ] Petroleum Refining
23. [ ] Pharmaceuticals
24. [ ] Photographic Supplies
25. [ ] Plastic & Synthetic Materials
26. [ ] Plastics Processing
27. [ ] Porcelain Enamel
28. [ ] Printing & Publishing
29. [ ] Pulp & Paper
30. [ ] Rubber
31. [ ] Soaps & Detergents
32. [ ] Steam Electric
33. [ ] Textile Mills
34. [ ] Timber

B. Other Business Activity

[ ] Dairy Products
[ ] Slaughter/Meat Packing/Rendering
[ ] Food/Edible Products Processor
[ ] Beverage Bottler

Pretreatment devices or processes used for treating wastewater or sludge (check as many as appropriate).

1. [ ] Air Flotation
2. [ ] Centrifuge
3. [ ] Chemical precipitation
4. [ ] Chlorination
5. [ ] Cyclone
6. [ ] Filtration
7. [ ] Flow Equalization
8. [ ] Grease or oil separation, type _____
9. [ ] Grease trap
10. [ ] Grit Removal
11. [ ] Ion Exchange
12. [ ] Neutralization, ph correction
13. [ ] Ozonation
14. [ ] Reverse Osmosis
15. [ ] Screen
16. [ ] Sedimentation
17. [ ] Septic tank
18. [ ] Solvent separation
19. [ ] Spill protection
20. [ ] Sump
21. [ ] Biological Treatment: Type _____
22. [ ] Rainwater diversion or storage _____
23. [ ] Other chemical treatment: Type _____
24. [ ] Other physical treatment: Type_____
25. [ ] Other: Type _____
26. [ ] No pretreatment provided

C.3 If any wastewater analyses have been performed on the wastewater discharge(s) from your facilities, attach a copy of the most recent data to this questionnaire. Be sure to include the date of the analysis, name of laboratory performing the analysis, and location(s) from which sample(s) were taken (attach sketches, plans, etc., as necessary).

C.4 Are any of the toxic pollutants listed in Table 1 (attached) being used at this facility in manufacturing of the product or is a by-product which may be discharged? If so, please indicate by a check mark on Table 1 and by replying below:

[ ] yes [ ] no

SECTION D: OTHER WASTES

D.1 Have you ever tested your wastewater or sludges to determine of they are Dangerous Wastes?

[ ] yes [ ] no

D.2 Do you generate any Dangerous Wastes, as defined by WAC 173-303?

[ ] yes [ ] no

If "yes", provide your identification number _____

How do you dispose o these wastes? _____

D.3 Are any liquid wastes or sludges from this firm disposed of by means other than discharge to the sewer system:

[ ] yes [ ] no

If "no", skip remainder of Section D.

If "yes", complete item 4 and 5.

D.4 These wastes may be described as:

	Estimated Gal. or lb/Year
[ ] Acids and Alkalies	_____
[ ] Heavy metal Sludges	_____
[ ] Inks/Dyes	_____
[ ] Oil and/or Grease	_____
[ ] Organic Compounds	_____
[ ] Paints	_____
[ ] Pesticides	_____
[ ] Planting Wastes	_____
[ ] Pretreatment Sludges	_____
[ ] Solvents/Thinners	_____
[ ] Other Hazardous Wastes	_____
(specify) _____	_____
_____	_____
_____	_____

D.5 For the above checked wastes, does your company practice:

[ ] On-site storage

[ ] Off-site storage

[ ] On-site disposal

[ ] Off-site disposal

Briefly describe the method(s) of storage or disposal checked above:

_____

_____

_____

_____

TABLE .1

MATRIX OF PRIORITY POLLUTANTS POTENTIALLY DISCHARGED FROM INDUSTRIAL CATEGORIES

*POLLUTANT FOUND IN SIGNIFICANT QUANTITY

PRIORITY POLLUTANTS / CATEGORICAL INDUSTRY	ADHESIVE	ALUMINUM FORMING	BATTERY MANUFACTURING	COAL MINING	COIL COATING	COPPER FORMING	ELECTRICAL PRODUCTS	ELECTROPLATING	FOUNDRIES	INORGANIC CHEMICALS
1. acenaphthene										
2. acrolein										
3. acrylonitrile										
4. benzene				*						
5. benzidine										
6. carbon tetrachloride	*									
7. chlorobenzene				*						
8. 1.2.4-trichlorobenzene										
9. hexachlorobenzene										
10. 1.2-dichloroethane				*			*			
11. 1.1.1-trichloroethane				*			*			
12. hexachloroethane										
13. 1.1-dichloroethane										
14. 1.1.2-trichloroethane										
15. 1.1.2.2-tetrachloroethane										
16. chloroethane										
17. bis (2-chloroethyl) ether										
18. 2-chloroethyl vinyl ether (mixed)										
19. 2-chloronaphthalene										
20. 2.4.6-trichlorophenol										
21. parachlorometa cresol										
22. chloroform (trichloromethane)	*	*		*						
23. 2-chlorophenol							*			
24. 1.2-dichlorobenzene							*			
25. 1.3-dichlorobenzene							*			
26. 1.4-dichlorobenzene							*			
27. 3.3-dichlorobenzidine										
28. 1.1-dichloroethylene										
29. 1.2-trans-dichloroethylene				*						
30. 2.4-dichlorophenol										
31. 1.2-dichloropropane										
32. 1.2-dichloropropylene (1.3-dichloropropene)										
33. 2.4-dimethylphenol										
34. 2.4-dinitrotoluene										
35. 2.6-diphenylhydrazine				*						
36. 1.2-diphenylhydrazine										
37. ethylnbenzne	*			*			*			
38. fluorathene										
39. 4-chlorophenyl phenyl ether										
40. 4-bromophenyl phenyl ether										
41. bis (2-chloroisopropyl) ether										
42. bis (2-chloroethoxy) methane										
43. methylene chloride (dichloromethane)	*	*		*			*			
44. methyl chloride (chloromethane)										
45. methyl bromide (bromomethane)										
46. bromoform (tribromomethane)										
47. dichlorobromomethane										

TABLE .1

MATRIX OF PRIORITY POLLUTANTS POTENTIALLY DISCHARGED FROM INDUSTRIAL CATEGORIES

*POLLUTANT FOUND IN SIGNIFICANT QUANTITY

PRIORITY POLLUTANTS / CATEGORICAL INDUSTRY	ADHESIVE	ALUMINUM FORMING	BATTERY MANUFACTURING	COAL MINING	COIL COATING	COPPER FORMING	ELECTRICAL PRODUCTS	ELECTROPLATING	FOUNDRIES	INORGANIC CHEMICALS
48. chlorodibromomethane				*						
49. hexachlorobutadiene										
50. hexachlorocyclopentadiene										
51. isophorone										
52. naphthalene							*			
53. nitrobenzene										
54. 2-nitrophenol										
55. 4-nitrophenol										
56. 2.4-dinitrophenol										
57. 4.6-dinitro-o-cresol										
58. N-nitrosodimethylamine										
59. N-nitrosodiphynylamine										
60. N-nitrosodi-n-propylamine										
61. pentachlorophenol	*									
62. phenol	*	*					*		*	
63. bis (2-ethylhexyl) onthalate	*	*		*						
64. butyl benzyl phthalate	*									
65. di-n-butyl phthalate	*	*		*						
66. di-n-octyl phthalate										
67. diethyl phthalate	*			*						
68. dimethyl phthalate	*									
69. benzo (a) anthracene (1.2-benzanthracene										
70. benzo (a) pyrene (3.4-benzo-pyrene)			*							
71. 3.4-benzofluoranthene (benzo(b) fluoranthene										
72. benzo (k) fluoranthane (11.12-benzofluoranthene)										
73. chrysene										
74. acenaphthylene										
75. anthracene				*						
76. benzo(ghi)perylene (1.12-benzoperylene)										
77. fluorene										
78. phenanthrene										
79. dibenzo(ah)anthracene (1.2.5.6-dibenzanthracene)										
80. indeno (1.2.3-cd)pyrene (2.3-o-phenylenepyrene)										
81. pyrene										
82. tetrachloroethylene						*				
83. toluene				*						
84. trichloroethylene	*	*								
85. vinyl chloride (chloroethylene)										
86. aldrin										
87. dieldrin										
88. chlordane (technical mixture & metabolites)										
89. 4.4-DDT										
90. 4.4-DDE (p.p-DDX)										
91. 4.4-DDD (p.p-TDE)										
92. Alpha Endosulfan										
93. Beta Endosulfan										
94. endosulfan sulfate										

TABLE .1

MATRIX OF PRIORITY POLLUTANTS POTENTIALLY DISCHARGED FROM INDUSTRIAL CATEGORIES

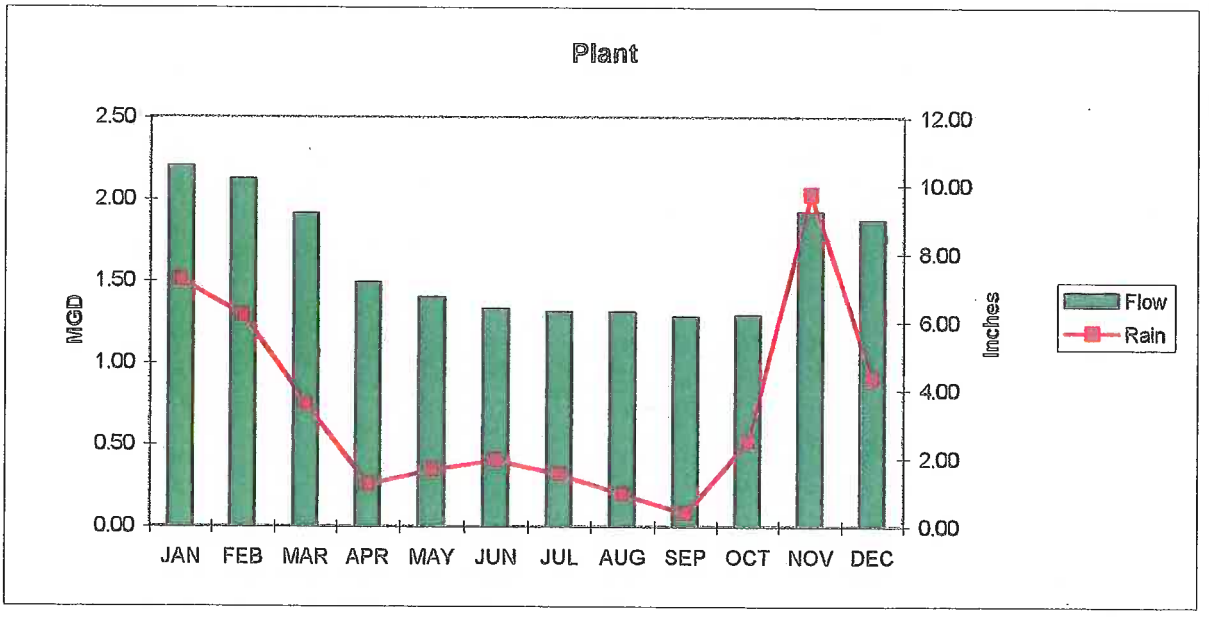
*POLLUTANT FOUND IN SIGNIFICANT QUANTITY

PRIORITY POLLUTANTS / CATEGORICAL INDUSTRY	ADHESIVE	ALUMINUM FORMING	BATTERY MANUFACTURING	COAL MINING	COIL COATING	COPPER FORMING	ELECTRICAL PRODUCTS	ELECTROPLATING	FOUNDRIES	INORGANIC CHEMICALS
95. endrin										
96. endrin aldehyde										
97. heptachlor										
98. heptachlor epoxide (BHC-hesachlorocyclohexane)										
99. Alpha-BHC										
100. Beta-BHC										
101. Gamma-BHC (lindane)										
102. Delta-BHC (PCB-polychlorinated bipheny)										
103. PCB-1242 (Arochlor 1242)										
104. PCB-1254 (Arochlor 1254)										
105. PCB-1221 (Arochlor 1221)										
106. PCB-1232 (Arochlor 1232)										
107. PCB-1248 (Arochlor 1248)										
108. PCB-1260 (Arochlor 1260)										
109. PCB-1016 (Arochlor 1016)										
110. toxaphene										
111. antimony (total)	*			*						*
112. arsenic (total)				*			*			*
113. asbestos (fibrous)										*
114. beryllium (total)										
115. cadmium (total)			*			*	*	*	*	*
116. chromium (total)	*	*		*	*	*	*	*	*	*
117. copper (total)	*	*		*		*	*	*	*	*
118. cyanide (total)	*				*			*		*
119. lead (total)	*	*	*	*		*	*	*		*
120. mercury (total)	*		*	*						*
121. nickel (total)		*	*	*				*		*
122. selenium (total)										*
123. silver (total)			*							*
124. thallium (total)	*	*	*	*	*	*	*	*	*	*
125. zinc (total)										
126. 2.3.7.8-tetrachlorodibenzo-p-dioxin (TCDD)										

CITY OF SUMNER

1999 INFLOW & INFILTRATION (I&I) REPORT

	RAIN (in)	PLANT (mgd)	SUMNER (mgd)	B.L. (mgd)
JAN	7.22	2.20	1.18	1.02
FEB	6.18	2.12	1.16	0.95
MAR	3.59	1.91	1.04	0.86
APR	1.23	1.49	0.78	0.72
MAY	1.65	1.40	0.70	0.70
JUN	1.94	1.33	0.64	0.70
JUL	1.52	1.31	0.63	0.68
AUG	0.94	1.31	0.63	0.68
SEP	0.38	1.28	0.61	0.67
OCT	2.48	1.29	0.61	0.68
NOV	9.74	1.92	1.00	0.92
DEC	4.32	1.87	0.95	0.92

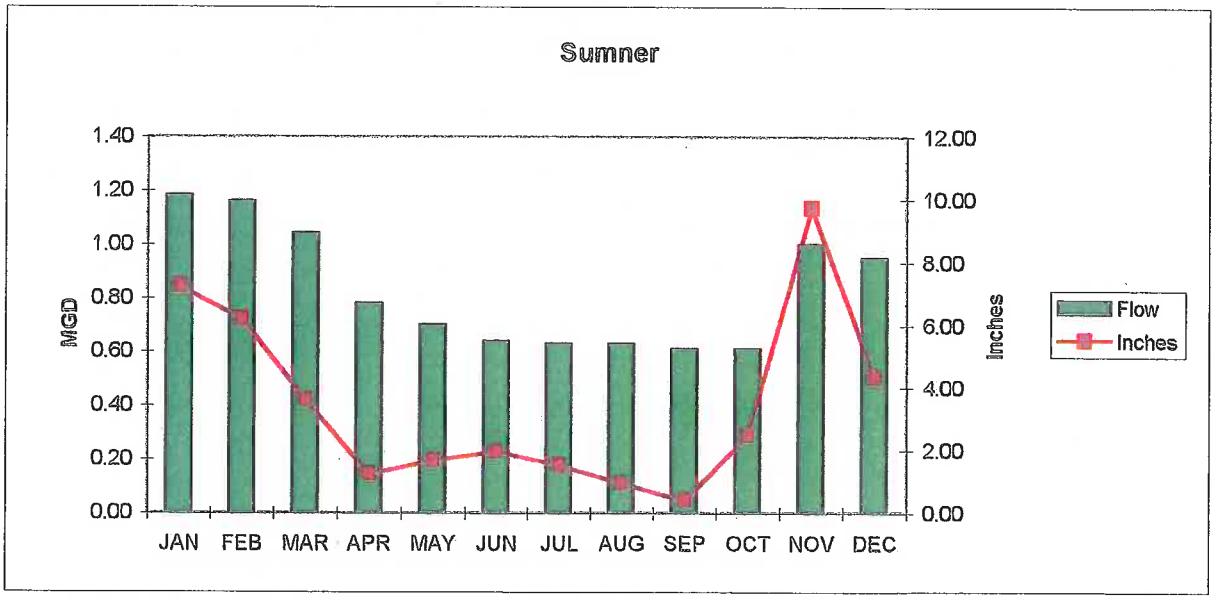


THE BAR GRAPH REPRESENTS PLANT FLOWS AS COMPARED WITH THE LINE GRAPH WHICH REPRESENTS RAINFALL.

CITY OF SUMNER

1999 INFLOW & INFILTRATION (I&I) REPORT

	RAIN (in)	PLANT (mgd)	SUMNER (mgd)	B.L. (mgd)
JAN	7.22	2.20	1.18	1.02
FEB	6.18	2.12	1.16	0.95
MAR	3.59	1.91	1.04	0.86
APR	1.23	1.49	0.78	0.72
MAY	1.65	1.40	0.70	0.70
JUN	1.94	1.33	0.64	0.70
JUL	1.52	1.31	0.63	0.68
AUG	0.94	1.31	0.63	0.68
SEP	0.38	1.28	0.61	0.67
OCT	2.48	1.29	0.61	0.68
NOV	9.74	1.92	1.00	0.92
DEC	4.32	1.87	0.95	0.92

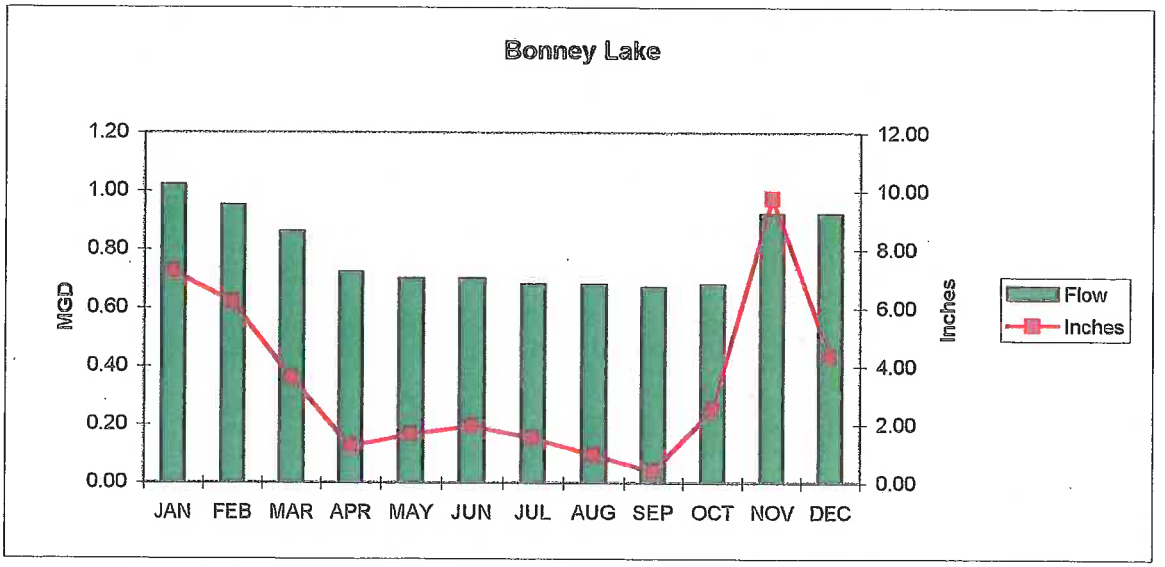


THE BAR GRAPH REPRESENTS SUMNER FLOWS AS COMPARED WITH THE LINE GRAPH WHICH REPRESENTS RAINFALL.

CITY OF SUMNER

1999 INFLOW & INFILTRATION (I&I) REPORT

	RAIN (in)	PLANT (mgd)	SUMNER (mgd)	B.L. (mgd)
JAN	7.22	2.20	1.18	1.02
FEB	6.18	2.12	1.16	0.95
MAR	3.59	1.91	1.04	0.86
APR	1.23	1.49	0.78	0.72
MAY	1.65	1.40	0.70	0.70
JUN	1.94	1.33	0.64	0.70
JUL	1.52	1.31	0.63	0.68
AUG	0.94	1.31	0.63	0.68
SEP	0.38	1.28	0.61	0.67
OCT	2.48	1.29	0.61	0.68
NOV	9.74	1.92	1.00	0.92
DEC	4.32	1.87	0.95	0.92

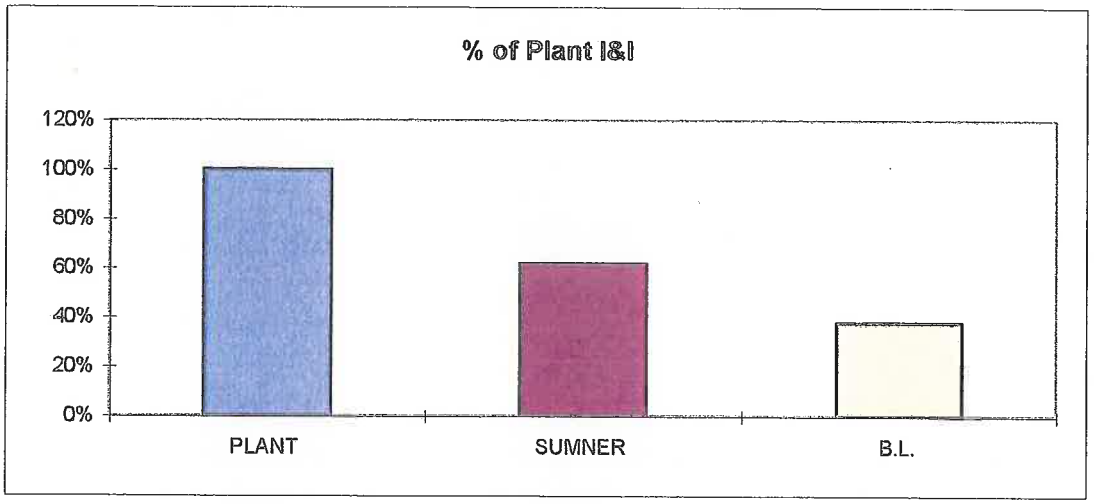


THE BAR GRAPH REPRESENTS BONNEY LAKE FLOWS AS COMPARED WITH THE LINE GRAPH WHICH REPRESENTS RAINFALL.

CITY OF SUMNER

1999 INFLOW & INFILTRATION (I&I) REPORT

	PLANT	SUMNER	B.L.
JAN	2.20	1.18	1.02
FEB	2.12	1.16	0.95
MAR	1.91	1.04	0.86
APR	1.49	0.78	0.72
MAY	1.40	0.70	0.70
JUN	1.33	0.64	0.70
JUL	1.31	0.63	0.68
AUG	1.31	0.63	0.68
SEP	1.28	0.61	0.67
OCT	1.29	0.61	0.68
NOV	1.92	1.00	0.92
DEC	1.87	0.95	0.92
Max	2.20	1.18	1.02
Min	1.28	0.61	0.67
I&I	0.92	0.57	0.35
% of Total I&I	100%	62%	38%

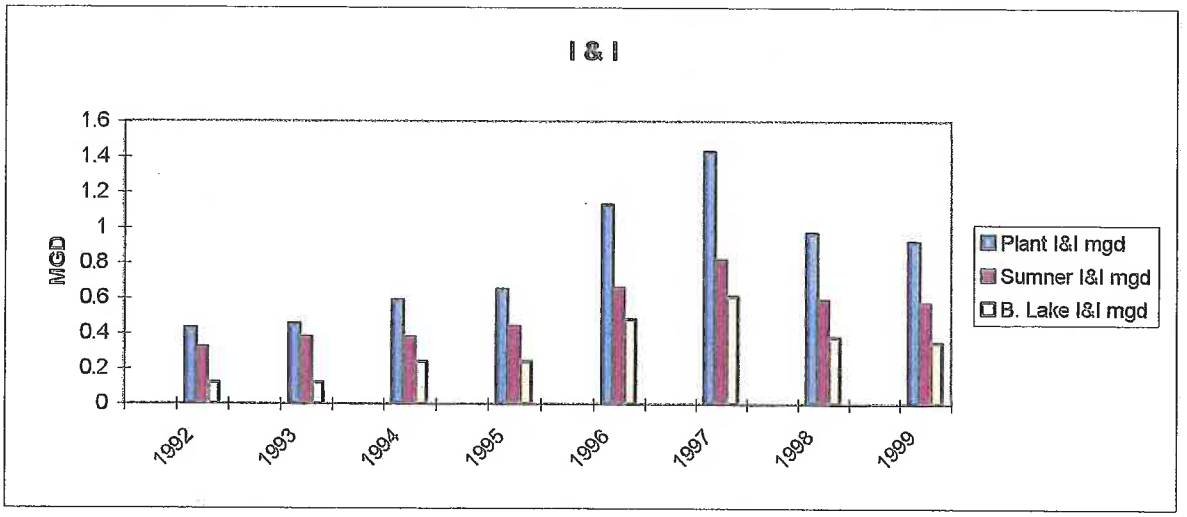


THE BAR GRAPH COMPARES SUMNER & BONNEY LAKES I&I TO THE TOTAL PLANT I&I FOR 1999

CITY OF SUMNER

1999 INFLOW & INFILTRATION (I&I) REPORT

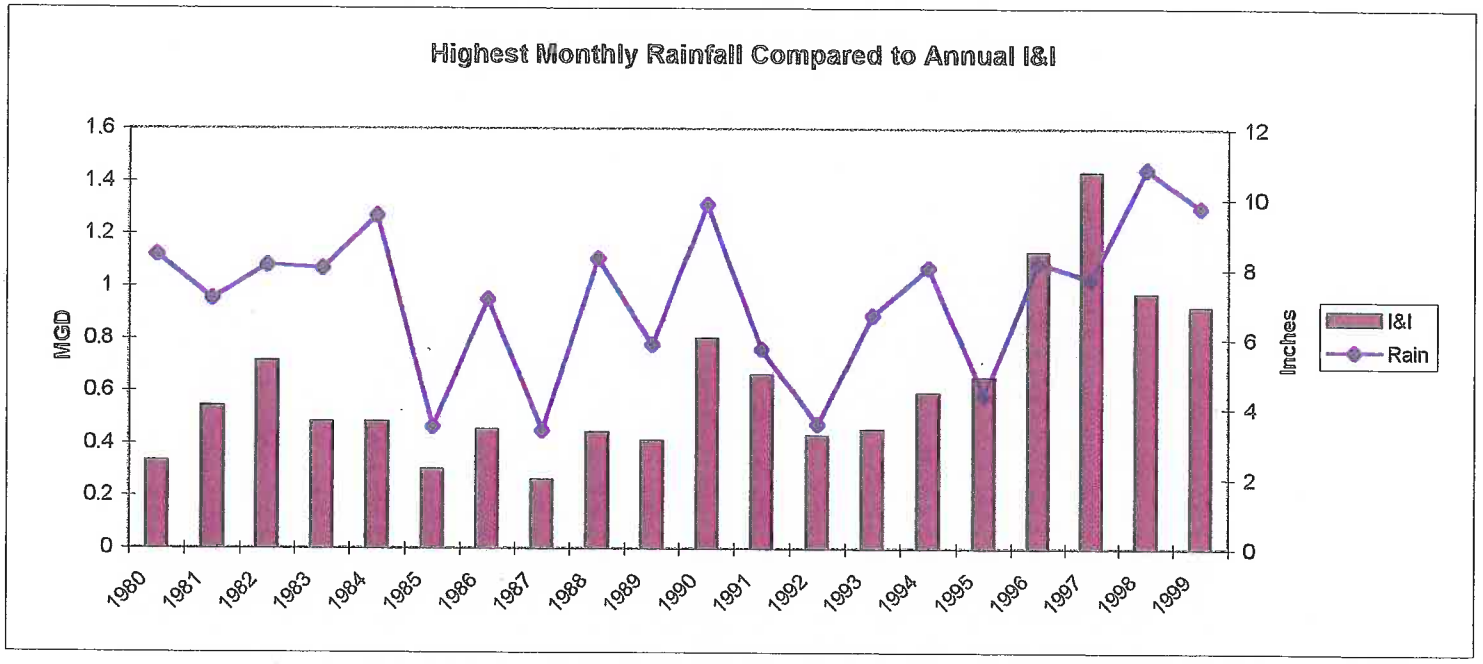
Year	Plant I&I mgd	Sumner I&I mgd	B. Lake I&I mgd
1992	0.43	0.32	0.12
1993	0.45	0.38	0.12
1994	0.59	0.38	0.24
1995	0.65	0.44	0.24
1996	1.13	0.66	0.48
1997	1.43	0.82	0.61
1998	0.97	0.59	0.38
1999	0.92	0.57	0.35



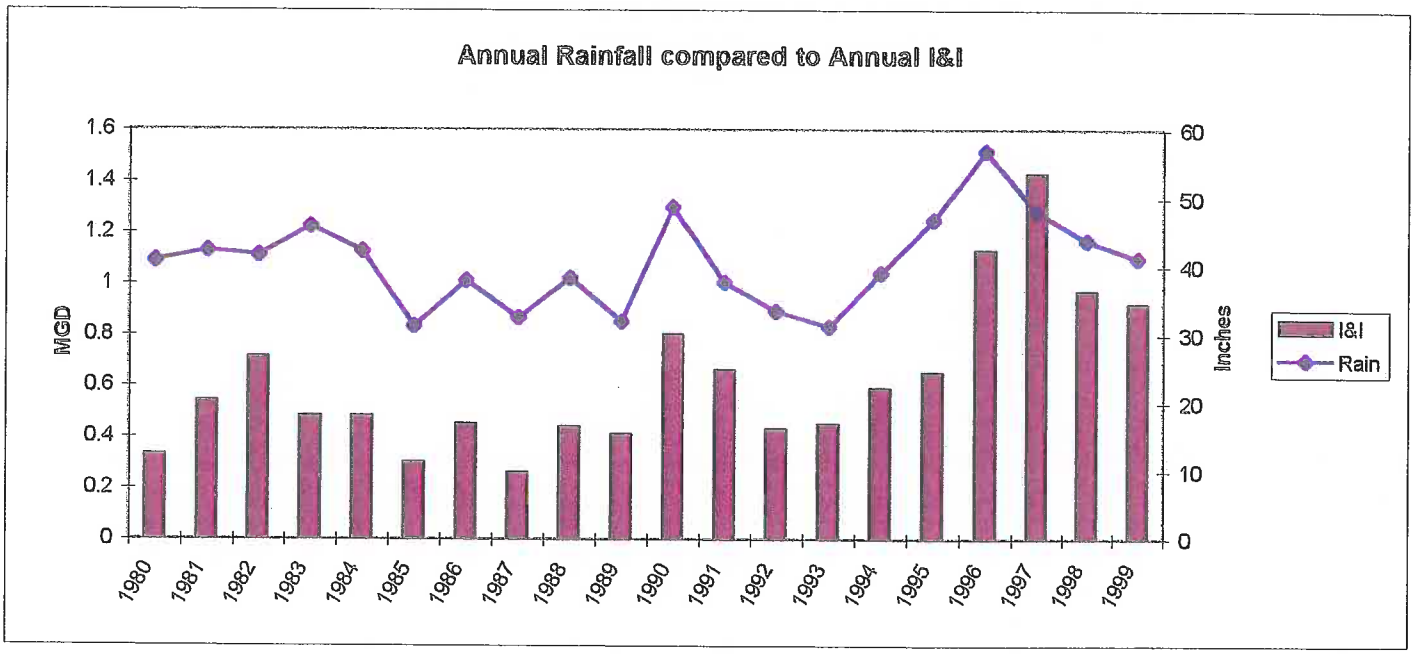
HISTORICAL I&I

CITY OF SUMNER

1999 INFLOW & INFILTRATION (I&I) REPORT



I&I TO HIGH RAINFALL COMPARISION TO REFLECT PLANT INFLOW

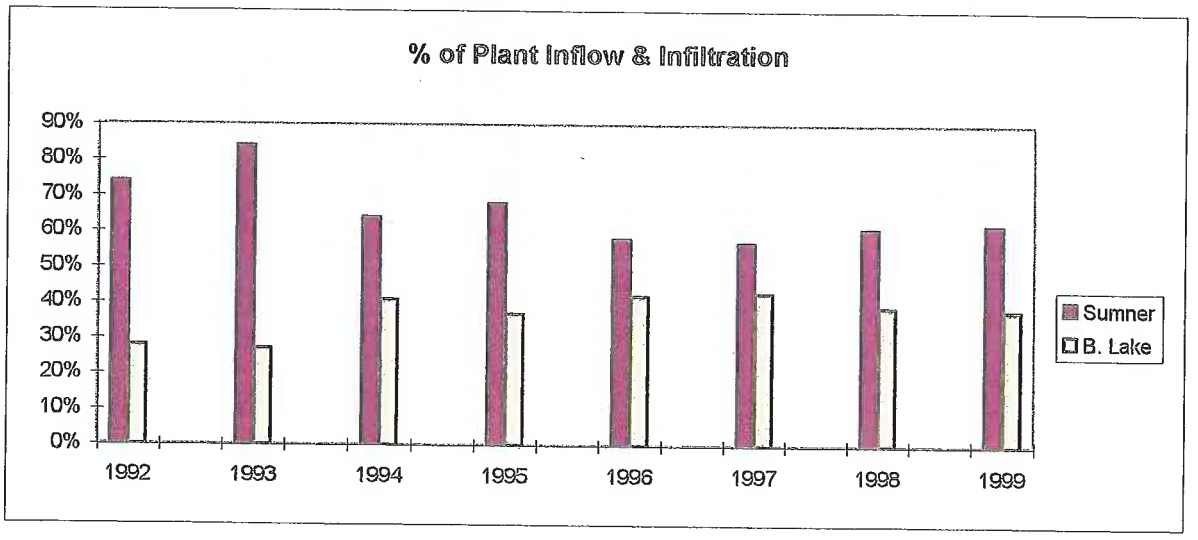


I&I TO ANNUAL RAINFALL COMPARISION TO REFLECT PLANT INFILTRATION

CITY OF SUMNER

% of PLANT INFLOW & INFILTRATION (I&I)

	Plant	Sumner	B. Lake
1992	100%	74%	28%
1993	100%	84%	27%
1994	100%	64%	41%
1995	100%	68%	37%
1996	100%	58%	42%
1997	100%	57%	43%
1998	100%	61%	39%
1999	100%	62%	38%



89-21

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Sumner Welding & Fabrication Shop

A.2 Mailing Address: 15532½ Main St
Sumner
Wa. 98390

Facility Address: Same

A.3 Contact Officials:
Name: Don L. Baker
Title: Owner
Telephone Number: (206) 863-0702

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Don L Baker
Signature of Official

4/16/90
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Welding, fabrication & repair

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 20.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: BILL'S Auto PlaEE

A.2 Mailing Address: 816 Main St.
[redacted] Washington
Sumner,

Facility Address: 816 Main st
Sumner, Washington
[redacted]

A.3 Contact Officials:
Name: _____
Title: _____
Telephone Number: _____

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

William D Eg — 9-11-90
Signature of Official — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Automotive Repairs Foreign & Domestic
Products To Be Used - Oil, Grease, Cleaning Solvent
To BE Kept in Safety Clean Container Provided
by Vendor & Mt by Vendor

A.5 Daily average sewer discharge: Average gallons
water use: _____ gallons
(If unknown, average monthly water billing $?)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: EXIDE CORPORATION

A.2 Mailing Address: P.O. Box 1210
Sumner, WA 98390

Facility Address: 2005 Fryar Avenue
Sumner, WA 98390

A.3 Contact Officials:
Name: William A. DeCamp
Title: Warehouse Manager
Telephone Number: (206) 863-5134

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

William A. DeCamp — 3/08/89
Signature of Official — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Distribution Center for automotive batteries.
Formation/Charging of product prior to customer shipment.

A.5 Daily average sewer discharge: 1700 gallons Per Batch
water use: _____ gallons Discharged
(If unknown, average monthly water billing $49.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: MAZZA CHEESE CO. INC.

A.2 Mailing Address: P.O. Box 1150
1515 Puyallup STREET
SUMNER, WA 98390-0229

Facility Address: SAME

A.3 Contact Officials:

Name: CHET TALLMAN — DAN PLINSKI
Title: ENGINEERING MANAGER — GENERAL MANAGER
Telephone Number: 206-863-3857 — 206-863-3857

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Chet Tallman — 2/22/89
Signature of Official — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

A FOOD PROCESSING FACILITY PRODUCING Italian Cheeses, Whey, AND Milk Powders. We will do some distribution OF FOOD products OUT OF OUR COLD STORAGE WAREHOUSE.

A.5 Daily average sewer discharge: NOT Known gallons
water use: NOT Known gallons
(If unknown, average monthly water billing $_____)
NEW FACTORY

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: PRECISION AEROSPACE & COMPOSITES

A.2 Mailing Address: 1516 FRYAR AVE.
SUMNER, WA. 98390

Facility Address: SAME AS ABOVE

A.3 Contact Officials:
Name: DON W. LUNDQUIST
Title: PRESIDENT
Telephone Number: 863-7868

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Nancy A. Henderson — Feb. 13, 1989
Signature of Official: Contract Administrator — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

WE MANUFACTURE PLASTER MOLDS, PLASTER MANDRELS, FIBERGLASS & KEVLAR DUCTING FROM PREPREG MATERIALS

A.5 Daily average sewer discharge: VERY SMALL gallons
water use: SAME AS ABOVE gallons
(If unknown, average monthly water billing $ OCT. 1988 $ 11.20)
DEC. 31. 1988 $ 7.00

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Washington Rhubarb Growers Assoc.

A.2 Mailing Address: P.O. Box 887
Sumner, Wash. 98390

Facility Address: 1706 Puyallup Ave
Sumner, Wash. 98390

A.3 Contact Officials:
Name: Paul A. Hammuch
Title: G. M.
Telephone Number: 206-863-7333

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

[signature]
Signature of Official

2/20/89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

We are a farmer owned Cooperative That Packs and Sell Fresh and Frozen Rhubarb, we also Pack and Sell Fresh Vegetables such as, Corn, Beans, Squash Ect.

A.5 Daily average sewer discharge: _____ gallons
water use: 55,000 gallons
(If unknown, average monthly water billing $_____)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: J.M. McConkey & Co. Inc / Big Valley Plastics, In

A.2 Mailing Address: P.O. Box 1690
Sumner, WA 98390

Facility Address: 1615 Puyallup St
Sumner WA 98390

A.3 Contact Officials:
Name: Ed McConkey
Title: VP
Telephone Number: 206-863-8111

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Ed McConkey
Signature of Official

4/24/89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

McConkey Co. - Wholesaler - Warehousing & Shipping
Big Valley Plastics - Injection Molder of Flower pots

A.5 Daily average sewer discharge: 1500 gallons
water use: 695 cuft = 5200 gallons
(If unknown, average monthly water billing $_____)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Weber Inc

A.2 Mailing Address: P.O. Box 190
Sumner Wa 98390

Facility Address: 5221 160th Ave East
Sumner WA

A.3 Contact Officials:
Name: Mel Bradley
Title: owner
Telephone Number: 8636334

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Melvin E Bradley
Signature of Official

Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Kill + Cut + Wrap Beef Hog + Lamb

A.5 Daily average sewer discharge: _____ gallons
water use: 3,400 gallons @ Work Day
(If unknown, average monthly water billing $_____)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Fleischmann's Yeast Inc.

A.2 Mailing Address: P. O. Box 488
Sumner, WA. 98390

Facility Address: 1115 Zehnder Street
Sumner, WA. 98390

A.3 Contact Officials:
Name: W. L. Kaser
Title: Plant Manager
Telephone Number: 206 863-6311

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

W L Kaser
Signature of Official

1-9-89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Fresh bakers yeast and vinegar

A.5 Daily average sewer discharge: 100,000 gallons
water use: 1 MGD gallons
(If unknown, average monthly water billing $_____)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: SUMNER CLEANERS

A.2 Mailing Address: 6005 PARKER
SUMNER, WA 98390
863-5560

Facility Address: _____

A.3 Contact Officials:
Name: Bert Stibbe
Title: Owner
Telephone Number: 863-5560

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Signature of Official

Date 30 Jan 89

A.4 Provide a brief description of products and processes or services your firm conducts.

Dry cleaning shop
Self-service laundry

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ ~~28.32~~ 31.56

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: BJ's AUTO REPAIR

A.2 Mailing Address: 15006
MAIN SUMNER, WA

Facility Address: SAME

A.3 Contact Officials:
Name: John McCullough
Title: ~~Owner~~
Telephone Number: 931-8970 OR 931-8936

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

John McCullough
Signature of Official

10-27-89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

auto Repair

A.5 Daily average sewer discharge: [redacted] gallons
water use: Don't know gallons
(If unknown, average monthly water billing $_____)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: JOHNSON'S CHEVRON

A.2 Mailing Address: 1005 WOOD AVE
SUMNER WA
98390

Facility Address: 1005 WOOD AVE
SUMNER WA

A.3 Contact Officials:
Name: ROGER JOHNSON
Title: OWNER
Telephone Number: 863 4367

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Roger Johnson
Signature of Official

4/10/89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Service Station Dispensary oil - gas

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 132.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Hess Texaco Service

A.2 Mailing Address: 15608 MAIN
SUMNER, WA 98390

Facility Address: SAME

A.3 Contact Officials:
Name: FORREST K. HESS
Title: OWNER
Telephone Number: 863-5500

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Mrs Forrest Hess
Signature of Official

2-24-89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Sell Gasoline & Oil
Repair Automobiles
Sell Tires & Repair Flats — (Tires)

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 6.30)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Sumner Texaco

A.2 Mailing Address: 914 Kincaid
Sumner WA
98390

Facility Address: Same

A.3 Contact Officials:
Name: Kenneth H. Kauth
Title: Owner
Telephone Number: 206-863-6221

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Kenneth H. Kauth
Signature of Official

1-17-89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Ser. Station

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 5.60)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Sumner Auto + TRANSmission Service.

A.2 Mailing Address: 816 MAIN St
Sumner WA.

Facility Address: SAME

A.3 Contact Officials:
Name: Bob WATTS
Title: Owner
Telephone Number: 863-0431

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Robert N Watts — 3-27-89
Signature of Official — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

A.T.F used as a service of transmission + oil changes

A.5 Daily average sewer discharge: 10-15 gallons
water use: 10-15 gallons
(If unknown, average monthly water billing $_____)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Smithco Meats, Inc.

A.2 Mailing Address: 15509 Main Street
Sumner, WA 98390

Facility Address: Same

A.3 Contact Officials:
Name: Joanne Smith
Title: President
Telephone Number: 206-863-5157

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Joanne Smith — 1/26/89
Signature of Official — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Meat and poultry products (non slaughter operation) sold wholesale as received or as further processed.

A.5 Daily average sewer discharge: ? gallons
water use: 1500 ? gallons
(If unknown, average monthly water billing $ $50.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: MOBILE MINI STORAGE

A.2 Mailing Address: 2825 E. MAIN
PUYALLUP, WA 98372

Facility Address: 15125 E. MAIN
SUMNER

A.3 Contact Officials:
Name: JOHNNY GREEN
Title: OWNER
Telephone Number: 841-2935

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Signature of Official _____ Date _____

A.4 Provide a brief description of products and processes or services your firm conducts.

MANUFACTURE MODULAR MINI STORAGE UNITS

A.5 Daily average sewer discharge: 3 gallons
water use: 3 gallons
(If unknown, average monthly water billing $_____)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: SUMNER STAINED GLASS

A.2 Mailing Address: 15307 MAIN ST.
SUMNER WA.
98390

Facility Address:
SAME

A.3 Contact Officials:
Name: MARK A. O'BRIEN
Title: OWNER
Telephone Number: 863-2148

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Mark A. O'Brien
Signature of Official

1/7/89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

WE ASSEMBLE STAINED GLASS WINDOWS FOR RESALE & SELL ALL MATERIALS NECESSARY FOR OTHERS TO DO THE SAME.

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 22.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE (NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: SUMNER LAUNDROMAT

A.2 Mailing Address: 818 Ryan Ave
SUMNER WA
98390

Facility Address: 1020 WOOD AVE
SUMNER WA
98390

A.3 Contact Officials:
Name: W. D. RUSSELL II
Title: OWNER
Telephone Number: 863-8821

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

W. D. Russell
Signature of Official

2/27/89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

SELF SERVICE COIN OPERATED LAUNDROMAT

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $_____)
City HAS THIS FUFORMATION.

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Sumner School Dist #320

A.2 Mailing Address: 1202 Wood Ave.
Sumner, WA. 98390

Facility Address: Same

A.3 Contact Officials:
Name: John Anderson
Title: Facilities/Activities Dir.
Telephone Number: 863-0457

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

John S Anderson — 1/13/89
Signature of Official — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

School District — Education of Youth

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 5,227.00) (see below)

Daffodil Elementary - $833.00
Maple Lawn Elementary - 968.00
Sumner Junior High - 725.00
Sumner High School - 1,380.00
Gymnasium ——— 150.00
Shops (SHS) ——— 300.00
Pool - 280.00
Greenhouse - 20.00
Stadium - 314.00
Bus Garage 140.00
Maintenance 140.00

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: ① Powers Funeral Home ② Valley Summer Chapel

A.2 Mailing Address: P.O. Box 369
Sumner, WA 98390

Facility Address: ① 802 Alder Ave.
② 15124 Main
Sumner, WA 98390

A.3 Contact Officials:
Name: Rich Powers
Title: Asst. Manager
Telephone Number: 863-1443 863-6332

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Richard J. Powers
Signature of Official

3/10/89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Funeral Ceremonies
including arrangements conference with family members and visitation of reposed remains.

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $_____)

avrg. household use for 2 residents

No preparation room on site

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: RONALD J TRACY DDS, PS

A.2 Mailing Address: 1006-B FRYAR AVE
SUMNER, WA 98390

Facility Address: 1006-B FRYAR AVE

A.3 Contact Officials:
Name: RONALD TRACY DDS
Title: PRES.
Telephone Number: (206) 863-2995

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Ronald J Tracy DDS
Signature of Official

23 FEB 89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

DENTAL SERVICES CLINIC, GENERAL DENTAL RESTORATIONS AND DENTURES

A.5 Daily average sewer discharge: 100-200 gallons
water use: 100-150 gallons
(If unknown, average monthly water billing $_____)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Robert H. Smith, D.D.S.

A.2 Mailing Address: PO Box 1130
Sumner Wa 98390

Facility Address: 1006 A Fryar Ave
Sumner wa 98390

A.3 Contact Officials:
Name: Robert A. Smith DDS.
Title:
Telephone Number: 863-8138

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Signature of Official

2/23/89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

provide typical services Associated with a dental office

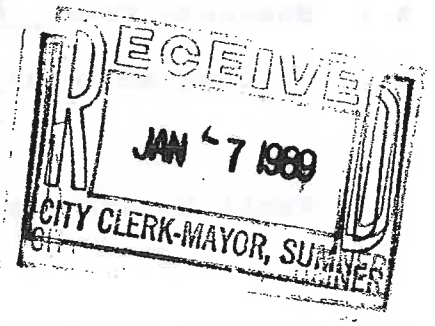
A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons 35 Feb. '89
(If unknown, average monthly water billing $ _____)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION



A.1 Business Name: The Smile Clinic

A.2 Mailing Address: 2208 E. Main
Sumner Wash

Facility Address: "

A.3 Contact Officials:
Name: Shannon Trader
Title: "
Telephone Number: 206 863 1310

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Signature of Official _____ Date _____

A.4 Provide a brief description of products and processes or services your firm conducts.

Dental Services

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ _____)

$0

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Bonney Lake Prof. Center

A.2 Mailing Address: P.O. Box 7290
Sumner Wa 98390

Facility Address: 18310 Hwy 410
Sumner Wa 98390

A.3 Contact Officials:
Name: Earl Floyd
Title: D.D.S.
Telephone Number: 863-5188

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Earl Floyd
Signature of Official

2/22/89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Dentistry

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 73.63)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE (NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: ROLF M. EDLUND D.D.S. P.S.

A.2 Mailing Address: 1006-C Fryar Ave.
Sumner, WA
98390

Facility Address: SAME

A.3 Contact Officials:
Name: ROLF M. EDLUND
Title: PRESIDENT
Telephone Number: 863-0444

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Roy M. Edlund DDS — 3-27-89
Signature of Official — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

DENTISTRY

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 45.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE (NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: SUMNER FAMILY PHYSICIANS

A.2 Mailing Address: 1518 MAIN ST
SUMNER, WASH 98390

Facility Address: _____

A.3 Contact Officials:
Name: JOHN F. KEMMAN, MD
Title: PRES
Telephone Number: 863-6338

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

John F. Kemman, MD
Signature of Official

9 January 1989
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

MEDICAL OFFICE

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ _____)
utilities $110 - $125

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

RECEIVED
JAN 9 1989
CITY CLERK-MAYOR, SUMNER

SECTION A GENERAL INFORMATION

A.1 Business Name: 913 Kincaid

A.2 Mailing Address: Same

Facility Address: Same

A.3 Contact Officials:
Name: James P. Duffy - Fire Chief
Title: Chief
Telephone Number: 863-4814

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

James P. Duffy
Signature of Official

1-6-89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Physician care facility —

A.5 Daily average sewer discharge: est. 30 gallons
water use: 2 gallons
(If unknown, average monthly water billing $ Minimal est'd

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE (NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Sumner Veterinary Hospital PS

A.2 Mailing Address: 15215 Main St
Sumner, WA 98390

Facility Address: Same as above

A.3 Contact Officials:
Name: Kathy Sheeran, DVM
Title: owner
Telephone Number: 863-2259
OR MARK SHEERAN at 863 2259

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

M.K Sheeran — Signature of Official

1-25-89 — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Veterinary medicine & surgery
dog & cat grooming
dog & cat boarding
pet store - pet supplies, fish, & birds

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ ~ 230.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Valley Muffler

A.2 Mailing Address: 15532 E MAIN
SUMNER WN
98390

Facility Address: Same

A.3 Contact Officials:
Name: DICK POPE
Title: OWNER
Telephone Number: 863-3011

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

X _____ _____
Signature of Official Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Muffler + Auto Rep Shop

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 32 00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: PERK'S SUNSET BODY SHOP

A.2 Mailing Address: 714 WEST MAIN STREET
SUMNER, WA 98390

Facility Address: 714 WEST MAIN STREET
SUMNER, WA 98390

A.3 Contact Officials:
Name: GEORGE M. PERKOVICH
Title: OWNER
Telephone Number: 863-6363

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

George M Perkovich — 03-14-89
Signature of Official — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

AUTOBODY REPAIR AND PAINT

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 29.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Valley Car Wash

A.2 Mailing Address: 15525 MAIN
Sumner, Wa
98390

Facility Address: _____

A.3 Contact Officials:
Name: Bill Bremer
Title: owner
Telephone Number: 863-8981 - 863-4269

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Wm. P Bremer
Signature of Official

_____
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Self-Serv Car Wash

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 150 - 250^{00})

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: ARNIE DAHL FORD

A.2 Mailing Address: PO BOX 100
SUMNER WA
98390

Facility Address: 603 HARRISON
SUMNER WA
98390

A.3 Contact Officials:

Name:	Arnie Dahl	or Allen Dahl
Title:	President	Sec Treas
Telephone Number:	863-2211	863-2211

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

AS Dahl — 1-20-89

Signature of Official — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

SERVICE AUTOS & SELL SAME.
MECHANICAL SERVICES ONLY NO AUTO BODY OR DETAL SHOP

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 15.67) average during 1988

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: SUNSET CHEVROLET INC.

A.2 Mailing Address: 910 TRAFFIC AVE
SUMNER, WA. 98390

Facility Address: 910 TRAFFIC AVE.
SUMNER WA 98390

A.3 Contact Officials:
Name: JERRY VODER
Title: GENERAL MANAGER
Telephone Number: 862-7039

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Signature of Official

2-18-89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

NEW & USED CAR, TRUCK, SALES & SERVICE

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 21.62)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: PENSKE TRUCK LEASING CO., L.P.

A.2 Mailing Address: 12840 48TH AVE. S. SEATTLE, WA 98168

Facility Address: 2222 TACOMA AVE., SUMNER, WA 98390

A.3 Contact Officials:
Name: P.H. HERD
Title: DISTRICT MANAGER
Telephone Number: 206-246-7600

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Signature of Official — Date: 3/1/89

A.4 Provide a brief description of products and processes or services your firm conducts.

TRUCK LEASING

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $_____)

SEE ATTACHED COVER LETTER

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Andersons welding & Repairs

A.2 Mailing Address: 15625 EAST main ST
SUMNER WA 98390

Facility Address: SAME

A.3 Contact Officials:
Name: Harley Anderson
Title: owner
Telephone Number: 863-7022

A.6 The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

A.5 Signature of Official _____ Date _____

A.4 Provide a brief description of products and processes or services your firm conducts.

Trailer hitches installed, welding Repairs on CARS Bikes Trikes JUST ABOUT Anything worth Fixing THATS Steel

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ [redacted] #5.25)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: News Review

A.2 Mailing Address: P.O. Box 428
Sumner, WA 98390

Facility Address: 1007 Main
Sumner, WA 98390

A.3 Contact Officials:
Name: William J. Ostlund
Title: General Manager
Telephone Number: 863-8171

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Signature of Official _____ Date _____

A.4 Provide a brief description of products and processes or services your firm conducts.

Newspaper production — typesetting — office supplies — NO printing on site —

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $_____)

You should have this in your utility records —

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: SECOND CEDAR TREE INC. / CEDAR TREE I

A.2 Mailing Address: PO BOX 399
SUMNER, WA. 98390

Facility Address: 1812 PEASE AVE.
SUMNER, WA 98390.

A.3 Contact Officials:
Name: STEVE VIZINA
Title: PRESCOENT
Telephone Number: 863-5196.

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Signature of Official

Date 4/4/89

A.4 Provide a brief description of products and processes or services your firm conducts.

Wholesale LBR company - use Telephones

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $_____)

DO NOT KNOW - AS WE Rent This
Office space AND SEWER + WATER
IS INCLUDED - 1 TOILET
1 SHOWER
1 BASIN -

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE (NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Golden State Foods Corp.

A.2 Mailing Address: P.O. Box 1470
Sumner, WA 98390

Facility Address: 1409 Puyallup St.
Sumner, WA 98930

A.3 Contact Officials:
Name: Jim Karkosky
Title: General Manager
Telephone Number: (206) 581-4460

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Jim Karkosky
Signature of Official

January 31, 1989
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Distribution of food items and supplies to McDonald's restaurants.

A.5 Daily average sewer discharge: Unknown * gallons (see below)
water use: 355 cu.ft. ~~gallons~~
(If unknown, average monthly ~~water~~ billing $130.10/mo.)

* sewer

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE (NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Western Wood Preserving Co

A.2 Mailing Address: P.O. Box 1250
Sumner, Washington 98390

Facility Address: 1313 Zehnder Street
Sumner, Washington 98390

A.3 Contact Officials:
Name: Rick Danielson
Title: President
Telephone Number: 863-8191

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Richard A. Danielson
Signature of Official

1/31/89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Pressure treatment of lumber and plywood using waterborne preservatives and fire retardants

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 63.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: COASTAL INDUSTRIES, INC.

A.2 Mailing Address: P.O. Box 279
SUMNER, WA 98390

Facility Address: 1812 PEASE
SUMNER, WA 98390

A.3 Contact Officials:
Name: CARL HART
Title: PRESIDENT
Telephone Number: 863-0144

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Carl Hart
Signature of Official

3-24-89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

LUMBER REMANUFACTURING

A.5 Daily average sewer discharge: 2500 gallons
water use: _____ gallons UNKNOWN
(If unknown, average monthly water billing $_____)
7500 cuft/month

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE (NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: PASQUIER PANEL PRODUCTS, INC.

A.2 Mailing Address: P.O. BOX 1170
SUMNER, WA 98390-1170

Facility Address: 1510 PUYALLUP STREET
SUMNER, WA 98390

A.3 Contact Officials:
Name: MARK SHELTON Tom Pasquier
Title: PLANT ASSISTANT ENGINEER
Telephone Number: 863-6323

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Mark F. Shelton — Signature of Official

3/6/89 — Date

A.4 Provide a brief description of products and processes or services your firm conducts.

CUSTOM FABRICATORS OF WOOD PRODUCTS

A.5 Daily average sewer discharge: _____ gallons
water use: _____ gallons
(If unknown, average monthly water billing $ 55.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Sonoco Products Company

A.2 Mailing Address: PO Box 489
Sumner, WA 98390

Facility Address: 1802 Steele Ave
Sumner, WA 98390

A.3 Contact Officials:
Name: K. B. Jhala/E. J. Kovacevich
Title: Plant Mgr./Shift Supervisor
Telephone Number: (206) 863-6366

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

K. B. Jhala
Signature ~~of official~~

1/9/89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Recycled paperboard manufacturing

A.5 Daily average (sewer) discharge: 1,100 gallons (55 employees x 20 gallons/employee)
water use: _____ gallons
(If unknown, average monthly water billing $ 102.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Crown Meat Co. Inc.

A.2 Mailing Address: 5221 160th Ave., E.
Sumner, WA 98390

Facility Address: Same as #2

A.3 Contact Officials:
Name: Fred L. McBain
Title: President
Telephone Number: 565-8541

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

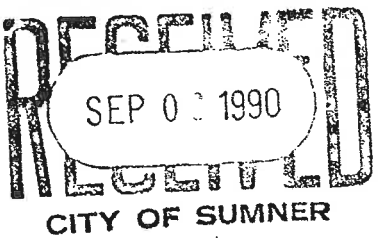
Fred L. McBain
Signature of Official

September 6, 1990
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Our intent is to cut and package red meats for sale to institutions, stores, commissarys etc.

A.5 Daily average sewer discharge: 1500 gallons
water use: 1500 gallons
(If unknown, average monthly water billing $_____)



CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: The New Sumner Meats

A.2 Mailing Address: 1014 Main St.
Sumner, Wa 98390

Facility Address: Same

A.3 Contact Officials:
Name: Larry D. Brown
Title: Owner
Telephone Number: 863-6541

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Larry D. Brown
Signature of Official

4-19-89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Retail Meat Sales & Processing

A.5 Daily average sewer discharge: DK gallons
water use: DK 1500 gallons
(If unknown, average monthly water billing $ 40.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: G & N SEPTIC TANK SERVICE

A.2 Mailing Address: 37201 MILITARY RD S
AUBURN, WA 98001

Facility Address: SAME

A.3 Contact Officials:
Name: PAUL BATTON
Title: OWNER
Telephone Number: 253-927-2860

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

Paul Batton
Signature of Official

5-8-98
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

PUMPING SEPTIC TANKS AND DEWATERING SLUDGE FROM SEPTIC TANKS.

A.5 Daily average sewer discharge: 20,000 gallons
water use: 20 gallons
(If unknown, average monthly water billing $ $ 17.00)

CITY OF SUMNER

PRETREATMENT PROGRAM

COMMERCIAL/INDUSTRIAL USER QUESTIONNAIRE
(NON-RESIDENTIAL ESTABLISHMENTS)

SECTION A GENERAL INFORMATION

A.1 Business Name: Pacific Northwest BAKing Co.

A.2 Mailing Address: P.O. Box 890
1307 PuyAllup St
SUMNER WA. 98390

Facility Address: 1307 PuyAllup St.
SUMNER WA. 98390

A.3 Contact Officials:
Name: MiKe Stevens – John POKORNY
Title: G.M. Chief ENGINEER
Telephone Number: 206-863-0373

The information contained in this questionnaire is familiar to me and to the best of my knowledge and belief, such information is true, complete, and accurate.

John Pokorny
Signature of Official

3-30-89
Date

A.4 Provide a brief description of products and processes or services your firm conducts.

Dry BAKing Single purpose Bun plant - We will produced only McDonalds Buns.

A.5 Daily average sewer discharge: 1600 gallons
water use: 3600 gallons
(If unknown, average monthly water billing $_____)

APPENDIX E

Joint Planning Area Resolution

FILE NO. 443 PROPOSAL NO. R93-127

Sponsored by: Councilmember Paul Cyr

Requested by: Pierce County Council

RESOLUTION NO. R93-127

A RESOLUTION OF THE PIERCE COUNTY COUNCIL ADOPTING A JOINT PLANNING FRAMEWORK TO BE USED AS A GUIDELINE FOR JOINT PLANNING INTERLOCAL AGREEMENTS AND ESTABLISHING GENERALIZED JOINT PLANNING AREAS FOR THE COUNTY AND CITIES AND TOWNS WITHIN THE COUNTY.

WHEREAS, the Growth Management Act required the County, in collaboration with the cities and towns within the County, to develop and adopt county-wide planning policies (CWPP) including a policy "... for joint county and city planning within urban growth areas (UGAs)" (RCW 36.70A.210(3)(f)); and

WHEREAS, Pierce County enacted Ordinance No. 92-74 on June 30, 1992, thereby adopting the County-wide Planning Policies (PCC 19.02.050); and

WHEREAS, Policy No. 4 (pp. 59-60) under "county-wide planning policy on urban growth areas, promotion of contiguous and orderly development and provision of urban services to such development" relates to joint planning; and

WHEREAS, Policy No. 4 (pp. 59-60) requires that "Designated Urban Growth Areas of municipalities, outside of municipal corporate limits, shall be subject to joint municipal-county planning. Joint jurisdictional planning shall occur in those other areas where the respective jurisdictions agree such joint planning would be beneficial;" and

WHEREAS, the Joint Planning Areas map, as shown in Exhibit "B" of this resolution, illustrates the generalized areas where joint municipal county planning is desired and beneficial but not necessarily required, since the municipal UGAs have not been designated. The municipal UGAs will fall within, but not extend beyond, the areas indicated on Exhibit "B" as Joint Planning Areas; and

WHEREAS, the Urban Growth Area Subcommittee of the Growth Management Coordinating Committee (GMCC) developed a "Draft Joint Planning Framework" on February 18, 1993; and

WHEREAS, the GMCC recommended that the Pierce County Regional Council (PCRC) accept the Draft Joint Planning Framework as a basis for negotiating Interlocal Agreements (ILAs) to facilitate and accomplish joint planning in areas of mutual concern; and

WHEREAS, the PCRC, by motion, recommended that the Pierce County Council adopt, by resolution, the Joint Planning Framework as amended by the PCRC; and

WHEREAS, the Pierce County Council finds that a Joint Planning Framework will assist in the negotiation of Interlocal Agreements for establishing joint planning for issues and areas of mutual concern; and

WHEREAS, the Pierce County Council finds that the issues identified in the Joint Planning Framework that are to be reviewed and included in an ILA (3. Issues: a-n) are only suggested issues since some issues mentioned may not be of mutual concern to the party jurisdictions, while other issues that are not listed (such as economic development, affordable housing, or critical areas regulation) may be of mutual concern to the party jurisdictions; and

WHEREAS, the Pierce County Council finds that the goal of an ILA is for the party jurisdictions to reach agreement on a joint planning process to coordinate efforts on issues and areas of mutual concern--flexibility is necessary to foster lasting joint planning agreements; and

WHEREAS, the cities and towns within Pierce County have identified geographic areas within which Joint Planning with the County may be desired; NOW, THEREFORE,

BE IT RESOLVED by the Council of Pierce County:

Section 1. The Joint Planning Framework is hereby adopted as shown in Exhibit "A," attached hereto and incorporated herein by reference. The Joint Planning Framework as adopted by this Resolution is to be used as a guideline and reference for negotiating and executing interlocal agreements for joint planning. Issues addressed in a Joint Planning Interlocal Agreement and the steps necessary to reach an Interlocal Agreement will be established by mutual consent and agreement of the party jurisdictions.

Section 2. The Joint Planning Areas Map, as shown in Exhibit "B," attached hereto and incorporated herein by reference, is herein established as a generalized Joint Planning Area Map for the County and cities and towns within the County. The actual boundaries of a joint planning area shall be contained in the individual Joint Planning Interlocal Agreements and specified in map form or by legal description. Exhibit "B" reflects the geographic areas identified by the cities and towns as urban growth study areas where joint planning with the County and other jurisdictions is desired. This map is not the Interim Urban Growth Area required to be designated by October 1, 1993, pursuant to ESHB 1761 as passed by the 1993 legislature.

Section 3. The Joint Planning Framework is intended as a guideline for carrying out the provisions of Policy No. 4--Joint Planning--of the County-wide Planning Policies (pp. 59-60). If any provision of the Joint Planning Framework conflicts with Policy No. 4 or with county or state law, county or state law shall govern.

PASSED this 13th day of July, 1993.

ATTEST:

PIERCE COUNTY COUNCIL
Pierce County, Washington

Clerk of the Council

Council Chair

Approved As To Form Only:

~~Chief~~ Civil Deputy #17792
Prosecuting Attorney

EXHIBIT "A" TO R93-127

JOINT PLANNING FRAMEWORK

recommended by the Pierce County Regional Council
April 15, 1993

Strategy: The involved jurisdictions shall enter into interlocal agreements to facilitate and accomplish joint planning in areas of mutual concern.

Interlocal Agreement Framework:

1. Each interlocal agreement shall be consistent with state law including the Growth Management Act and its requirement for early and continuous public participation, the County-wide Planning Policies of Pierce County including tier delineation and development, and any applicable, adopted local comprehensive and other plans.

2. The agreement should cover procedural information and processes.

   a. All the signatories should be identified and their duties and responsibilities set out in the agreement. Any party who will participate in the development of the agreement and/or review the agreement should be identified. Service providers and special districts may be signatories, participants or reviewers. Service providers are those who provide a service in the joint planning area such as power, water, sanitary sewer, solid waste collection, stormwater management, transit, natural gas, telephone, cable television, schools, parks, libraries and fire protection. Special districts are separate entities that perform a specific function in the community. Examples of special districts are school districts, park districts, Pierce Transit, fire districts, drainage districts and ports. Special districts may or may not have taxing authority.

   b. A process for review by outside parties should be established. According to RCW 39.34.120, if the agreement covers land use planning, air or water pollution, zoning, building or housing code issues it must be submitted to the Department of Community Development at least 60 days prior to the effective date of the agreement.

   c. The duration of the agreement should be specified.

   d. A process for amendment and termination of the agreement should be included.

   e. A process to resolve conflicts concerning the agreement and compliance provisions should also be included.

3. Issues: The involved jurisdictions shall work together to review and consider issues of mutual concern. These issues may be covered in one interlocal agreement or in a series of agreements. The issues which shall be reviewed and included are discussed below. All of the issues shall be included, unless all the parties to the agreement decide otherwise. Various information and options are presented for these issues.

   a. Boundaries of the joint planning area - The joint planning area should be an area of mutual concern to all the jurisdictions involved. Such an area may include unincorporated and/or incorporated areas, it may include all or a portion of the urban growth area and it may extend beyond the urban growth area.

   b. Land use patterns, intensity and density - The agreement should identify the existing land use patterns and intensity and density of development. It should also identify all existing applicable local comprehensive plans. The agreement shall set what land uses,

development intensities and/or densities will be allowed in what portions of the joint planning area in the future. The process to establish and adopt the allowed land uses, development intensities and/or densities should be in the agreement. Action by appropriate advisory or legislative bodies may be required. The planned land uses, intensities or densities of any adopted local plan could be chosen or a combination of designations from existing plans could be chosen or new designations could be made.

c. Zoning designations - The actual zoning of the area shall be established by the interlocal agreement. The process to establish and adopt the new zoning shall also be in the agreement. Action by appropriate advisory or legislative bodies may be required. The zoning of any of the involved jurisdictions could be applied in the joint planning area or a combination of zoning designations from the involved jurisdictions could be used or a new zoning system could be created.

d. Development standards - The actual development standards to be applied in the area shall be established by the interlocal agreement. The process to establish and adopt these development standards should also be in the agreement. Action by appropriate advisory or legislative bodies may be required. The development standards of any of the involved jurisdictions could be applied in the joint planning area or a combination of development standards from the involved jurisdictions could be used or a new standards could be established.

e. Design standards - The interlocal agreement shall establish the actual design standards for the area. The process to establish and adopt such standards should also be in the agreement. Action by appropriate advisory or legislative bodies may be required. The design standards of any of the involved jurisdictions could be applied in the joint planning area or a combination of standards from the involved jurisdictions could be used or a new standards could be developed.

f. Environmental standards and policies - The actual environmental protection standards and environmental policies under the State Environmental Policy Act (SEPA) for the area shall be established by the interlocal agreement. The process to establish and adopt such standards and policies should also be in the agreement. Action by appropriate advisory or legislative bodies may be required. The environmental protection standards and environmental policies of any of the involved jurisdictions could be applied in the joint planning area or a combination of standards and policies from the involved jurisdictions could be used or new protection standards and policies could be developed.

g. Level of service standards - The actual level of service standards for the area shall be established by the agreement. The process to establish and adopt such standards should also be in the agreement. Action by appropriate advisory or legislative bodies may be required. The level of service standards could be those adopted by any of the involved jurisdictions. The standards could be phased over time to increase from a lower standard to a higher standard. If the area is likely to be annexed into a jurisdiction in the future, that jurisdiction's standards should be the goal.

h. Service providers - A list of current service providers should identify the public and private entities that provide services in the area and, therefore, who would be impacted by the agreement. The listing should also identify each service providers service area, franchise agreements and any other service requirements.

i. Growth tiers - The agreement shall delineate the growth tiers in the joint planning area. The provision of services within the various tiers needs to be identified as to who will

provide the service and when it will be provided. The extension policies of each service provider should be reviewed, and possibly modified, to ensure they are consistent with the growth tiers.

j. Lands useful for public purposes - The agreement shall identify and map any lands useful for public purposes such as utility corridors, transportation corridors, landfills, sewage treatment facilities, open space corridors, recreation and schools. The involved jurisdictions should discuss the timing and cost of acquiring of such sites.

k. Essential public facilities - The agreement shall include a process for identifying and siting essential public facilities such as airports, state education facilities, state or regional transportation facilities, state and local correctional facilities, solid waste handling facilities and in-patient facilities. The jurisdictions should discuss any potential sites for such essential facilities and facilities of a county-wide or state-wide nature.

l. Capital facilities - Any needed capital facilities and improvements, including those for transportation, shall be identified. The involved jurisdictions should discuss who will be responsible to provide such facilities and improvements. The review and approval of any capital facility projects should also be set out. In areas where annexation is planned, the agreement should specify who will construct and maintain capital facilities before, during and after the annexation.

m. Review and approval of development projects - A process to review and approve development projects shall be included in the agreement. The review process should include both SEPA review and substantive project review. As to SEPA review, the agreement should set out who performs such review and what SEPA policies will be used. The SEPA review could be performed by any of the involved jurisdictions using the environmental policies established by the agreement. The substantive review could occur in several ways. First, the existing jurisdiction could continue to provide all of the review and approval authority with no input from the other jurisdictions. Second, the existing jurisdiction could perform the review and approval, but receive and consider comments from the other jurisdictions. Third, the existing jurisdiction could perform the review, but be required to impose any conditions of the other jurisdictions. Finally, one of the other jurisdictions could perform the review and approval with compensation from the existing jurisdiction. At a minimum, all the involved jurisdictions should review the requests for land use approvals (reclassifications, subdivisions, special use permits, etc.) and building permits to monitor the rate, amount and type of growth occurring in the joint planning area. Jurisdictions should be particularly concerned with proposed projects located on or overlapping existing boundaries.

n. Annexation and transition - If annexation is planned, the agreement shall include a discussion of the timing of annexation and a transition plan for level of service standards and the provision of services. The allocation of revenues and expenditures for the area and the assumption of bonded indebtedness should also be discussed.

Activities: The preparation of any interlocal agreement will involve several steps, which are set out below. Also, during the preparation, various staff, committees, commissions, elected bodies and members of the public may be involved. This involvement may include writing, reviewing, commenting or approving.

1. Identify and contact the involved jurisdictions, service providers and special districts for each potential joint planning area.

2. Use the interlocal agreement framework to begin joint planning discussions with the involved jurisdictions, service providers and special districts.

3. Determine and describe the exact boundaries of the joint planning area.

4. Review any existing agreements in place for any portion of the joint planning area to determine whether such agreements should be incorporated into, amended by or repealed by a new agreement.

5. Review any applicable comprehensive plans.

6. Identify existing land use patterns, intensities, densities and zoning designations. Determine appropriate future land uses, intensities, densities and zoning.

7. Determine what development and design standards shall apply within the joint planning area.

8. Decide what environmental standards and policies shall be applicable.

9. Determine the existing level of service for all capital facilities and utilities and develop a transition plan to the ultimate urban service provider's level of service standards.

10. Identify the current providers of all services and develop a transition plan, in case of annexation, to provision of service by the involved municipality.

11. Delineate growth tiers and connect with the transition plans for level of service standards and provision of service.

12. Identify lands useful for public purposes and possible sites for essential public facilities and facilities of a county-wide or state-wide nature within the joint planning area.

13. Review existing, needed and proposed capital facilities and determine responsibilities for such facilities.

14. Determine what process of review and approval of development projects shall apply. All requests for land use approvals shall be consistent with the land uses, zoning, development standards, design standards, environmental standards and policies, and level of service standards designated in the interlocal agreement.

15. Identify, discuss and resolve any other issues of mutual concern, including annexation issues if it is planned.

16. Prepare draft interlocal agreement based on framework and have reviewed by administration of each jurisdiction.

17. Hold further discussions and revise agreement as needed.

18. Present agreement to legislative body of each jurisdiction for approval and execution.

19. After the interlocal agreement is executed, additional actions by some of the involved jurisdictions may be necessary. These may include amendments to existing plans or regulations and changes in administrative procedures or processes. The involved jurisdictions should review the agreement when considering future administrative, legislative or quasi-judicial actions which may impact the subject matter of the agreement. Amendments to the agreement may be necessary.

Replica of Exhibit B to R 93-127

Joint Planning Area

Gig Harbor
Ruston
Tacoma
Milton
Fife
Fircrest
McNeil Island
Sumner
Puyallup
Steilacoom
Buckley
McChord AFB
South Prairie
DuPont
Orting
Wilkeson
Carbonado
Fort Lewis
Mt. Rainier National Park

Pierce County, Washington

State or Federal Route

Federal Boundary

MILES
0 3 6

Department of Planning and Land Services
July 9, 1993

PIERCE COUNTY
Geographic Information System

JOINT PLANNING AREAS

APPENDIX F

Amendments to the Standard Specifications and Special Provisions

AMENDMENTS TO THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

Standard Specifications

The latest edition of the "*Standard Specifications for Road, Bridge and Municipal Construction*" prepared by the Washington State Department of Transportation and the Washington State Chapter of the American Public Works Association (APWA) and all amendments thereto, including the "Division One Supplement," shall be hereinafter referred to as the "Standard Specifications" together with the laws of the State of Washington and the ordinances of the City of Sumner, so far as applicable, are hereby included in these Specifications and shall apply as though quoted in their entirety.

Special Provisions

The following Special Provisions replace, amend, or supplement the Standard Specifications. All provisions of the Standard Specifications, which are not so amended, replaced, deleted, or supplemented, remain in full force and effect. In case of conflict, the Special Provisions shall take precedence over the Standard Specifications. Additional Special Provisions shall be included as part of the Special Provisions and are considered to be a supplement.

DIVISION 7

DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

7-05 MANHOLES

7-05.3 Construction Requirements

Replace the third paragraph with the following:

All manholes shall be 48-inch-diameter precast concrete manufactured by Pipe Inc., Associated Sand and Gravel, or approved equal.

Add the following to the fifth paragraph:

Ladder rungs shall be polypropylene coated conforming to ASTM D-4101. Coating shall not be field applied.

7-05.3(1) Adjusting Manholes to Grade

Supplement this section with the following:

All manholes, catch basins, grates, and valve boxes affected by the construction shall be adjusted to final grade. Covers shall not rock when seated in any position on the frame.

7-05.3(3) Connection to Existing Manholes

Supplement this section with the following:

The Contractor shall notify the city at least 24 hours prior to connecting to any existing utilities. Also see Section 7-17.3(2)G.

Excavate completely around the existing manhole to ensure against unbalanced loading on the manhole.

Keep the manhole in operation at all times and take precautions necessary to prevent any debris or other materials from entering the sewer.

Contractor may be required to install a tight pipeline bypass through the existing channel. If the connection is to a dead-end manhole, the outlet shall be plugged and sealed with cement grout.

The Contractor shall verify the existing manhole invert elevations prior to construction.

Bring laterals into the existing manhole so that the crowns of the two incoming pipes are at the same elevation unless otherwise specified.

Reshape the existing base to provide a channel equivalent to that specified for a new manhole.

The Contractor shall be responsible for repairing all damage to the manholes resulting from his operations.

7-08 GENERAL PIPE INSTALLATION REQUIREMENTS

7-08.3(1)C Pipe Zone Bedding

Supplement this section with the following:

Pipe bedding shall conform to 9-03.12(3) and shall extend 6 inches above and below the pipe. The base of the excavation should be as dry as possible and all loosened soil, organic material, and other debris removed. Any bedding material should be placed on a firm nonyielding, relatively dry subgrade. The top 6 inches of bedding should be contoured to fit the pipe.

Pipe zone material should be placed in layers not exceeding 6 inches (loose thickness), compacted to 90 percent density as the standard (ASTM D 1557), and should be brought up evenly on both sides of the pipe for its full length up to at least 6 inches above the top of the pipe. Compaction within the pipe zone should be accomplished with hand-operated lightweight equipment as approved by the pipeline manufacturer to avoid pipe damage.

7-08.3(2)H Sewer Line Connections

Supplement this section with the following:

Temporary connections shall be made to ensure that the side sewers can continue to be used. Said connections shall be constructed so that they will not leave permanent damage to the finished pipeline. Temporary connections, which are visibly leaking, will not be allowed.

7-08.3(2)I Side Sewer Connections

Supplement this section with the following:

Side sewer connections shall conform to Section 7-18.

7-08.3(3) Backfilling

Supplement this section with the following:

Select trench backfill shall conform to Section 9-03.19.

7-17 SANITARY SEWERS

7-17.1 General

The design of any sewer extension/connection shall conform to City Standards, Department of Ecology's *"Criteria of Sewage Works Design"*.

New gravity sewer systems shall be designed on the basis of an average daily per capita flow of sewage of not less than 100 gallons per day. See the following DOE table on Design Basis for Sewage. This

figure is assumed to cover normal infiltration, but an additional allowance shall be made where conditions are unfavorable. Generally, laterals and submain sewers should be designed to carry, when running full, not less than 400 gallons daily per capita contributions of sewage. When deviations from the foregoing per capita rates are used, a description of the procedure used for sewer design shall be submitted to the Department of Public Works for review and approval.

7-17.2 Materials

Replace section with the following:

Pipe used for sanitary sewers shall be Solid Wall PVC Sanitary Sewer Pipe per 9-05.12(1).

7-17.3 Construction Requirements

7-17.3(2) Cleaning and Testing

Supplement this section with the following:

Gravity sewer pipe shall be subject to low-pressure air test per Section 7-17.3(4)E. Contractor shall furnish all equipment and personnel for conducting the test. All tests shall be done under observation of the inspector. Contractor shall give inspector 24-hour written notice prior to conducting test.

All wyes, tees, and end of side sewer stubs shall be plugged with flexible joint caps, or acceptable alternates, securely fastened to withstand the internal test pressures. Such plugs or caps shall be readily removable and their removal shall provide a socket suitable for making a flexible jointed lateral connection or extension.

Immediately following the pipe cleaning, the pipe installation shall be tested with low-pressure air.

A water test of all new manholes is also required. The water test shall be made by the Contractor first by filling the manhole up with water and letting it sit to allow the water to saturate the concrete. After the saturation period, the manhole shall be filled to the top of the cone. The water cannot drop more than 0.05 gallons in 15 minutes per foot of head above invert to pass.

Contractor shall be responsible for maintaining service during manhole and sewer testing.

7-17.3(2)H Television Inspection

Delete the first paragraph and supplement with the following:

After cleaning the new sewer pipe, passing the air test, and passing the compaction testing on the trench backfill, the Contractor shall make a video recording (VHS format) of the new sewer using remote camera normally used for said application and deliver the tape and associated written transcript to the Engineer within 48 hours of performing the video recording.

A 1-inch sewer ball shall be attached in front of the camera to allow for inspection of the depth of water in low points in the sewer pipe. Low points exceeding $^1/_2$-inch shall be repaired. The inspection will be done one manhole section at a time, and the flow in the section being inspected shall be suitably controlled as necessary to observe the depth of flow on the 1-inch sewer ball.

The television camera used for the inspection shall be one specifically designed and constructed for such inspection with a rotating camera capable of looking into the side sewers. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. The camera shall be operative in 100 percent humidity conditions. The camera, television monitor, and other components of the video system shall be capable of producing picture quality to the satisfaction of the Engineer, and, if unsatisfactory, equipment shall be removed and no payment will be made for an unsatisfactory inspection.

Television inspection shall be incidental to the Contract unit price for PVC sanitary sewer pipe 8-inch diameter.

7-18 SIDE SEWERS

7-18.1 Description

Replace this section with the following:

The work shall consist of reconnecting existing side sewers to the new side sewers at the right-of-way, and extending new side sewers to the right-of-way from the new sewer.

7-18.2 Materials

Replace this section with the following:

Side sewers shall be 6-inch PVC conforming to Section 9-05.12. Contractor shall be responsible to have fittings available for connecting to existing side sewers.

7-20 STEP/GRAVITY WASTEWATER COLLECTION (NEW SECTION)

7-20.1 General

The City of Sumner Technical Specifications were developed for use with on-site Septic Tank Effluent Pump (STEP) tank installations, on-site wastewater disposal system installations that are to be converted to STEP, and STEP collection line installations.

The City of Sumner Technical Specifications are subject to change as new regulations come into effect.

Anyone who wishes to extend or connect to the City's sewer system should contact the Utility Department for a sewer extension/connection fee estimate of the costs due the City for a sewer extension or connection.

Prior to the release of any water meters, or operation of any STEP systems, all Public Works improvements must be completed and approved and all applicable fees must be paid.

All surveying and staking shall be performed by an engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work shall be licensed as a Professional Engineer or Professional Land Surveyor by the State of Washington.

A preconstruction meeting shall be held with the City prior to commencing staking. All construction staking shall be inspected by the City prior to construction.

Ownership, operation, and maintenance of the tank, pump, and pump controls shall be the responsibility of the property owner. Pipelines and service lines within public right-of-way remain the ownership of the City of Sumner.

Currently, only the Orenco STEP Pump System is referenced in the Specifications or shown in the drawing section of this Standard. These manufacturers's components and references are provided as a guide to property owners. Property owners may opt to substitute similar products as long as they meet the salient features of the components listed.

7-20.1(1) Design Standards

The design of any STEP sewer system shall conform to City standards and the latest version of the Criteria for Sewage Works Design prepared by the Department of Ecology (hereinafter referred to as the DOE Design Manual). In case of conflict between the two Standards, the most stringent conditions shall apply.

The layout of extensions shall provide for the future continuation of the existing system as determined by the City. In addition, main extension shall be extended to and through the side of the affected property fronting the main. Individual service boxes shall be located at the center of each lot.

Pump, STEP tank, and pipeline sizing shall conform to the criteria as set forth herein.

The applicable General Notes preceeding the list of drawings shall be included on any plans dealing with pressure sanitary sewer design.

7-20.2 Materials

7-20.2(1) STEP Tanks

7-20.2(1)A Loading Criteria

Weight of backfill shall be 135 lbs./cu.ft.

The water table is at ground level. Lateral loading is 85 lbs./cu.ft., which includes hydrostatic water pressure.

The tank will support a minimum 1,000 lb. wheel load.

Tanks designated as traffic bearing tanks shall be designed to withstand HS-20 truck loading with appropriate impact factors. All tanks shall be structurally sound and watertight and shall be guaranteed in writing by the tank manufacturer for a period of seven (7) years from the date of final acceptance. The tank guarantee/warranty shall be furnished at the time of submittal. Tank warranty shall not limit liability to replacement cost of the tanks.

7-20.2(1)B Fiberglass Tanks

Unless superseded by the Standard Specifications, the fiberglass tanks will meet all requirements of IAMPO PS 1-87. If requested by the Owner, the manufacturer shall supply to the Owner, without charge, approved original laboratory report showing compliance with IAMPO PS 1-87 and requirements of the suppliers licensed Structural Engineer.

1. Method of Calculations: Fiberglass tanks shall be analyzed using finite element analysis for buried structures.

   Calculations shall address the following:

   A. Strength with a safety factor of 2.5

   B. Buckling with a safety factor of 2.5

   C. Deflection of 5 percent of the tank diameter, based on service load (including long-term deflection lag)

   D. Buoyancy

2. Performance Testing:

   In lieu of calculations for fiberglass tanks, the supplier may elect for in situ performance testing.

   In situ testing of each tank model shall include use of strain gauges and deflection gauges. The tank will be subjected to external forces equal to twice the actual load.

   Maximum initial deflection based on service loading shall not exceed 2 percent of the tank diameter.

   Performance testing will be evaluated by a licensed Structural Engineer registered in the State of Washington. The Owner will have the sole responsibility to determine the maximum external loading on any of the tank models.

   A. Inspections may be made by the Owner in the suppliers' yard, within the plant, upon delivery and again after installation. The wall thickness shall average at least $^{1}/_{4}$ inch unless superseded by the requirements of the Structural Engineer. When less than $^{3}/_{16}$ inch in thickness or any delamination is suspected within any portion of the tank wall for inspection purposes. If the required minimum $^{3}/_{16}$-inch thickness is not found, repair, if feasible, shall be the responsibility of the Contractor. If repair is judged not feasible, the tank shall be rejected. If 20 percent or more of the tanks are rejected for any of the aforementioned reasons, each tank under this bid will become suspect of substandard quality and subject to rejection by the Owner. If the required minimum $^{3}/_{16}$-inch thickness is found, and no delamination is present, the repair shall be the responsibility of the Owner.

   B. The Structural Engineer shall specify the minimum weight of each tank model that will be allowed and submit those weights during the submittal process. The manufacturer will weigh each tank and place that weight on the side of each tank in a manner that will not be affected by rain or inclement weather.

   C. Holes required in the tank shall be provided by the manufacturer. Resin shall be properly applied to all cut or ground edges so that no glass fibers are exposed and all voids are filled.

   D. Dual Tite or Ty-Seal neoprene gaskets, or equal, shall be used at the inlet to join the tank wall and the ABS inlet piping. ABS Schedule 40 pipe and fittings shall be used at the inlets.

E. Inlet plumbing shall penetrate 18-inches into the liquid from the inlet flow line.

F. Each tank shall be water tested on the project site after assembly by the manufacturer and witnessed by the Owner. Every tank shall be assembled by the manufacturer and water raised to the brim of the manhole for a minimum of two (2) hours. The tank shall show no leakage from section seams, pinholes, or other imperfections. Any leakage is cause for rejection.

G. When leakage occurs, if the tank is not rejected by the Owner, an additional water test for a minimum of two (2) hours shall be made on the tank after repairs have been completed, upon request by the Owner. The manufacturer shall be responsible for making all corrective measures in production or assembly necessary to ensure a completely watertight tank.

H. After installation of tank with riser is completed, each tank shall be filled with water to the top of the riser for a two-hour period as per paragraph F, to assure that there is no leakage. Every tank test shall be witnessed by the Owner.

I. Each tank will also include a serial number and date of manufacturer.

J. Installation shall be in accordance with the manufacturer's recommendations, and as shown on the contract plans, no variations.

7-20.2(1)C Concrete Tanks

Concrete tanks will be allowed in sizes up to 3,000-gallon capacity.

Wall, bottom, and top of reinforced-concrete tanks shall be designed across the shortest dimension using one-way slab analysis. Stresses in each face of monolithically constructed tanks may be determined by analyzing the tank cross-section as a continuous fixed frame.

The walls and bottom slab shall be poured monolithically; alternatively, water stops may be provided.

Reinforcing steel shall be ASTM A-615 Grade 60, fy=60,000 psi. Details and placement shall be in accordance with ACI-35 and ACI-318.

Concrete shall be ready mix with cement conforming to ASTM C-150, Type II. It shall have a cement content of not less than six (6) sacks per cubic yard and maximum aggregate size of 3/4 inch. Water/cement ratio shall be kept low (0.35±), and concrete shall achieve a minimum compression strength of 4,000 pi in 28 days. The Contractor shall submit a concrete mix design to the Owner for review and approval. Three (3) concrete sample cylinders shall be taken and tested for each tank manufactured until the manufacturer and Owner are satisfied that the minimum compression strength is being obtained. To insure compliance, the manufacturer shall then make and test three (3) sample cylinders for a minimum of 20 percent of the remaining tanks at the discretion of the Owner. If the minimum compressive strength is not being obtained, the manufacturer shall be required to make and test sample cylinders for each tank manufactured. Calcium chloride will not be allowed in the mix design. The cost of testing cylinders shall be the tank manufacturer's responsibility. The tank manufacturer may supply a Swiss hammer for compressive testing in the field in lieu of sample cylinders.

Tanks shall be protected by applying a heavy cement-base waterproof coating (Thoroseal or equal), on both inside and outside surfaces, in compliance with Council of American Building Officials (CABO) report #NRB-168; 6181.

Form release used on tank molds shall be Nox-Crete or equal. Diesel or other petroleum products are not acceptable.

Tanks shall not be moved from the manufacturing site to the job site until the tank has cured seven (7) days or has reached two-thirds of the design strength.

Tanks shall be manufactured and furnished with access openings of the size and configuration to accommodate individual packaged pump systems. Modification of completed tanks will not be permitted.

The septic tank and the top slab shall be sealed with a performed flexible plastic gasket. The flexible plastic gasket shall be equal to the flexible butyl resin sealant conceal CS-102 or CS-202 as manufactured by Concrete Sealants, Inc. of New Carlisle, Ohio and shall conform to federal specification SS-S00210(210A) and AASHTO M-198.

Tanks shall be furnished without concrete access hole lids and equipped with tank riser adapters as manufactured by Orenco Systems or equal. In order to demonstrate water tightness, the tanks shall be tested as follows:

Inlets to the septic tank will be water tight pipe seal as Ty Seal pipe seal or equal. Outlets for effluent filters shall be configured as shown on the contract plans.

1. Factory Test:

   All of the tanks supplied by the precast manufacturer will be hydrostatically tested in the factory. The tank shall be tested by filling with clean water to the soffit and let stand for a minimum of 24 hours. After the 24-hour period, the water will be replaced to soffit. The water level shall be checked after 2 hours. Any water loss will not be acceptable.

2. Field Tests:

   After the tanks have been set in place, but prior to backfilling, each tank shall be tested for a 2-hour period. Any tank that fails the test as outlined in 11A shall be repaired and/or replaced until the tank passes said test. After backfilling, the tank shall be filled with water to 4 inches above riser and tank connection and tested for exfiltration over a two-hour period. No tank will be accepted if there is any leakage over the two (2) hour period.

7-20.2(2) STEP Pipelines Materials

7-20.2(2)A Pipelines and Service Line Materials

All pipes less than 2 inches shall meet the following requirements:

1. Schedule 40 PVC pipe shall be designed for solvent weld joints and shall comply with ASTM D 1785.

All pipe 2 inches and above shall meet the following requirements:

1. PVC 1PS 1120 SDR 21 Class 200 pipe shall have rubber ring gasket joints, shall comply with ASTM D 1784 and have a working pressure rating of 200 psi.

7-20.2(2)B Bedding

Bedding shall be crushed or granular material as per Section 9-03.16 of the Standard Specifications.

Bedding shall be installed as shown on the Standard Details.

7-20.2(2)C Joints

Solvent Weld Joints: Solvent cements and primer for joining PVC pipe and fittings shall comply with ASTM D 2564 and be as recommended by the pipe and fitting manufacturers.

Rubber Ring Gasket Joints: Rubber ring gaskets shall comply with ASTM D 1869 and ASTM D 3139 and shall be supplied by the pipe or fitting manufacturer with a sufficient amount of lubricant. The lubricant shall be water soluble, non-toxic, nonsupportive of bacterial growth and have no deteriorating effect on the PVC or gasket.

7-20.2(2)D Fittings

All fittings shall have a minimum working pressure equal to the pipe with which they are connected.

1. Solvent Weld Fittings:

   Solvent weld fittings for pipe less than 2 inches shall be socket type Schedule 40 fittings and shall comply with ASTM D 2466 and 2467.

2. Rubber Ring Gasket Fittings:

   Rubber ring gasket fittings for pipe 2 inches and larger shall be PVC 1120 complying with ASTM F 477, as manufactured by Head Manufacturing Co., Preston, Idaho; Gault Fabrication Company, Stockton, California; Spears Fabrication, Stockton, California; or approved equal.

7-20.3 Construction Requirements – Step Tanks/Pipelines

7-20.3(1) STEP Tanks

STEP tanks shall be the size and type as denoted in these specifications and as shown on the standard drawings. Grease interceptors shall be sized in accordance with the EPA Design Manual (625/1-80-012) and shall be of a configuration consistent with industry standards. Grease interceptor vessels will be subject to requirements of the STEP tanks.

STEP tanks with an influent pipe invert elevation of less than or equal to 4 feet, which are not placed in traffic bearing areas shall meet the following criteria:

1. All models of tanks will be certified by a licensed Structural Engineer that they will meet the loading conditions specified herein. The Structural Engineer certifying each model of tank shall submit drawings including but not limiting to the following:

   A. Plan view showing dimensions of tanks and the size and location of any openings in the tank.

   B. Side section of tank showing dimensions and thickness.

C. End section of tank showing dimension and thickness.

2. STEP tanks with influent pipe inverts greater than 4 feet, and/or are subject to traffic bearing loading, shall meet the following criteria:

   A. All models of tanks will be designed by a licensed Structural Engineer Calculations shall be submitted for review.

3. An inspection port will be required over the inlet baffle for all STEP tanks. A 21-inch minimum riser inspection port/clean-out shall be required.

7-20.3(1)A STEP Tank Sizing

STEP tanks for the City of Sumner will be sized and configured as outlined, and shall meet the DOE Design Manual criteria for vessel sizing and configuration (see Table 1).

Table 1 – Step Tank Sizing

Descriptions	Tank Size
Up to 4 Bedroom Home	Minimum: 1,000 gallons (liquid capacity)
5/6 Bedroom Home/Duplex	Minimum: 1,500 gallons (liquid capacity)

STEP tanks for any applications of institution, multi-family dwelling, or other structures not listed above shall be sized in accordance with the latest version of the DOE Design Manual. Peak-day flow for purposes of sizing STEP tanks shall be calculated using Table 2, Accepted Engineering Manual, or actual operating records, whichever is more stringent. All STEP tank configurations will be two compartments and shall meet requirements of the DOE Design Manual with the following additions:

1. All STEP tanks 1,000-4,500 gallons will be two compartment tanks divided by a baffle as shown in Drawing Detail 7-10 and 7-11. On 1,000-4,500 gallon tanks, install the equivalent of three each 4-inch-diameter holes uniformly spaced across width of tank baffle 29 inches above floor of tank in each baffle.

2. On 6,000-gallon tanks, install three each 6-inch diameter holes uniformly spaced across width of tank baffle 40 inches above floor of tank in each baffle.

3. If approved by the Owner, 6,000-gallon tanks used in conjunction with a pump tank may not require a baffle.

Table 2 – Estimated Daily Sewer Flows	
Type of Establishment	**Gallons per Person per Day (Unless otherwise noted)**
Airports (per passenger)	5
Apartments – Multiple family (per resident)	65
Bathhouses and swimming pools	10
Camps:	
Campground with central comfort stations	35
With flush toilets, no showers	25
Construction camps (semi-permanent)	50
Day camps (no meals served)	15
Resort camps (night and day) with limited plumbing	50
Luxury camps	100
Cottages and small dwellings with seasonal occupancy	50
Country clubs (per resident member)	100
Country clubs (per nonresident member present)	50
Dwellings:	
Boarding houses	50
Additional for nonresident boarders	10
Luxury residences and estates	150
Multiple family dwellings (apartments)	65
Rooming houses	40
Single family dwellings	75
Factors (gallons per person, per shift, exclusive of industrial wastes)	35
Hospitals (per bed space)	250+
Hotels with private baths (2 persons per room)	60
Hotels without private baths	50
Institutions other than hospitals (per bed space)	125
Laundries, self-service (gallons per wash, i.e. per customer)	50
Mobile home parks (per space)	250
Motels with bath, toilet, and kitchen wastes (per bed space)	50
Motels (per bed space)	40

Table 2 – Estimated Daily Sewer Flows	
Type of Establishment	**Gallons per Person per Day (Unless otherwise noted)**
Picnic parks (toilet wastes only) (per picnicker)	5
Picnic parks with bathhouses, showers, and flush toilets	10
Restaurants (toilet and kitchen wastes per patron)	10
Restaurants (kitchen wastes per meal serviced)	8
Restaurants additional for bars and cocktail lounges	2
Schools:	
Boarding	100
Day, without gyms, cafeterias, or showers	15
Day, with gyms, cafeterias, and showers	25
Day, with cafeteria, but without gyms, or showers	20
Service stations (per vehicle served)	10
Swimming pools and bathhouses	10
Theaters:	
Movie (per auditorium seat)	5
Drive-in (per car space)	5
Travel trailer parks without individual water and sewer hookups (per space)	50
Travel trailer parks with individual water and sewer hookups (per space)	100
Workers:	
Construction (at semi-permanent camps)	50
Day, at schools and offices (per shift)	15

All tanks install a 4-inch-diameter hole within 1 inch of crown of baffle for venting.

Designers to consult with Pubic Works Director prior to design of commercial STEP installation and tanks 3,000 gallons and larger to verify tank sizing, vault configuration, pump requirements, and electrical requirements.

Underestimating the wastewater flow anticipated to be received by either the STEP tank or primary tanks by the property owner or the owner's designer based on estimated use will result in the property owner increasing the septic tank holding capacity to meet the above criteria. Refusal to increase the size of the septic tank to meet the design criteria will result in discontinuance of sewage collection services.

7-20.3(1)B STEP Tank Installation

It shall be the Contractor's responsibility to verify the location and the elevation of all existing sewer lines prior to installing the individual tank. STEP tanks shall be located in front of building unless otherwise approved by the City of Sumner.

It is anticipated that existing utility lines will be encountered during installation of the STEP tank and appurtenances. Prior to starting construction the Contractor will notify the proper utility for underground locations and also contact the property owner to determine location of foundation drains, electrical lines, etc.

The Contractor shall be responsible to obtain all necessary permits for work on public right-of-way such as street opening permit available at City hall. All cost for permits will be the Contractor's responsibility.

Excavations for all tanks shall be sufficient to leave a minimum of 6 inches of bedding (see List of Drawings).

All tank installations shall adhere to the following:

1. Location of the STEP tank site will be submitted to the Owner upon request.

2. For work within public right-of-way, the contractor shall be responsible on a daily basis for providing ingress and egress for both pedestrian and vehicle traffic on all work sites. The contractor shall clean up his work area on a daily basis to avoid inconvenience to the public.

3. For work within public right-of-way, the contractor shall safeguard his work on a daily basis to prevent possible injuries. the contractor shall submit to the City his method of safeguarding his work prior to beginning any construction on public right-of-way.

7-20.3(2) STEP Pipelines

7-20.3(2)A General

Installation and materials used for construction of the City of Sumner STEP system shall conform to the requirements of Sections 7-10 through 7-12, 7-15, and 7-17 of the Standard Specifications, unless amended herein.

STEP pipelines constructed and sized within private developments and public right-of-way shall conform to the City of Sumner Sewer Comprehensive Plan and the DOE Design Manual, whichever is more stringent.

7-20.3(2)B Pipeline and Service Line Installation

Grade and Alignment: Service lines shall be placed at a minimum of 18 inches of cover within private property. Deeper excavation may be required due to localized breaks in grade such as curbs, retaining walls, and terraced ground. Where required by the City of Sumner, the pipeline shall be laid to the profile or elevation shown, regardless of depth. Minimum cover of any mainline within public right-of-way or easement shall be 60 inches.

7-20.3(3)C Trench Excavation and Backfill

Native material from trenches and excavations may be considered unsuitable for trench backfill. The City of Sumner shall determine the suitability of native material for trench backfill. If the native material is deemed unsuitable by the City, "Bank Run Gravel for Trench Backfill" shall be used. Bank run gravel shall be equal to Section 9-03.19 of the Standard Specifications.

The Contractor has the option of jacking or boring pressure sewer lines under existing improvements. The Contractor's proposed method of construction and material type shall be submitted for the City's approval prior to commencing work. Pipeline material shall be approved by the manufacturer for jacking or boring application. No jacking operation shall exceed 40 feet unless authorized by the City.

At location where paved or graveled streets, shoulders, alleys, parking lots, driveways, patios, and sidewalks will be reconstructed over the trenches, the backfill shall be spread in layers not exceeding 8 inches in loose thickness and be compacted by mechanical tampers to 95 percent of maximum density. At locations where lawn, landscaping, and unimproved surfaces will be reconstructed over the trench, the backfill shall be spread in layers not exceeding 8 inches in loose thickness and be compacted by mechanical tampers to 85 percent of maximum density.

Maximum density and optimum-moisture content shall be determined using the modified Proctor maximum dry density procedure (AASHTO T180 or ASTM D 1557). In place density shall be determined using the Washington Densimeter method or Nuclear Gauge as outlined in the WSDOT Construction Manual.

7-20.3(2)D Detectable Marking Tape

Heavy-duty fourteen-gage insulated copper toning wire designed for direct-bury applications, shall be placed directly over all non-metallic pressure sewer lines and service lines. The Contractor shall bring the toning wire to the surface of the valve box and service boxes for purposes of attaching a utility detection device. All connection of the toning wire for service connections shall be stripped of insulation and attached to the copper portion of the main line toning wire. The connection point shall be wrapped with heat shrink tape acceptable for direct bury in accordance with manufacturer's recommendations.

7-20.3(2)E Hydrostatic Pressure Test

All sewer mains, service lines, and appurtenances shall be hydrostatically tested in lengths specified. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be accompanied with certifications of accuracy from a laboratory approved by the Owner.

The sewer pipeline shall be backfilled sufficiently to prevent movement of the pipe under pressure. All thrust blocks shall be in place and time allowed for the concrete to cure before testing. Where permanent blocking is not required, the Contractor shall furnish and install temporary blocking and remove it after testing.

The sewer lines shall be filled with water and allowed to stand under pressure a sufficient length of time to allow the escape of air.

The test shall be accomplished by pumping the sewer line up to the required pressure, stop the pump for 15 minutes, and then pump the sewer line up to the test pressure again. During the test, the section being

tested shall be observed to detect any visible leakage. There shall not be an appreciable or abrupt loss in pressure during the 15-minutes test period.

The quantity of water required to restore the pressure shall be accurately determined by pumping through a positive displacement water meter with a sweep unit hand registering one gallon per revolution. The meter shall be approved by the Owner.

The maximum allowable leakage for sewer lines shall be, according to AWWA C600, Section 4 Hydrostatic Testing, as follows:

	Pipe Diameter			
Test Pressure	3"	4"	6"	8"
150 psi	.28	.37	.55	.74
125 psi	.25	.34	.50	.67
100 psi	.23	.30	.45	.50

The above table values give the allowable loss in gallons per 1,000 feet of sewer pipeline per hour. The allowable loss can be calculated for any condition with the formula:

$$L = \frac{SD \times \sqrt{P}}{133{,}200}$$

where:

L =Allowable loss for push-on or mechanical joints (GPH).*

S =The length of the pipe tested, in feet.

D =The nominal diameter of the pipe, in inches.

P = Average test pressure (psi), during the test duration.

* Add .0078 GPH/inch of nominal valve size for metal seated gate valves pumped against.

Portions of the sewer line that are determined to be critical, or suspected of leaking, should be left with the joints exposed during the testing procedure to allow visual inspection. The use of dye in the testing water will assist the location of leaks if ground water is present in the trench. Any visible leakage detected shall be corrected by the Contractor regardless of the allowable leakage specified above. Should the tested section fail to meet the pressure test successfully as specified, the Contractor shall, at his expense, locate and repair the defects and then retest the pipeline.

Prior to calling out the Owner to witness the pressure test, the Contractor shall have all equipment set up completely, ready for operation and shall have successfully performed the test to assure himself that the pipe is in a satisfactory condition.

Defective materials or workmanship, discovered as a result of a hydrostatic field test, shall be replaced by the Contractor at his expense. Whenever it is necessary to replace defective material or correct the workmanship, the hydrostatic test shall be rerun at the Contractor's expense until a satisfactory test is obtained.

The Contractor shall provide the water necessary to fill the pipelines for testing purposes. Water may be purchased from the Water Utility. Contractor to coordinate with the City of Sumner Water Utility. The Contractor will be responsible for transporting the water to the project site. The Contractor will also be responsible for furnishing a backflow prevention device or other Owner approved method to avoid contamination of the water supply during loading, an appropriate water meter and all other appurtenances required. Water meter and appurtenances shall be approved by the Owner.

The Contractor shall demonstrate to the satisfaction of the Owner that the air release valves and vacuum release valves are operating correctly.

1. Sewer Main Line Testing:

   Sewer Main Lines shall be tested under a hydrostatic pressure equal to 150 psi.

   After the sewer main test has been completed, each mainline valve shall be tested by closing valves in turn and relieving the pressure beyond. This test of the valves will be acceptable if there is no immediate loss of pressure on the gauge when the pressure comes against the valve being checked. The Contractor shall verify that the pressure differential across the valve does not exceed the rated working pressure of the valve.

   The ball valve (or self-tapping saddle if used) at the sewer main shall be opened during testing of the sewer main so that the main is tested with pressure against the service line check valves.

   Prior to any main line testing, all service lines within the main line test area shall be installed, tested, and approved. The Contractor shall test no more than 5,000 linear feet for the first test to qualify crews and materials. Sections of collection main line to be tested shall not exceed 10,000 linear feet per each individual test. Once successful test results have been achieved, the Contractor may request in writing test sections greater than 10,000 linear feet for the Owner's approval. The Contractor is required to keep his pipe testing and service line testing concurrent with his pipeline laying operations.

2. Sewer Service Line Testing:

   In order to test the service line, the ball valve (or self-tapping saddle if used) at the sewer main shall be closed and the test pump shall be attached at the end of service line. This portion of the service line shall be tested under a hydrostatic pressure of 70 psi. The test will be deemed successful if the pressure is constant for a minimum of 1 minute.

7-20.3(2)F Air and Vacuum Release Valves

Air release valves and air/vacuum valves shall be located at the high points of the line. Profiles for each pipe run shall be submitted with the hydraulic gradeline for both static and dynamic flow conditions to show where the critical points are for air release valves. Vehicular access to air/vacuum valves is required for maintenance.

Because the air released by these valves will contain hydrogen sulfide, the valves and their enclosures have to be constructed of corrosion resistant materials. The air released from the valve will be quite odoriferous, thus, each vent will be equipped with an odor control system such as activated carbon filters impregnated with sodium hydroxide.

7-20.3(2)G Pigging Ports/Cleanouts

A pipeline pig is a projectile that is forced through the inside of a pipe to clean pressure pipelines. A pigging port/cleanout is used as a point to send the pig (see Standard Detail 7-20).

Pigging ports are required at every 2-inch diameter change in pipeline size, and at the end of every dead end line.

Specific locations are subject to review and approval by the City.

7-20.3(2)H Thrust Blocking

Thrust block concrete shall be Class B poured against undisturbed earth. A plastic barrier shall be placed between all thrust blocks and fittings.

See _____. Designed and approved restraining joint systems may be allowed in lieu of thrust blocking. Restraining joint brand, type and size shall be specified on the plans.

7-20.3(2)I Service Connections

This work consists of installing the service line and appurtenances. The service connection at the sewer main includes a check valve and ball valve, without valve boxes, and a saddle or tee at the sewer main.

7-20.3(2)J Service Interruption/Line Connections

The contractor shall give the City a minimum of 72 hours notice of any planned connection to an existing pipeline. This includes all cut-ins and live taps. Notice is required so any disruptions to existing services can be scheduled. The City will notify customers involved or affected of the sewer service interruption. The contractor shall make every effort to schedule sewer main construction with a minimum interruption of sewer service. In certain situations, the City may dictate scheduling of sewer main shutdowns so as not to impose unnecessary shutdowns during specific periods to existing customers.

7-20.3(3) STEP Pump Assemblies Materials and Installation

7-20.3(3)A General

This work shall include but not be limited to providing and installing pump assemblies, effluent filters, risers, electrical equipment and pump control and alarm assemblies in accordance with the plans and these specifications. The pump assemblies provided shall restrict the discharge to low flow over a wide range of head conditions to assure that solids remain in the STEP tank and not be transmitted into the pressure line. Pumps installed shall be protected by a screen to prevent solids greater than 1/8 of an inch entering the pressure line and prevent plugging the intake to the impeller or the flow restriction device.

7-20.3(3)B Ball Valves

One-inch ball valves shall be PVC ball valves shall comply with ASTM D 2846. It shall be designed for use with corrosive fluids, for low torque manual operation, and for a working pressure of 150 psi. The PVC material shall be Type 1 (NSF). The valve shall be Model No. LT-1000-S as manufactured by KBI (King Brothers Industries), or equal approved by the City.

7-20.3(3)C Gate Valves

Gate valves for sewer systems shall be NRS gate valves, complying with AWWA C509. Buried valves shall have 2-inch square AWWA Standard operating nuts. Valve stem extensions, if necessary, shall be provided by the same supplier as the gate valves.

All gate valves buried greater than 60 inches shall be equipped with operator extensions.

7-20.3(3)D Check Valves

Check valves for sewer systems shall be PVC swing check valves designed for use with corrosive fluids and shall have a Buna-N seal on a swing gate which lifts to allow for unobstructed flow. The PVC material shall be Type 1 (NFS). The valve shall have no metallic parts. It shall have a working pressure of 150 psi and shall require only $^1/_2$ psi backpressure for complete closure. It shall be as manufactured by KBI (King Brothers Industries), or equal approved by the Owner.

7-20.3(3)E Valve Boxes

The word Sewer shall be cast into the lid. The top section shall be made of cast iron conforming to the following specifications: ASTM A 4876; WWP 401; and CS-88. It shall be slip type with top flange, weight 40 pounds or more, be 10 inches in length, have an inside diameter sufficient to house the bottom section, and have an average material tensile strength of 30,000 psi. It shall be Rich Model 910 heavy duty, or equal approved by the City. The bottom section of the valve box shall be 6-inch PVC pipe (ASTM 3034), which in color. the entire valve box top and bottom shall perform as a unit that has the ability to extend.

7-20.3(3)F Saddles

Standard saddles shall be band-type saddles designed for use on PVC pipe. The material shall be UNS S 30400 stainless steel for the shell, bolts, washers, nuts, and tapped outlet. Gaskets shall be NBR compounded rubber complying with ASTM D 2000-343K515_E34. Saddles shall be Style 304, manufactured by Romac Industries, Inc., or equal approved by the City.

Self-tapping saddles shall have a PVC body and be secured in place by four stainless steel bolts and nuts. After tapping, the tapping mechanism shall retain the coupon from the pipe and serve as a shut-off valve. The tapping mechanism shall be operated by a $^5/_8$-inch Allen-head wrench and have a PVC cover to prevent fouling of the mechanism when not in use. The saddle shall have an O-ring seal glued in place by the manufacturer.

7-20.3(3)G Standard Service Box

The Standard Service Box shall be made from a structural plastic, have extensions as required, and have a bolt down cover. It shall be Model No. 1419, as manufactured by Carson Industries, Inc. or equal approved by the City.

7-20.3(3)H Traffic Bearing Service Boxes

Traffic Bearing Service Boxes shall conform to 7F.010 E - "Valve Boxes"

7-20.3(3)I Effluent Pump – 4" Submersible Pumps

Simplex Pumps:

1. Systems for tanks 1,500 gallons or less.

   A. General – For Discharge to a STEP Collection System:

   B. Provide Orenco Model P10 05 11 or approved equal. Pumps shall be listed by an approved testing laboratory, e.g., UL or CSA or use as an effluent pump.

   C. Pumps shall be stainless steel and/or thermoplastic.

   D. All wetted fasteners shall be 300-series stainless steel.

2. Motors:

   A. Motors shall be permanent split phase-type operating at 3450 RPM. Motors shall be $^1/_2$ HP, 115 volt, single phase, 60 Hz.

   B. Motors shall be thermally protected with an automatic-reset feature.

3. Operating Conditions: The effluent pump shall be of the submersible turbine type capable of delivering 5 gpm against a TDH of 105 feet, and with a shut-off head of not less than 160 feet. Pumps will be provided with an orifice installed in the discharge piping to restrict flow to a maximum of 9 gpm over any head condition. The supplier shall provide a head curve showing performance of the pump with the orifice installed.

4. Bypass: A $^1/_8$-inch bypass orifice shall be drilled in the discharge head of the pump to allow for cooling pump motor during periods of no discharge.

Duplex Pump Systems and Triplex Pump Systems for 3,000 Gallon Tanks or Larger.

1. General – For Discharge to a STEP Collection System:

   A. Provide Orenco Model P20 05 11 or approved equal. Pumps shall be listed by an approved testing laboratory e.g., UL or CSA for use as an effluent pump.

   B. Pumps shall be stainless steel and/or thermoplastic.

C. All wetted fasteners shall be 300-series stainless steel.

2. Motors:

   A. Motors shall be permanent split phase-type operating at 3450 RPM. Motors shall be $^1/_2$ HP, 115 volt, single phase, 60 Hz. The supplier shall provide a head curve showing performance of the pump with the orifice installed.

   B. Motors shall be thermally-protected with an automatic-reset feature.

3. Operating Conditions: The effluent pump shall be of the submersible turbine type capable of delivering 20 gpm against a TDH of 105 feet, and with a shut-off head of not less than 160 feet.

4. Bypass: A $^1/_8$-inch bypass orifice shall be drilled in the discharge head of the pump to allow for cooling pump motor during periods of no discharge.

7-20.3(4) Pump Vault, Riser, and Lid

7-20.3(4)A General

Provide an internal pump vault, which will be of sufficient size and structural integrity to house and support the pumping equipment necessary for transportation of effluent. The pump vault will have a screen to prevent solids larger than 1/8 from entering the pipeline and to protect the pump and flow restriction device from plugging. The internal vault will be removable for access into the STEP tank for septage pumping. All risers and connections to the septic tank with risers shall be watertight.

7-20.3(4)B Internal Vault

Simplex pump assemblies shall be a Biotube Pump Vault as manufactured by Orenco Systems, Inc., Model Number X4S 1254-18 19. Vaults for duplex 4 submersible pump assemblies shall be a Biotube Pump Vault Model Number X4D 12xx-18 19 as manufactured by Orenco Systems, Inc., or equal.

7-20.3(4)C Risers

Risers shall be required for access to internal vaults and access into the septic tanks for septage pumping. All risers shall be constructed of PVC, fiberglass, or polyethylene and shall be constructed watertight. Risers over pump vault shall be a minimum of 24-inches in diameter and shall be of sufficient diameter to allow removal of internal vaults without removing splice boxes, etc. All risers shall be of sufficient length to meet minimum requirement of the latest version of the National Electric Code (NEC) and shall vary depending on the depth of bury on the various tanks. The risers shall be attached to the tanks such that a watertight seal is provided. Epoxy required to adhere the PVC or fiberglass risers to fiberglass or concrete tanks shall be a two-part epoxy as supplied by the manufacturer of the riser.

When applicable, Neoprene grommets shall be installed by the manufacturer for discharge piping, vent piping and/or the electrical conduit to assure a watertight seal. Neoprene grommets will not be allowed on risers not requiring discharge piping, etc.

Risers shall be Model RR24 (length as required) for simplex systems and RR30 (length as required) for duplex systems as manufactured by Orenco Systems, Inc., or approved equal.

7-20.3(4)D Lids

Standard Lid: The standard lid shall be a flat fiberglass lid, green in color, with a non-skid aggregate finish. The lid shall be the diameter required to fit the required riser and shall be supplied with a minimum of two stainless steel bolts and the lid shall have a gasket. Allen wrench will not be included as part of the pump packages but 2 wrenches will be included in the spare parts. Lids shall be as manufactured by Orenco Systems, Inc., Model Number FL24-4B or FL30G or approved equal.

Traffic Bearing Lid: The traffic-bearing lid shall be an HS-20 loading frame and cover. The cover shall have the word "SEWER" cast into it. Frame and cover for 24-inch-diameter lids shall meet requirements of Section 9-05.15(1) of the Standard Specifications, and 30- and 36-inch lids (covers) shall be HS-20 and shall be constructed of aluminum.

7-20.3(5) Internal Splice Box

For applications with five or less residential units, each residential riser requiring electrical connections shall have a PVC splice box located in the interior of the riser. All splice boxes shall be installed within 1′0″ of the riser lid for access purposes. The splice box shall be complete with cord grips and dual wall heat shrink with butt connectors. Splice boxes shall be UL listed for the application. The number of cord grips and heat shrink connectors shall be equivalent to the number of floats and electrical leads within the pump vaults. The splice box and accessories shall meet all requirements of labor and industries and shall be UL listed for wet locations.

For all Class I, Division I installations more than five residential units or non-residential applications, risers requiring electrical connections shall have two separate splice boxes. All splice boxes shall be installed within 1′0″ of the riser lid for access purposes. One splice box shall be for the pump wire and one splice box shall be for the low voltage wire for the float system. The splice boxes for the pump leads shall meet all requirements of the Department of Labor and Industries for a Class I, Division I, Type D gas application. The splice box for the low voltage float leads on an intrinsically safe relay shall be a non-metallic PVC splice box. The PVC splice box shall be complete with cord grips and dual wall heat shrink butt connectors. The number of cord grips and wire nuts within the PVC splice box shall be equivalent to the number of floats. The pump wire splice box simplex assemblies shall be single gang Model SBX-S as supplied by Orenco Systems, Inc., and the splice box for duplex assemblies shall be two gang Model SBX-D as supplied by Orenco Systems, Inc. or equal as approved by the Owner. Mounting box shall be mounted to riser with stainless steel bolts. An explosion proof EY fitting shall be provided directly outside of the mounting box for the pump wire connection. The pump wires shall be fitted with a watertight plug Model B Model ECP-2023 as manufactured by Appleton Electric Company or equal as approved by the Owner.

7-20.3(6) Level Control and Alarm Floats

Level control floats shall be UL or CSA listed for use in effluent on an adjustable or preset PVC stem, which attaches directly to the pump vault. Floats shall consist of high level alarm, on, off, and redundant off. Level control floats shall be Model MF-ABT for simplex pump assemblies and Model MF-A2GT for duplex pump assemblies and Model MF-A3GT for triplex pump applications as manufactured by Orenco System, Inc. or equal as approved by the City.

Pump control and alarm panels for simplex pump assemblies shall be Model S1 RO ETMCT as manufactured by Orenco Systems, Inc. or equal as approved by the City. Pump control panels for simplex

commercial and intrinsically safe applications shall be Model S1 1R RO ETMCT as manufactured by ORENCO or equal.

Pump control and alarm panels for duplex pump assemblies shall be Model DAX1 IR2 RO ETMCT as manufactured by Orenco Systems, Inc. or equal as approved by the City.

Pump control and alarm panels for triplex pump assemblies shall be Model TA1 IR3 RO ETM CT as manufactured by Orenco Systems, Inc., or equal.

All pump control panels shall have NEMA 4x fiberglass enclosures, an audio and visual alarm, an elapsed time meter, event counter, stainless steel latch and internal 120-volt, 20-amp circuit breaker.

Any separate "on-off" disconnect switch, if required by L&I, shall be manufactured by Scepter Model #USC 15/10 or approved equal.

7-20.3(7) Hose and Valve Assembly

Hose and valve assembly for a 4-inch submersible shall include 1-inch diameter 100 psi PVC hose with PVC union and ball valve and anti-siphon valve Model Number HV100BASX as manufactured by Orenco Systems, Inc., or approved equal.

7-20.3(8) Additional Material Requirements

All equipment including but not limited to pump vault, riser, standard lid, bonding epoxy, splice box, discharge piping, control float assembly, pump(s), pump control and alarm panels, etc. shall be supplied by one single supplier or manufacturer as a packaged unit. The supplier or manufacturer shall upon request by the City, submit information on availability of replacement parts, maintenance records of operating pump assemblies. The package as supplied by the manufacturer or supplier will have a standard guarantee against material defect for a period of not less than 1 year. The date of guarantee shall begin on the date equipment is delivered on a particular site and may be a single guarantee incorporating all the components or individual guarantees on the various components. The manufacturer or supplier will be responsible to handle replacement or repair of defective parts.

7-20.3(9) Electrical Connections

All electrical equipment and materials shall be installed in conformance to requirements of the latest edition of the National Electrical Code as enforced by the State of Washington Labor and Industries Electrical Section. The Contractor shall be required to acquire all necessary permits and coordinate directly with the appropriate authority on the necessary inspection.

Splice boxes shall be installed in the STEP tank riser in accordance with the instruction from the supplier or manufacturer. The control panel shall be installed either on a remote pressure-treated 8" x 4" post or on the garage wall, unless approved by the City of Sumner. The panel shall be affixed by stainless steel wood screws to either the structure or the post. The wood screws shall be of sufficient size and length to securely fasten the panel.

Power and control wire from the splice box in the riser to the pump control shall be UL approved for direct bury with a minimum of 12 gauge for each control or power wire. Power and control wire shall be color-coded for ease of tracing between the alarm panel and pumps and float switches. The Contractor shall submit type and size of cable for review and approval by the City and Labor and Industries. Cable

attached to the exterior of the building shall be contained in approved electrical conduit. All wire connections shall be made with heat shrink butt connectors.

Power and control wire for commercial or intrinsically safe applications shall be contained in two IMC or rigid metal conduits for separation of low and high voltage lines between the control panel and pump vault and shall meet the requirements of Labor and Industries.

All exterior electrical wire shall be contained within PVC conduit, unless direct buried. Exterior conduit and wire will only be allowed on the exterior of the house directly above or below the control panel and will be installed plumb and vertical. Underground electrical cable shall have a minimum of 24 inches of earth cover. All above ground cable shall be contained in PVC conduit.

7-20.3(9)A Electrical

All materials used for control and electrical connections shall meet requirements of labor and industries and the Uniform Electrical Code.

The Pumping Assemblies shall comply with the latest State of Washington's Department of Labor and Industries Electrical Inspection Section Policy.

Power supply to the pump control panel shall be a 20 amp dedicated circuit for each pump with separate neutral wires. A dedicated 10-amp circuit shall be required for the control system for duplex and triplex pump systems.

END OF DIVISION

DIVISION 8

MISCELLANEOUS CONSTRUCTION

8-30 RESTORATION (NEW SECTION)

8-30.1 General

This work shall consist of various types of surface restoration. As required by the City of Sumner for all work on public right-of-way, all surfaces and surface improvements effected by the Contractors operations shall be restored to conditions equal to or better than preconstruction conditions. The City shall be the sole judge as to the equality of materials and work when comparing post-construction conditions to preconstruction conditions.

8-30.3 Construction Requirements

Cement concrete sidewalk and driveway repair shall conform to the Standard Specifications and List of Drawings, except that the finish, dimensions, and joints shall be the same as the original work. Cement concrete driveways shall be defined so as to include cement concrete alleys and parking lots.

Curb repair shall conform to the Standard Specifications, except that the finish, dimensions, and joint shall be the same as the original work.

Crushed surfacing shoulders, driveways, and other graveled or crushed surfaced areas, which are disturbed by the Contractors operations, shall be resurfaced with 2 inches of crushed surfacing. All work and material shall conform to the requirements of the Standard Specifications.

END OF DIVISION

GENERAL PLAN NOTES

SANITARY SEWER MAIN INSTALLATION

1. All workmanship and materials shall be in accordance with City of Sumner standards and the most current copy of the State of Washington Standard Specifications for Road, Bridge and Municipal Construction (WSDOT/APWA).

2. All approvals and permits required by the City of Sumner shall be obtained by the contractor prior to the start of construction.

3. If construction is to take place in the County right-of-way, the contractor shall notify the County and obtain all the required approvals and permits.

4. A preconstruction meeting shall be held with the City of Sumner prior to the start of construction.

5. The City of Sumner shall be notified a minimum of 48 hours in advance of a tap connection to an existing main. A City representative shall be present at the time of the tap.

6. The contractor shall be fully responsible for the location and protection of all existing utilities. The contractor shall verify all utility locations prior to construction by calling the Underground Locate Line at 1-800-424-5555 a minimum of 48 hours prior to any excavation.

7. All plastic pipe and services shall be installed with continuous tracer tape installed 12 to 18 under the proposed finished subgrade. The marker shall be plastic non-biodegradable, metal core or backing marked sewer, which can be detected by a standard metal detector. In addition, STEP systems, and force mains shall be installed with 14 gauge direct-bury rated copper wire wrapped around all plastic pipe, brought up and tied off at valve body. Tape shall be Terra Tape "D" or approved equal. The tape and wire shall be furnished by the contractor.

8. Bedding of the sewer main and compaction of the backfill material shall be required in accordance with the above-mentioned specification (See note 1).

9. Temporary street patching shall be allowed for as approved by the City engineer. Temporary street patching shall be provided by placement and compaction of 2-inch minimum asphalt concrete cold mix. Contractor shall be responsible for maintenance as required.

10. Erosion control measures shall be taken by the contractor during construction to prevent infiltration of existing and proposed storm drainage facilities and roadways.

11. Provide traffic control plan(s) in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) as required.

12. It shall be the responsibility of the contractor to have a copy of these approved plans on construction site at all times.

13. Any changes to the design shall first be reviewed and approved by the City of Sumner.

14. All STEP mains shall be hydrostatically tested in conformance with the above-referenced specification for testing water mains. (See note 1.) In addition, all STEP mains shall be pigged/cleaned in the presence of the City Inspector prior to placing STEP main in service.

15. Prior to backfill all mains and appurtenances shall be inspected and approved by the City of Sumner. Approval shall not relieve the contractor for correction of any deficiencies and/or failures as determined by subsequent testing and inspections. It shall be the contractor's responsibility to notify the City of Sumner for the required inspections.

16. Inspections for onsite STEP installations are required. A 24-hour notice to the sewer department is required prior to the inspection.

Items needing inspection are:

1. Tank installation, i.e.; bedding and location

2. Tank infiltration, exfiltration test

3. S.S. pressure test

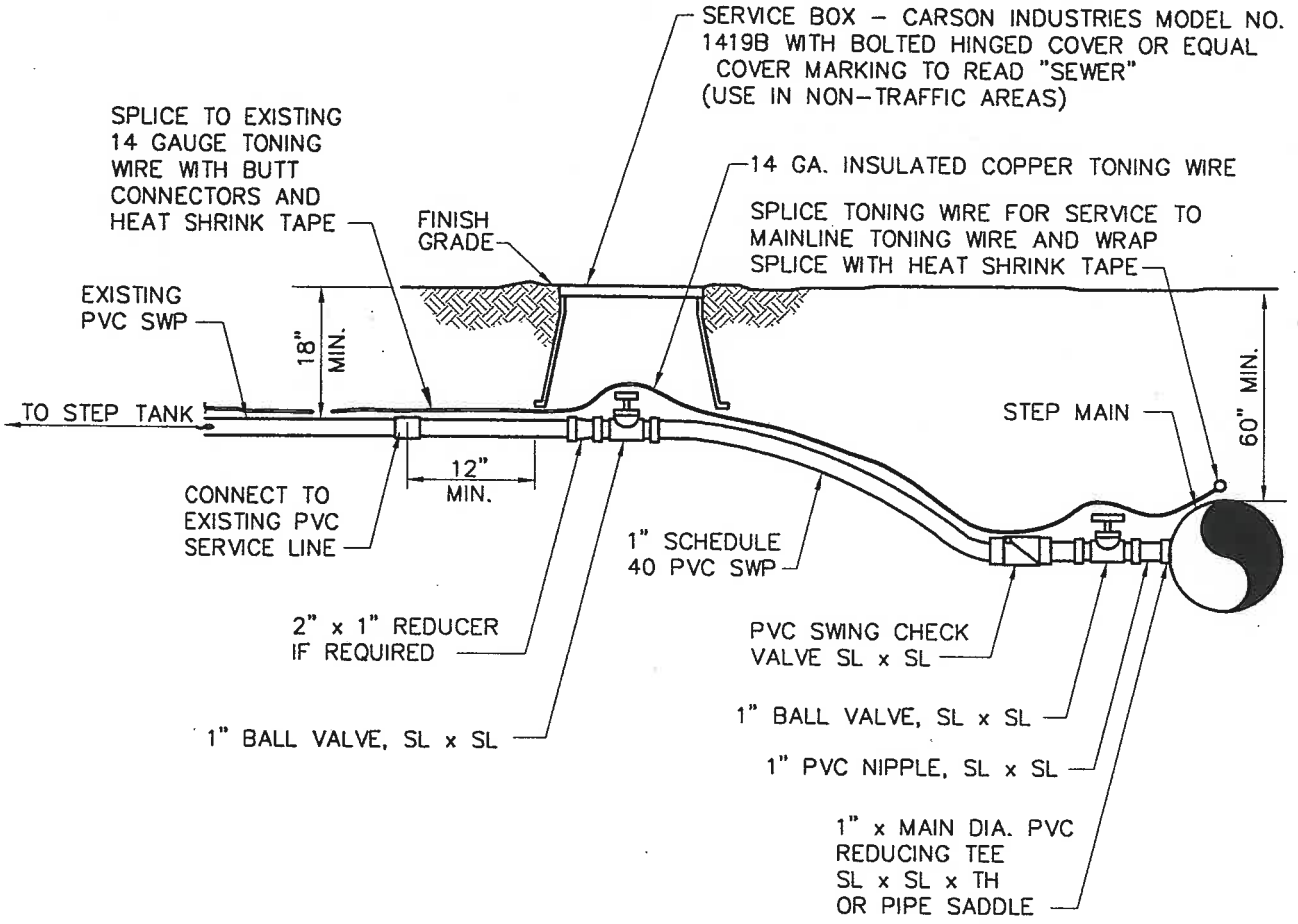
4. Service line pressure test

5. Final Inspection

LIST OF DRAWINGS

SEWER SYSTEM

TITLE	DRAWING
Step Drawings	
Typical 1″ Service Connection	STEP-1
Typical Pipe Trench	STEP-2
Remote Post – Residential Pump Control Panel Installation	STEP-3
Typical Pump Control Panel Installation on Existing House	STEP-4
Typical Pump Panel	STEP-5
Typical Connection	STEP-6
Typical Simplex Step Tank Installation	STEP-7
1,000-Gallon STEP Tank	STEP-8
1,500; 3,000; 4,500-Gallon STEP Tank/Pump Tank	STEP-9
Typical Sewer Automatic Air Release Valve	STEP-10
Fiberglass Tank Bedding	STEP-11
Concrete Tank Bedding	STEP-12
Typical Riser	STEP-13
Traffic Bearing Lid	STEP-14
Typical End of Line Cleanout	STEP-15
Typical Sewer Main Line Gate Valve	STEP-16
Mainline Cleanout Plan	STEP-17
Mainline Pig Port Detail	STEP-18
Pig Launcher	STEP-19
Gravity Sewer Drawings	
Sanitary Sewer Manhole	SS-1
Inside Drop Sanitary Sewer 54″ Diameter or Larger Manhole	SS-2
Main Line Clean Out	SS-3
Side Sewer	SS-4
Side Sewer Service	SS-5
Grease Interceptor Guidelines	SS-6
Outside Drop Connection for Sanitary Sewer Manholes	SS-7
Manhole Frame and Cover Detail	SS-8



CITY OF SUMNER
DEPT. OF PUBLIC WORKS

TYPICAL 1" SERVICE CONNECTION

APPROVED			DWG. NO.
PUBLIC WORKS DIRECTOR DATE			STEP-1
DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	05/09/00

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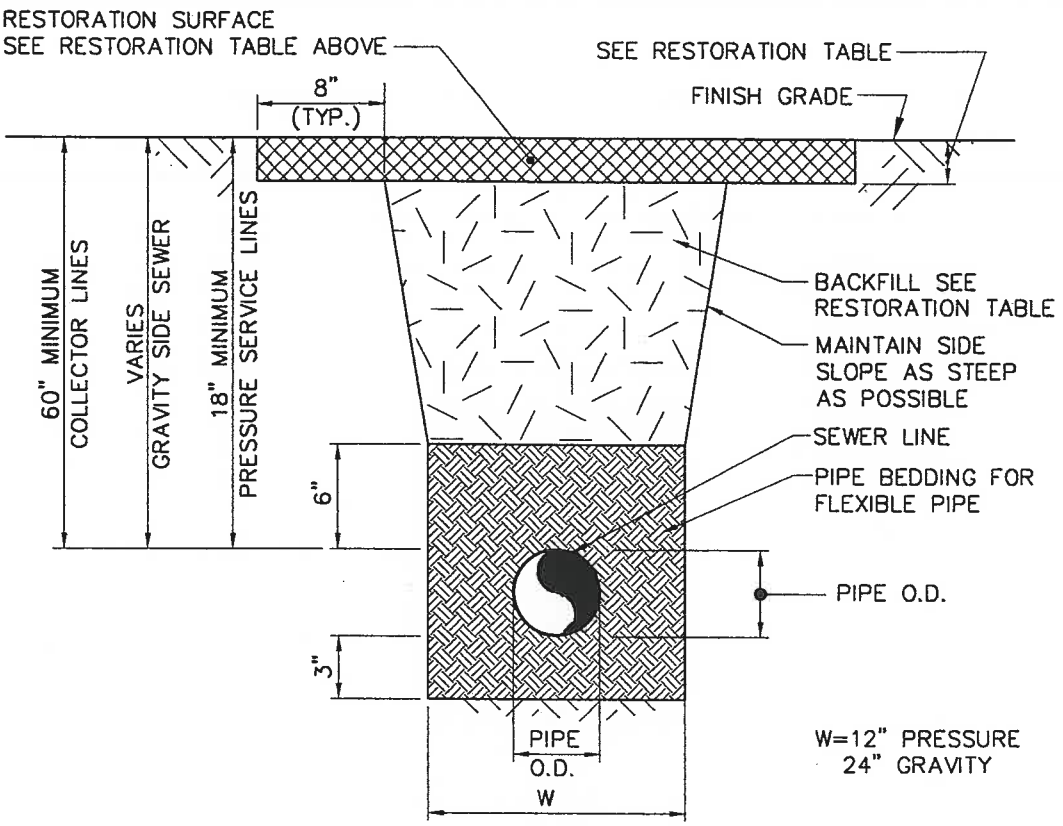

RESTORATION TABLE 1

SURFACE TYPE	THICKNESS	BACKFILL/ COMPACTION REQMNTS.	COMMENTS/ OTHER REQUIREMENTS
CRUSHED SURFACE	4" CRUSHED SURFACE TOP COURSE	SELECT BACKFILL COMPACT TO 95%	FINISH GRADE SHALL BE SMOOTH & CONSISTANT WITH EXISTING
A.C. PAVEMENT OVER GRAVEL BASE	3" MIN. GRADE B A.C. PAVING OVER 4" CRUSHED SURFACE TOP COURSE	SELECT BACKFILL COMPACT TO 95%	FINISH ROADWAY TO CONFORM TO ALL EXISTING GRADES AND CURBS SLOPES SHALL MATCH
CONCRETE SURFACE (DRIVEWAY/SIDEWALK)	MATCH EXISTING CONCRETE THICKNESS	SELECT BACKFILL COMPACT TO 95%	MATCH EXISTING FINISH TEXTURE, AND GRADE.
LAWN/LANDSCAPE	HYDROSEED/ PLANTINGS OVER 4" MIN. TYPE A TOP SOIL	NATIVE BACKFILL COMPACT TO 85%	FINISH GRADE SHALL BE SMOOTH & CONSISTANT WITH EXISTING GRADE
UNIMPROVED SUFACE	N/A	NATIVE BACKFILL COMPACT TO 85%	MOUND BACKFILL 2" ABOVE EXISTING GRADE & SMOOTH

CSBC = CRUSHED SURFACE BASE COURSE
CSTC = CRUSHED SURFACE TOP COURSE

CITY OF YELM
DEPT. OF PUBLIC WORKS

TYPICAL PIPE TRENCH

APPROVED

CITY ENGINEER DATE

DWG. NO. STEP-2

DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

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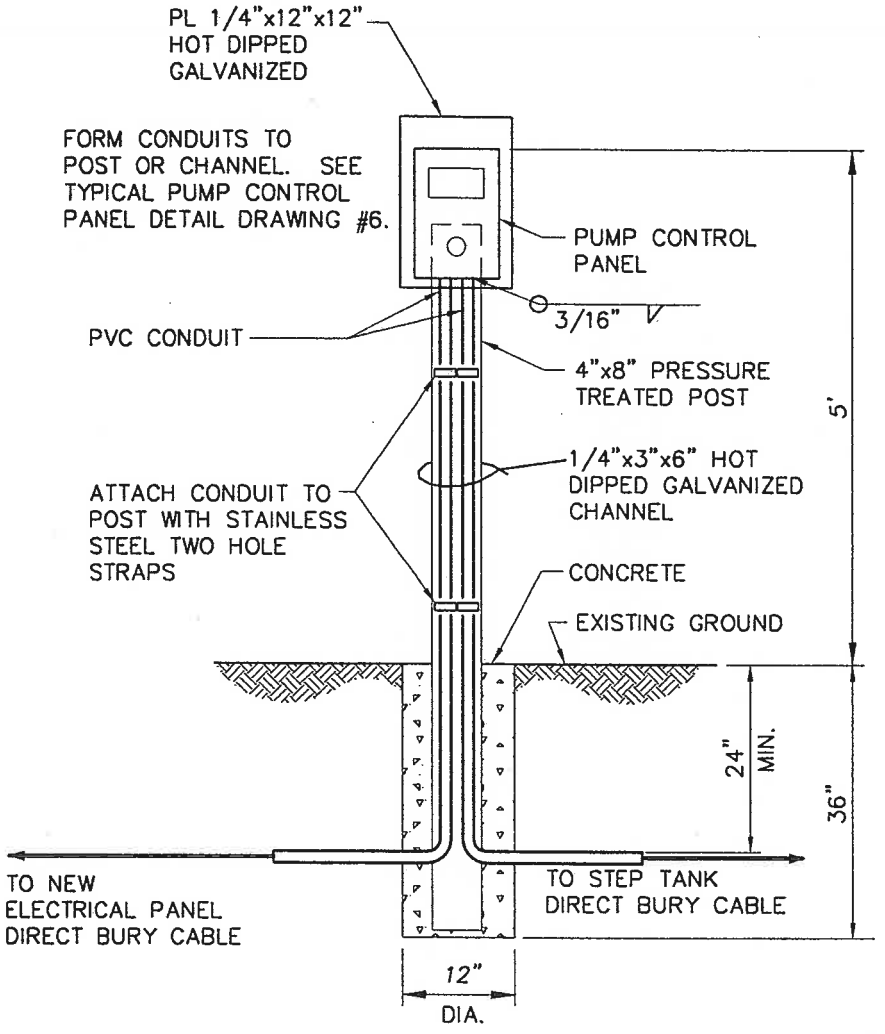

CITY OF SUMNER
DEPT. OF PUBLIC WORKS

REMOTE POST – RESIDENTIAL PUMP CONTROL PANEL INSTALLATION

APPROVED			DWG. NO.
CITY ENGINEER DATE			STEP–3
DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

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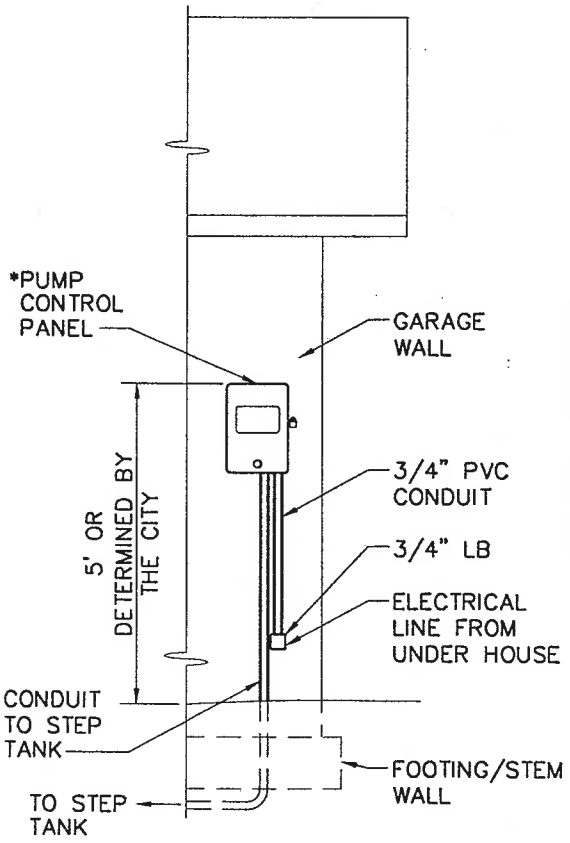
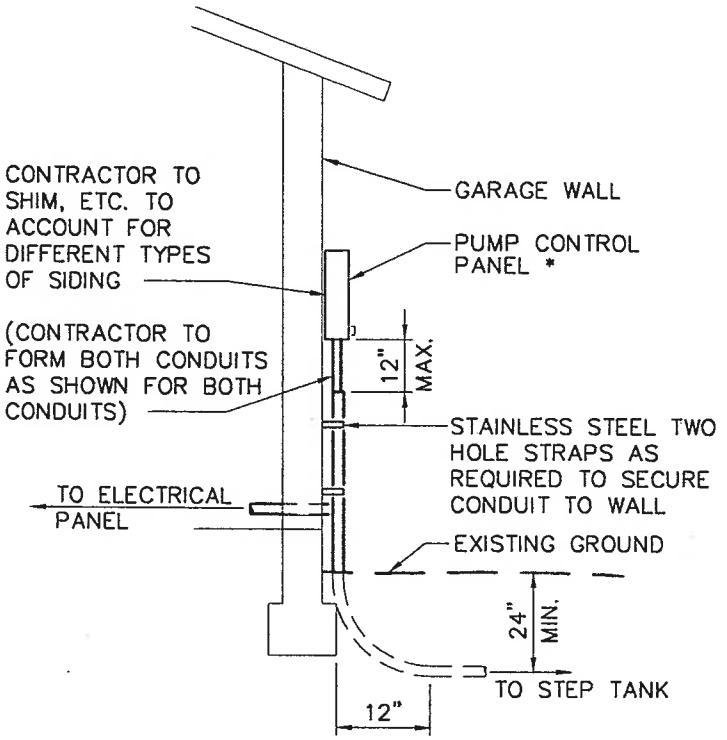




*LOCATION OTHER THAN GARAGE WALL OR REMOTE POST WILL BE CONSIDERED ON A CASE BY CASE BASIS.

CITY OF SUMNER
DEPT. OF PUBLIC WORKS

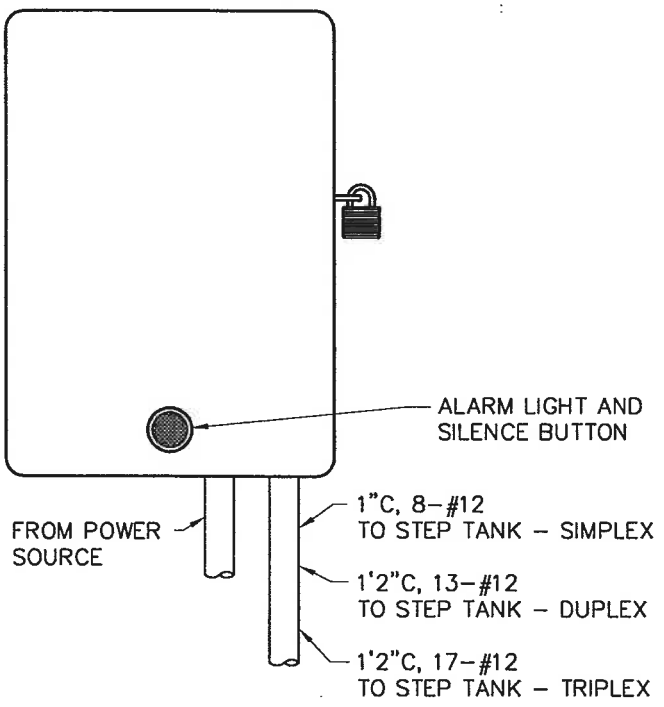
TYPICAL PUMP CONTROL PANEL INSTALLATION ON EXISTING HOUSE

APPROVED			DWG. NO.
CITY ENGINEER DATE			STEP-4
DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

152750F26.DWG

TABLE FOR FEEDER WIRE RUN	
WIRE SIZE	MAXIMUM DISTANCE
#12 AWG COPPER	150 FEET
#10 AWG COPPER	250 FEET
#8 AWG COPPER	350 FEET

(SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION).



NOTE:
PANEL SIZE MAY VARY
DEPENDING ON MANUFACURER

CITY OF SUMNER
DEPT. OF PUBLIC WORKS

TYPICAL PUMP CONTROL PANEL

APPROVED

CITY ENGINEER DATE

DWG. NO.
STEP–5

DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

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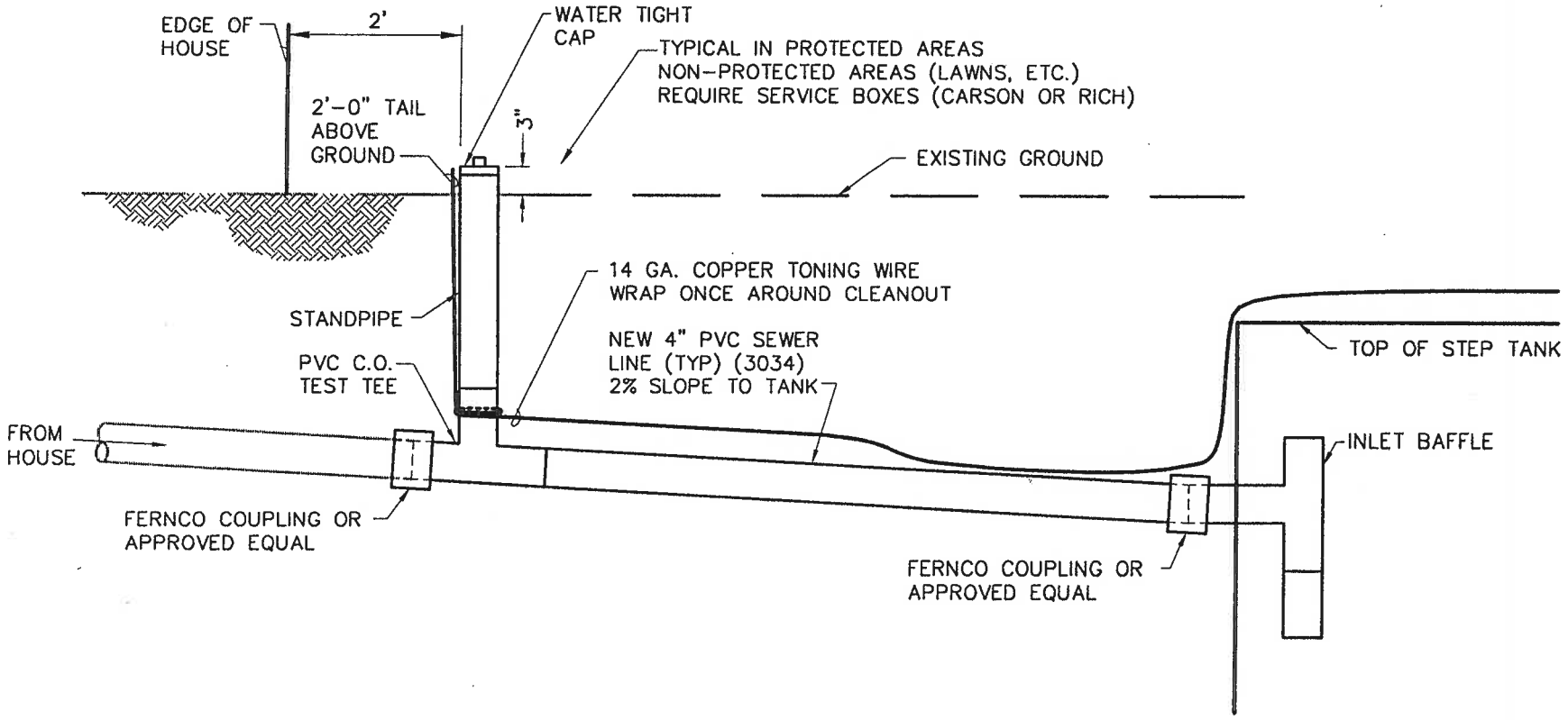

CITY OF SUMNER
DEPT. OF PUBLIC WORKS

TYPICAL CONNECTION

APPROVED			DWG. NO.
CITY ENGINEER DATE			STEP-6
DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

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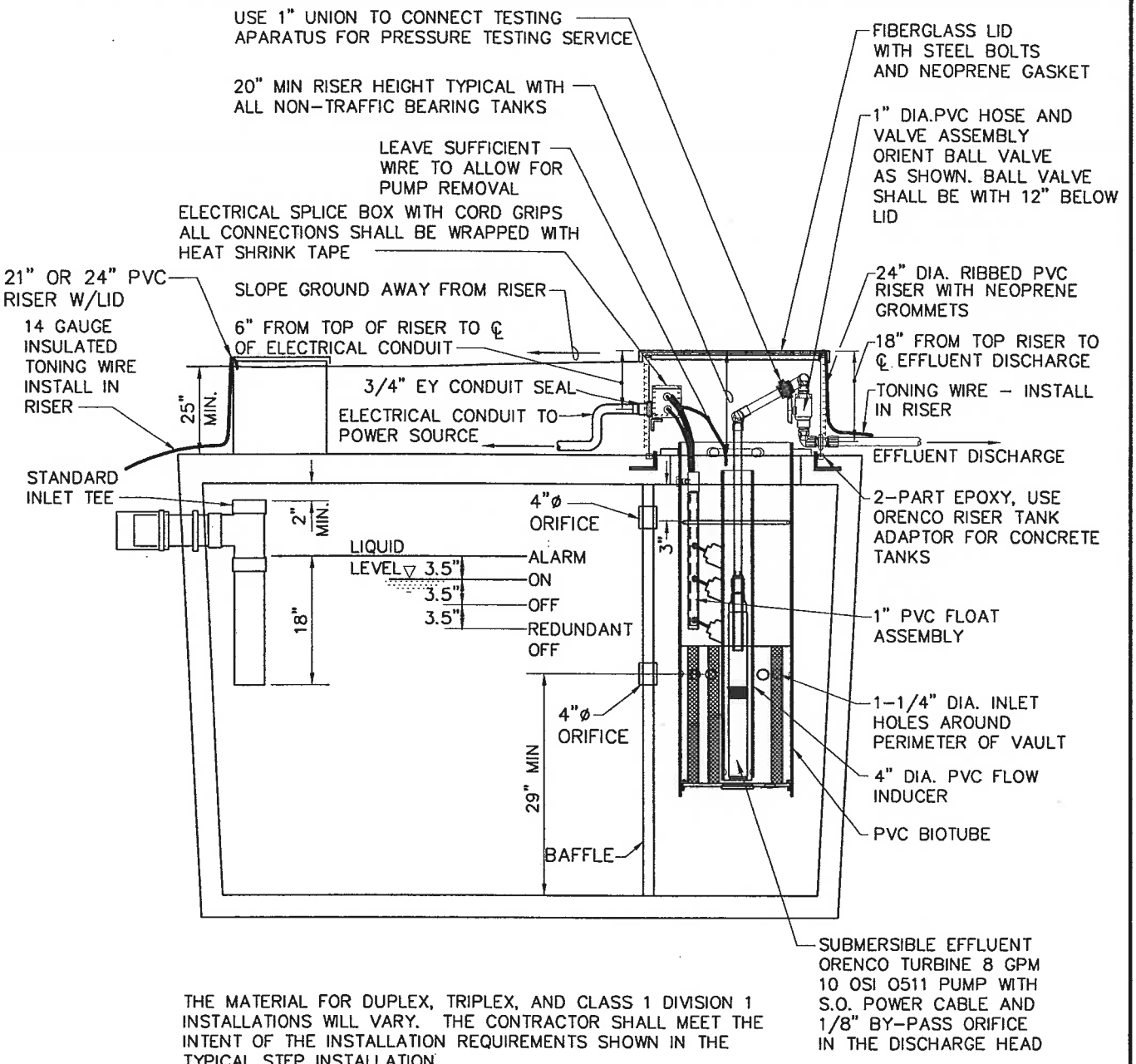

THE MATERIAL FOR DUPLEX, TRIPLEX, AND CLASS 1 DIVISION 1 INSTALLATIONS WILL VARY. THE CONTRACTOR SHALL MEET THE INTENT OF THE INSTALLATION REQUIREMENTS SHOWN IN THE TYPICAL STEP INSTALLATION.

CITY OF SUMNER
DEPT. OF PUBLIC WORKS

TYPICAL SIMPLEX STEP TANK INSTALLATION

APPROVED			DWG. NO.
CITY ENGINEER DATE			STEP-7
DES.	DWN.	CKD.	DATE
PMX	TEW	MTO	5/09/00

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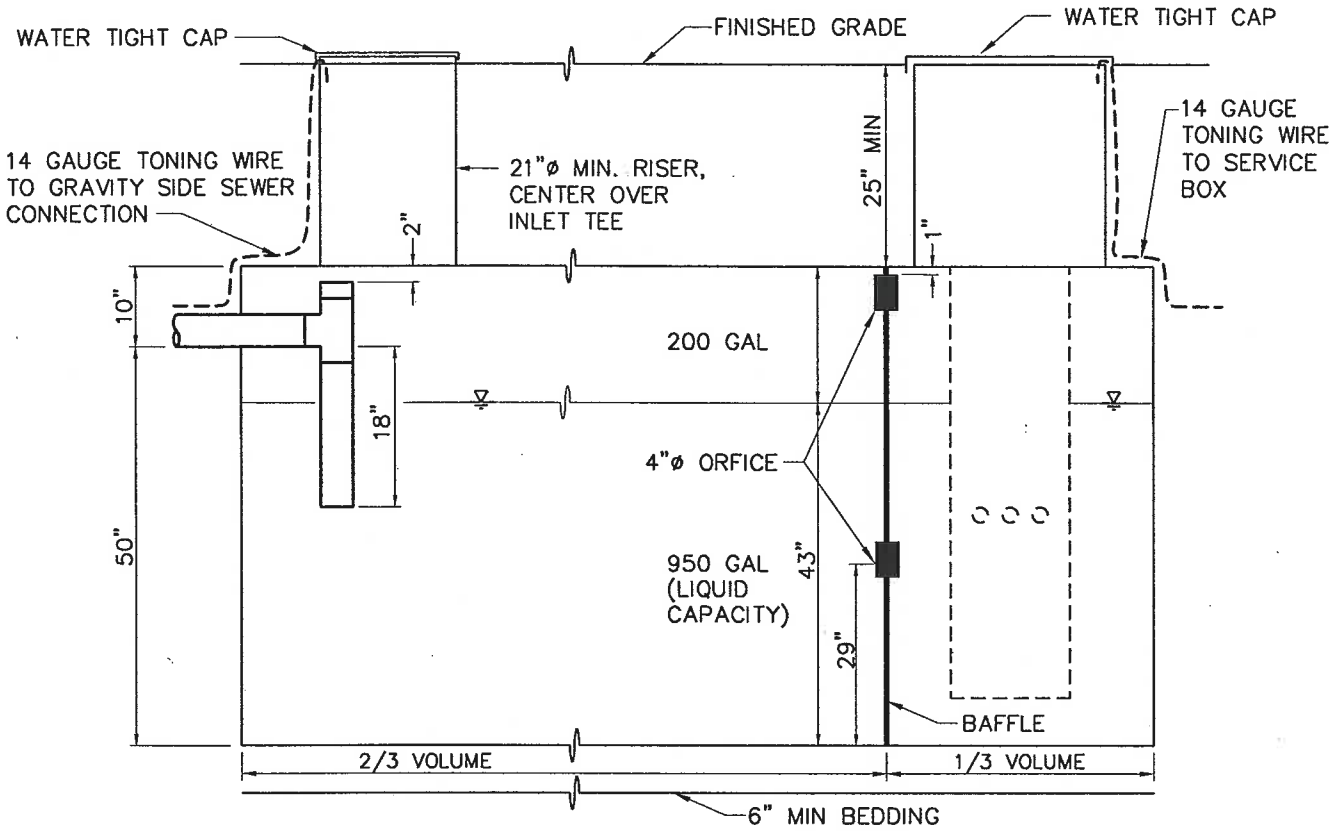


NOTE:

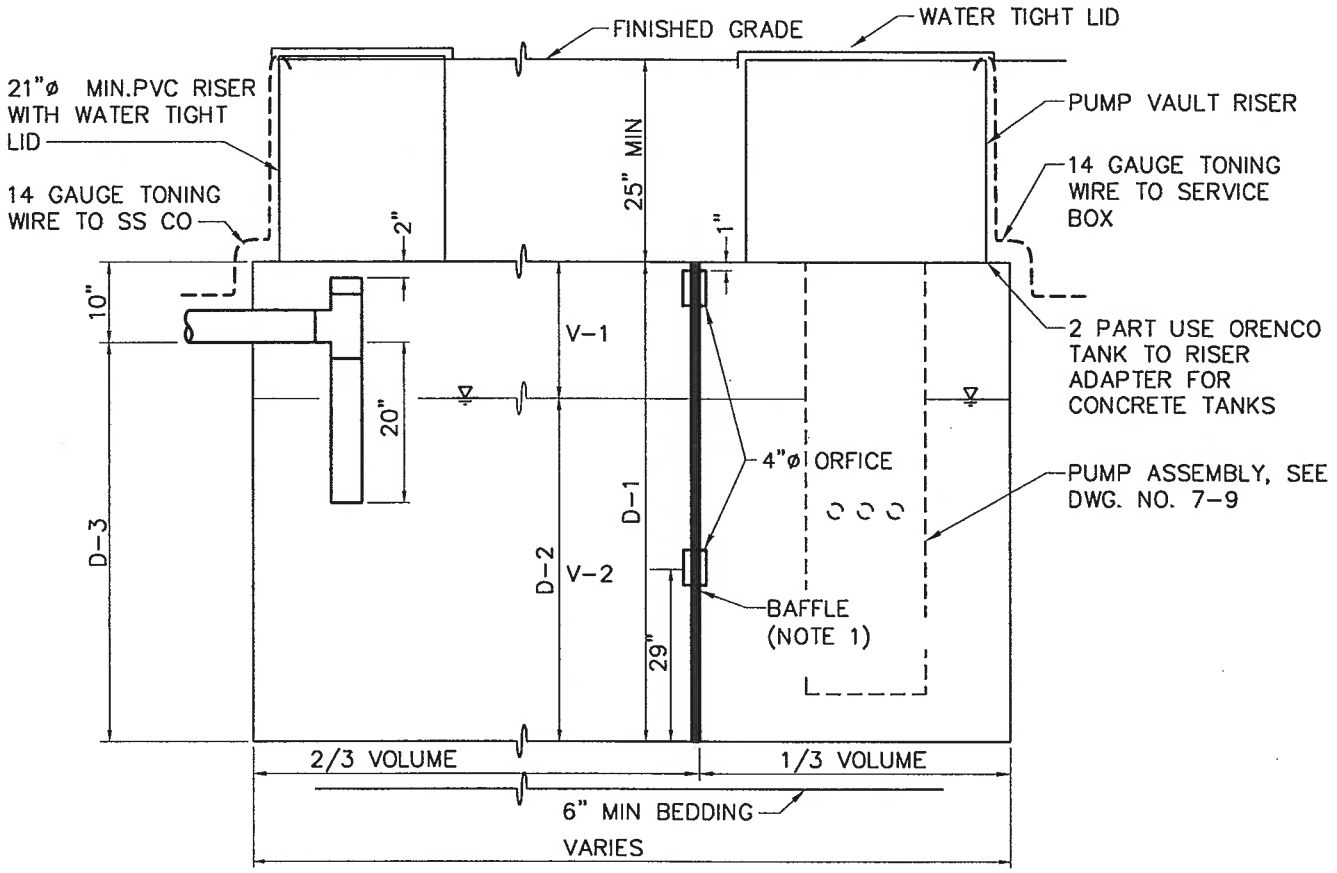
1. FOR THE APPROPRIATE FLOAT LEVELS, SEE DRAWINGS #7-13, #7-14 AND #7-15 (SIMPLEX, DUPLEX AND TRIPLEX) AS THEY APPLY.

CITY OF SUMNER
DEPT. OF PUBLIC WORKS

1000 GALLON STEP TANK

APPROVED			DWG. NO.
PUBLIC WORKS DIRECTOR DATE			STEP-8
DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

152750F30.DWG



	1500 GAL	3000 GAL	4500 GAL
D-1 (2)	60"	72"	72"
D-2 (2)	43"	55"	55"
D-3 (2)	50"	62"	62"
V-1	400 GAL	600 GAL	
V-2	1100 GAL	2400 GAL	

NOTES:

1. DELETE BAFFLE FOR A 3000 GALLON TANK UTILIZED AS A TRIPLEX PUMP VAULT.
2. THE OWNER WILL REVIEW TOLERANCES IN EXCESS OF DIMENSIONS SHOWN.
3. THE TRIPLEX PUMP VAULT REQUIRES TWO VAULTS AND TWO COMPLETE RISERS. ONE VAULT CONTAINS FLOATS AND ONE PUMP. THE SECOND VAULT CONTAINS TWO PUMPS.
4. 4500 GALLON TANKS OR LARGER SHALL HAVE THREE RISERS AND LIDS.

CITY OF SUMNER
DEPT. OF PUBLIC WORKS

1500, 3000, 4500 GALLON STEP TANK/PUMP TANK

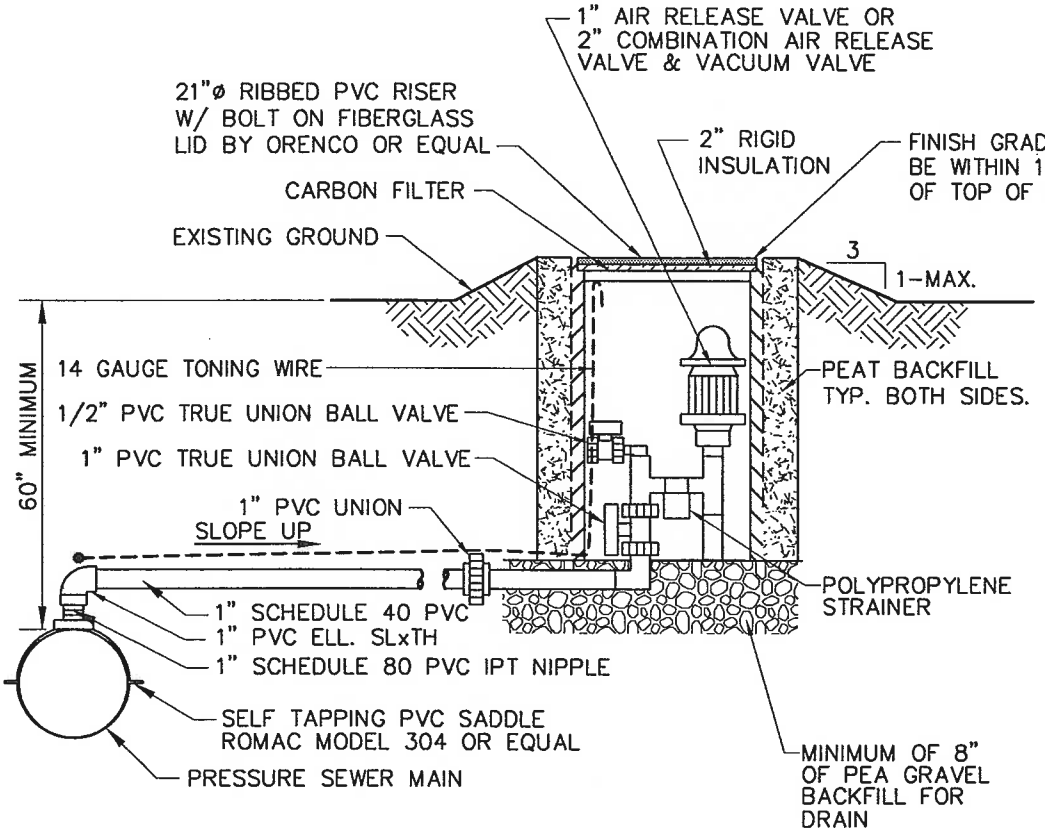
APPROVED

PUBLIC WORKS DIRECTOR DATE

DWG. NO. STEP-9

DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

152750F31.DWG



NOTE:

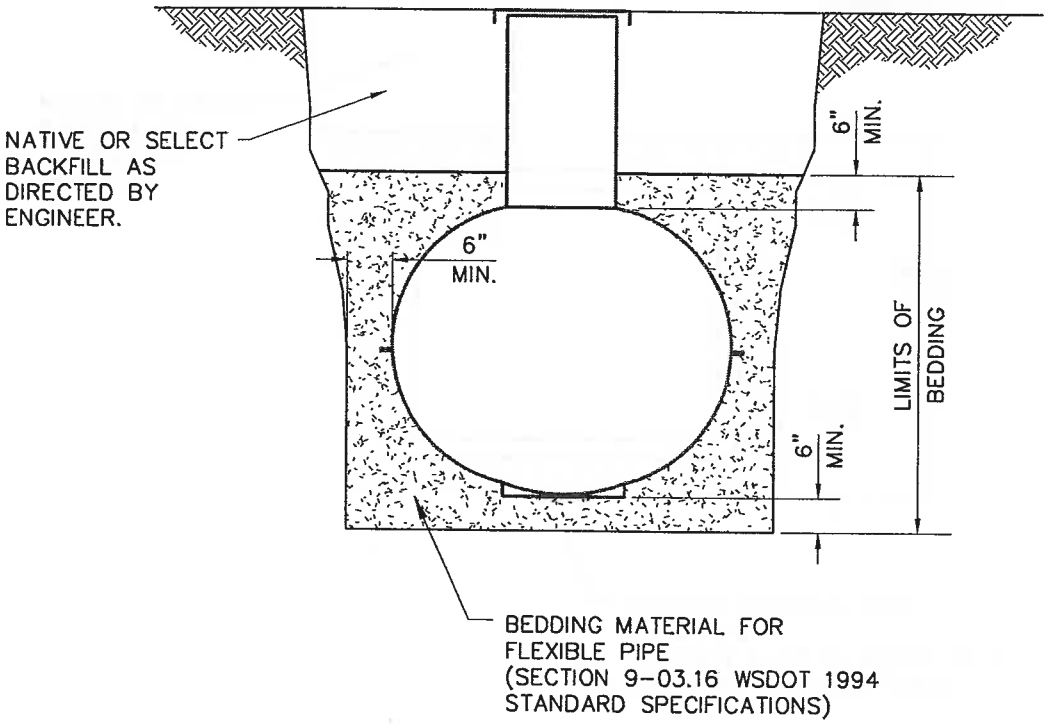
PLACE IN A NON-TRAFFIC AREA, UNION JOINTS SHALL BE SOLVENT WELDED. CITY TO FIELD LOCATE.

CITY OF SUMNER
DEPT. OF PUBLIC WORKS

TYPICAL SEWER AUTOMATIC AIR RELEASE VALVE

APPROVED			DWG. NO.
PUBLIC WORKS DIRECTOR DATE			STEP-10
DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

152750F32.DWG

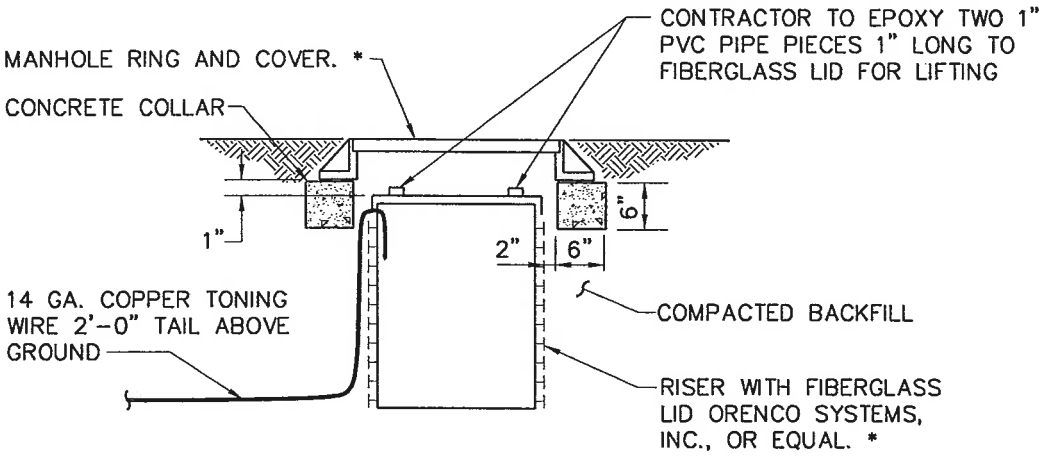


CITY OF SUMNER
DEPT. OF PUBLIC WORKS

FIBERGLASS TANK BEDDING

APPROVED			DWG. NO.
PUBLIC WORKS DIRECTOR DATE			STEP-11
DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

152750F36.DWG



* 21" PVC RISER REQUIRES 24" RING & CAST IRON COVER
24" PVC RISER REQUIRES 30" RING & ALUMINUM COVER
30" PVC RISER REQUIRES 36" RING & ALUMINUM COVER

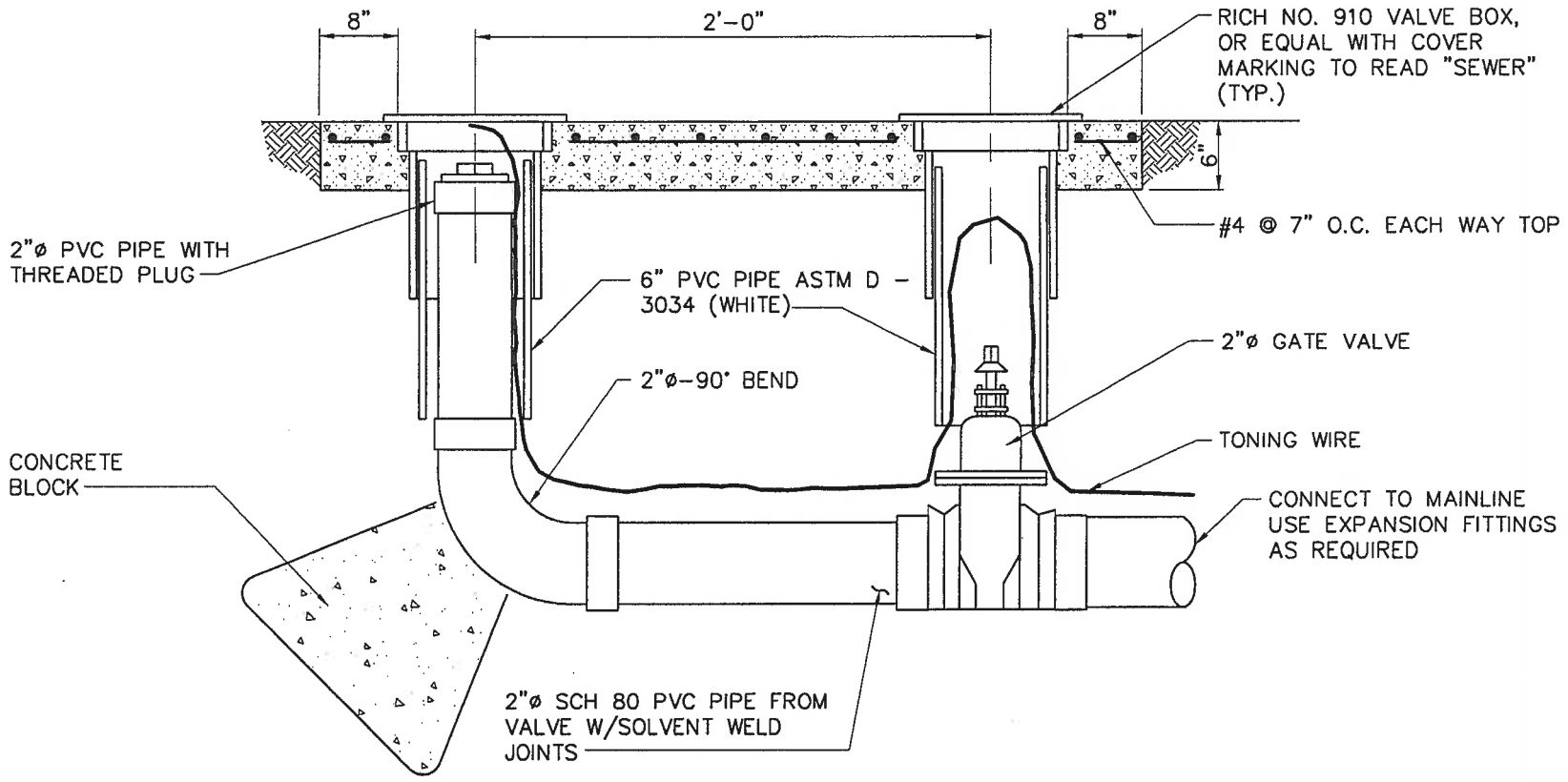
CITY OF SUMNER
DEPT. OF PUBLIC WORKS

TRAFFIC BEARING LID

APPROVED	DWG. NO.
PUBLIC WORKS DIRECTOR DATE	STEP-14

DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

152750F39.DWG



NOTE:

THE 2" VALVE MAY BE BELL x BELL AT THE CONTRACTORS OPTION

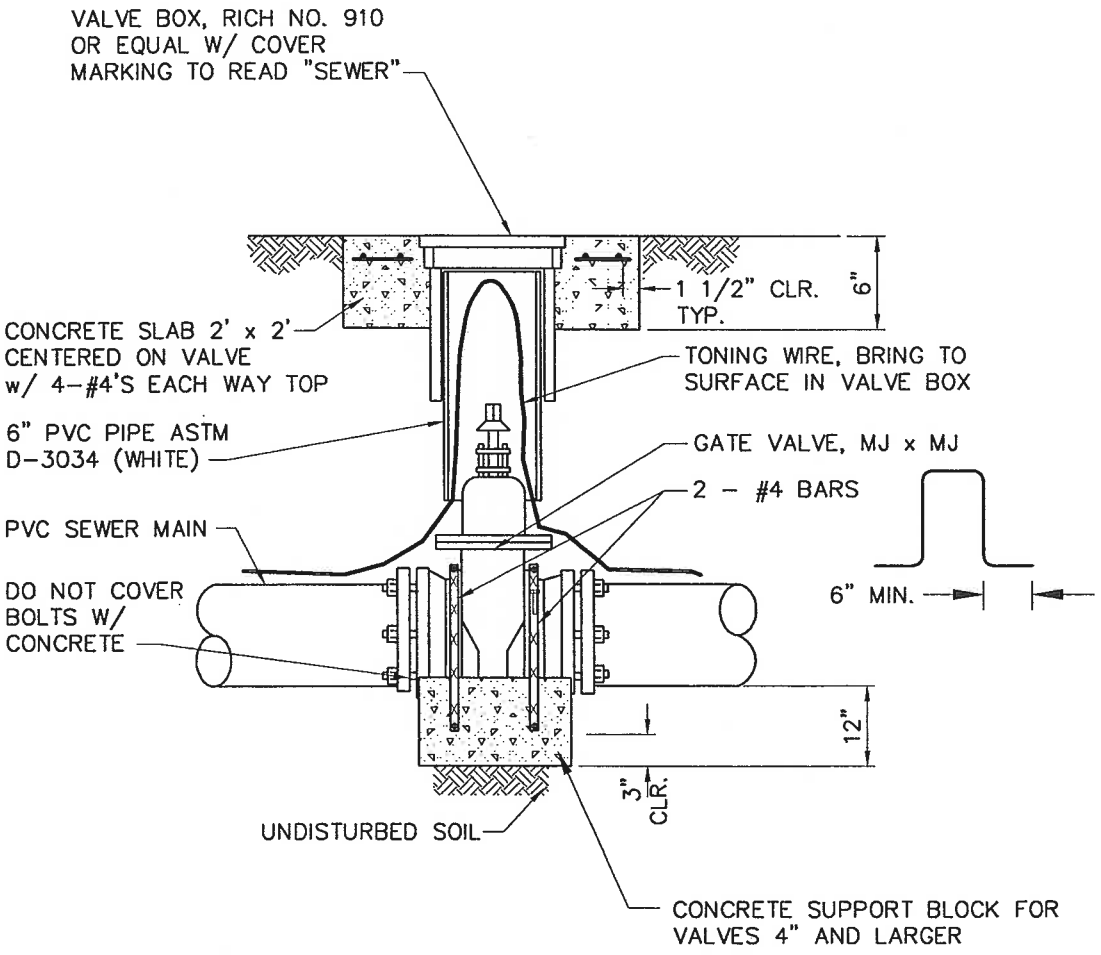
CITY OF SUMNER
DEPT. OF PUBLIC WORKS

TYPICAL END OF LINE CLEANOUT

APPROVED	DWG. NO.
PUBLIC WORKS DIRECTOR DATE	STEP-15

DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

152750F40.DWG



NOTE:

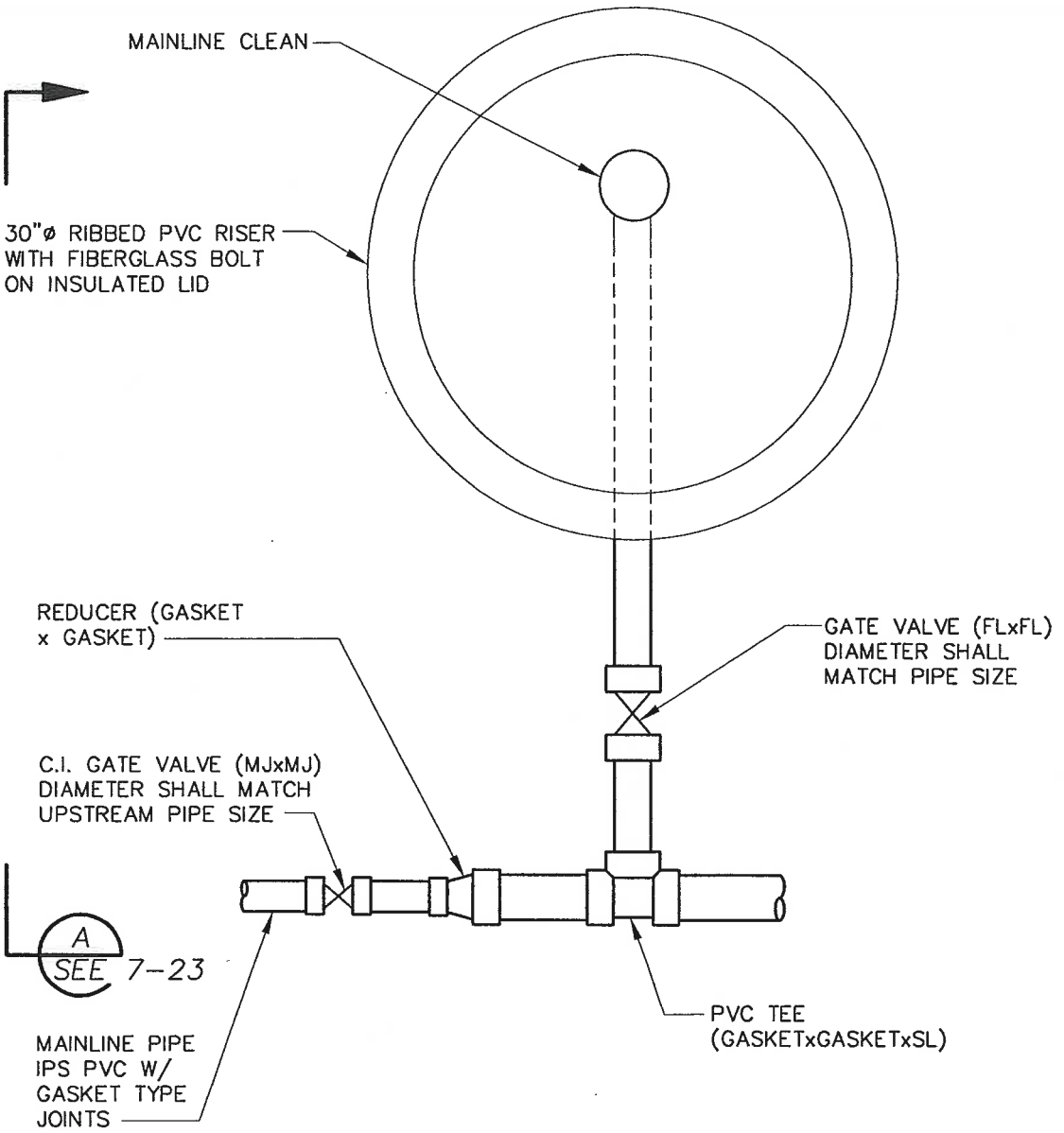
2" & 3" VALVES MAY BE BELL x BELL
AT THE CONTRACTORS OPTION

CITY OF SUMNER
DEPT. OF PUBLIC WORKS

TYPICAL SEWER MAIN LINE GATE VALVE

APPROVED			DWG. NO.
CITY ENGINEER DATE			STEP-16
DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

152750F41.DWG

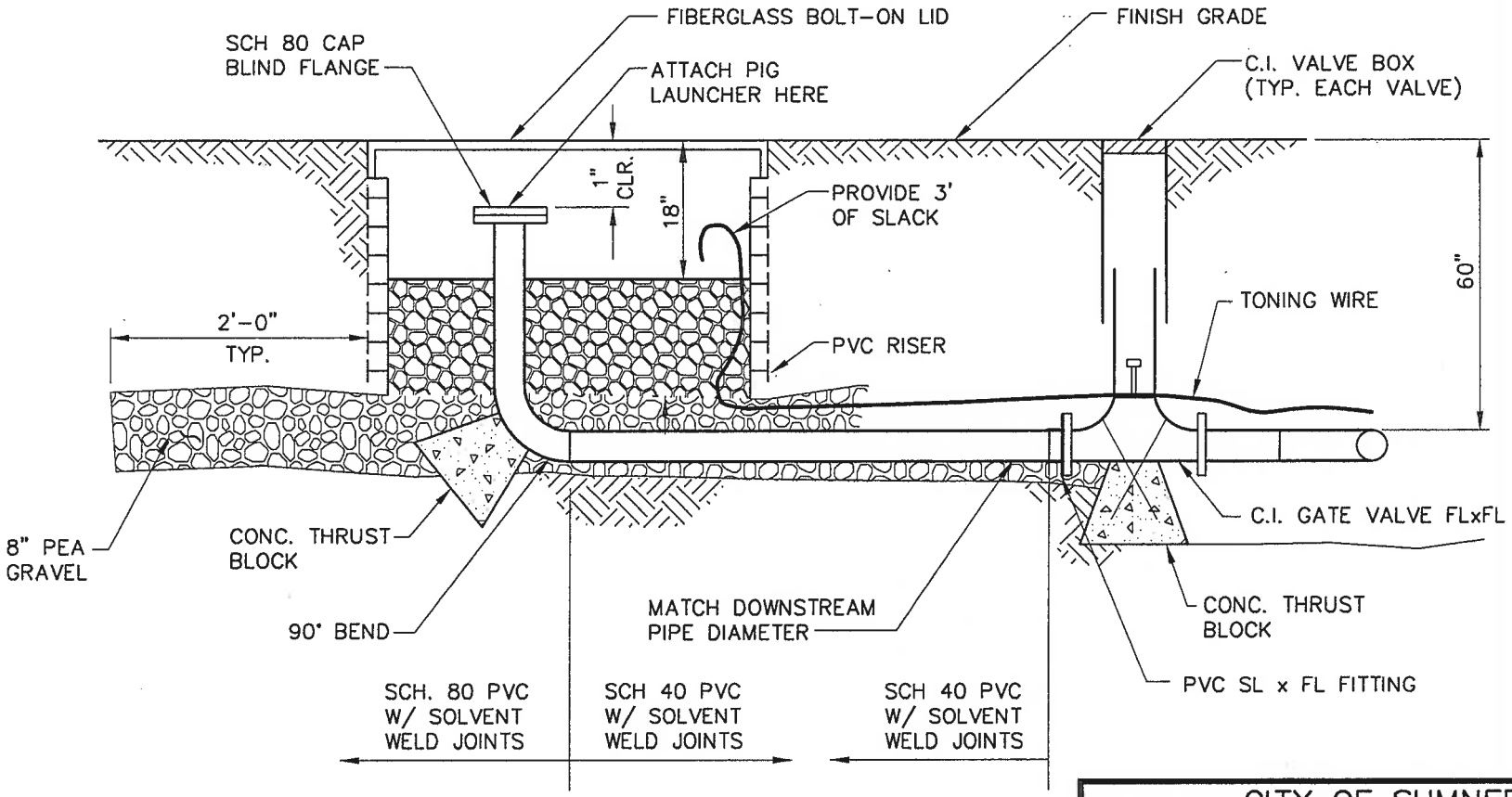


CITY OF SUMNER
DEPT. OF PUBLIC WORKS

MAINLINE CLEANOUT PLAN

APPROVED			DWG. NO.
PUBLIC WORKS DIRECTOR DATE			STEP–17
DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

152750F42.DWG



ELEVATION A

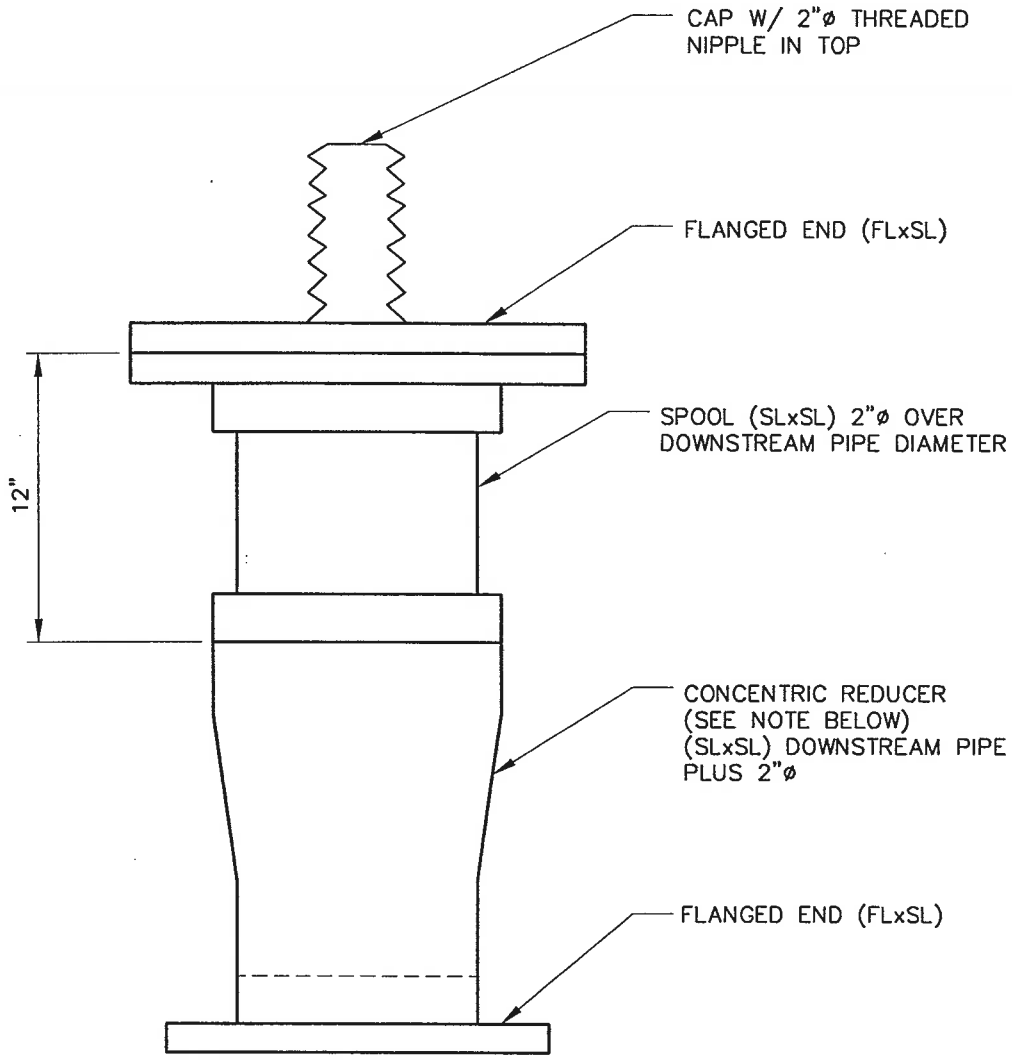
CITY OF SUMNER
DEPT. OF PUBLIC WORKS

MAINLINE PIG PORT DETAIL

APPROVED	DWG. NO.
PUBLIC WORKS DIRECTOR DATE	STEP-18

DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/08/00

152750F43.DWG



NOTE:

CONTRACTOR SHALL PROVIDE 1 LAUNCHER FOR EACH PIG PORT INSTALLED.
USE SCH 80 PVC UNO SOLVENT WELD ALL FITTINGS.

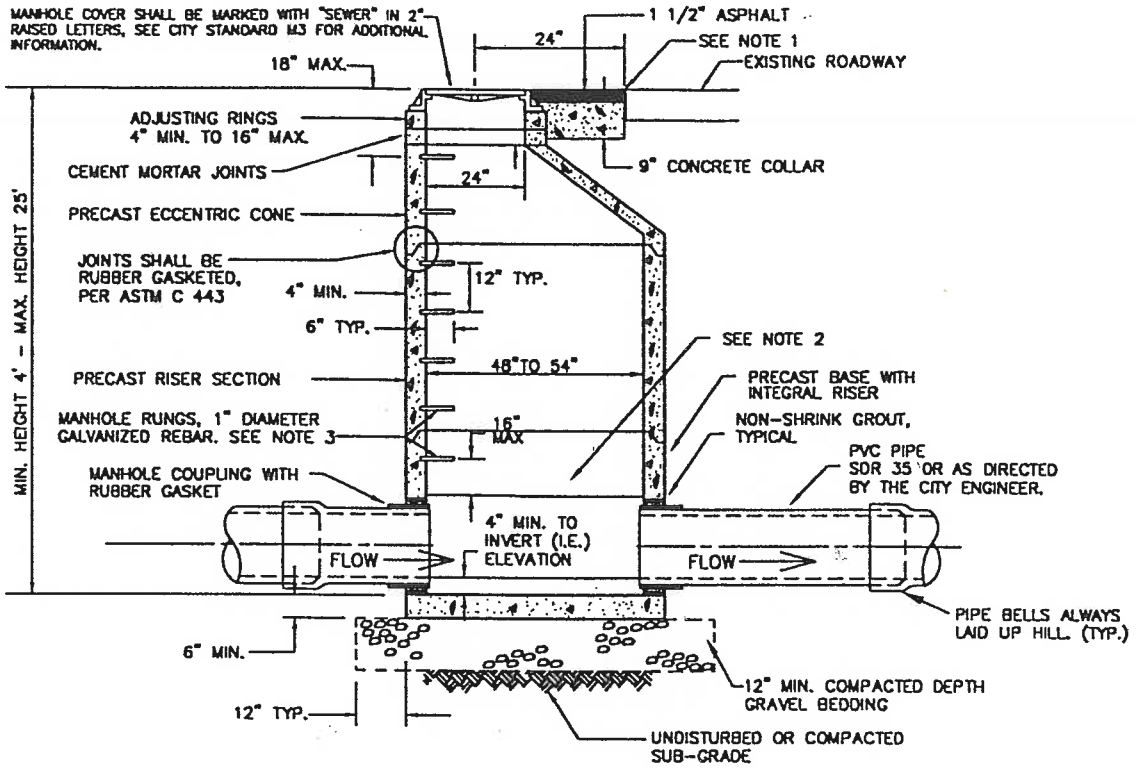
CITY OF SUMNER
DEPT. OF PUBLIC WORKS

PIG LAUNCHER

APPROVED	DWG. NO.
PUBLIC WORKS DIRECTOR DATE	STEP–19

DES.	DWN.	CKD.	DATE
PMX	PMX	MTO	5/09/00

152750F44.DWG



NOTES:

1. NEAT LINE CUTS SHALL BE SEALED AT TOP WITH A HOT PAVING GRADE AND FACE OF CUT TACKED.
2. TOP OF SHELF, SLOPE 1/2" PER FOOT, CONSTRUCT IN FIELD CHANNEL AND SHELF TO THE CROWN OF PIPE.
3. MANHOLE RUNGS SHALL CONFORM TO SECTION R, ASTM C 478 (AASHTO M-199) AND MEET ALL WISHA REQUIREMENTS. MANHOLE RUNGS SHALL BE PARALLEL OR APPROXIMATELY RADIAL AT THE OPTION OF THE MANUFACTURER, EXCEPT THAT ALL STEPS IN ANY MANHOLE SHALL BE SIMILAR. PENETRATION OF OUTER WALL BY A LEG IS PROHIBITED. SEE STANDARD MANHOLE STEP AND LADDER DETAIL
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS MANHOLE WALL THICKNESS. MAXIMUM HOLE SIZE IS 36" FOR A 48" MANHOLE, 42" FOR A 54" MANHOLE. MINIMUM DISTANCE BETWEEN HOLES IS 8".
6. PRECAST CONCRETE MANHOLE COMPONENTS SHALL CONFORM TO ASTM C 478.
7. FLEXIBLE JOINTS SHALL BE RUBBER GASKETED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. MORTARED, DRY-PACKED, OR CAST-IN-PLACE JOINTS WILL BE PERMITTED ONLY FOR CONNECTION TO OR THROUGH MANHOLES. A FLEXIBLE GASKETED JOINT SHALL BE INSTALLED WITHIN ONE (1) FOOT OF EACH CONNECTION TO OR THROUGH SAID MANHOLES. CONNECTIONS TO MANHOLES WITH CONCRETE PIPE SHALL BE MORTARED. CONNECTIONS TO THESE STRUCTURES WITH PVC PIPE SHALL UTILIZE A MANHOLE COUPLING AND RUBBER GASKET.
8. ALL SEWERS SHALL BE DESIGNED AND CONSTRUCTED TO GIVE MEAN VELOCITIES, WHEN FLOWING FULL, OF NOT LESS THAN 2.0 FEET PER SECOND. THE FOLLOWING MINIMUM SLOPES SHOULD BE PROVIDED; HOWEVER, SLOPES GREATER THAN THESE ARE DESIRABLE:

SEWER SIZE (INCHES)	MINIMUM SLOPE (FEET PER 100 FEET)
8	0.40
10	0.28
12	0.22
14	0.17
15	0.15
16	0.14
18	0.12
21	0.10
24	0.08
27	0.07
30	0.06
36	0.05

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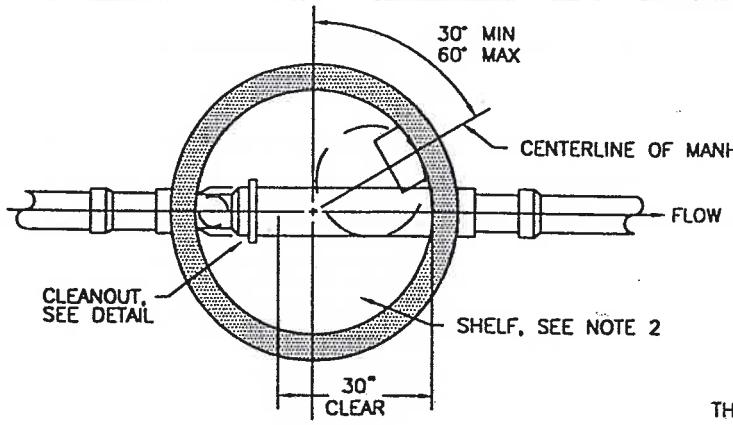
SUMNER

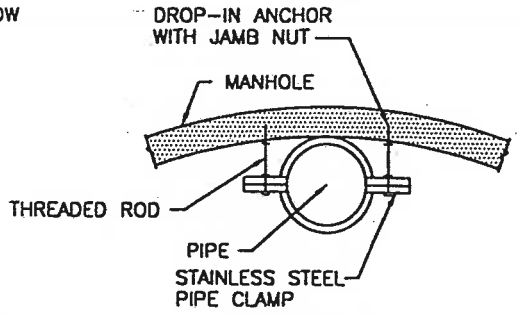
PUBLIC WORKS DEPARTMENT

SANITARY SEWER MANHOLE

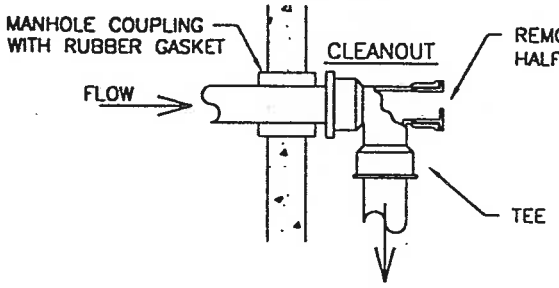
DRAWN	SCALE	DATE APPROVED	REVISED 1-21-99	CITY STANDARD SS1
FILE NAME ...\SANITARY\SANTMH.DWG		CHECKED BY	PAGE 1 OF 1	



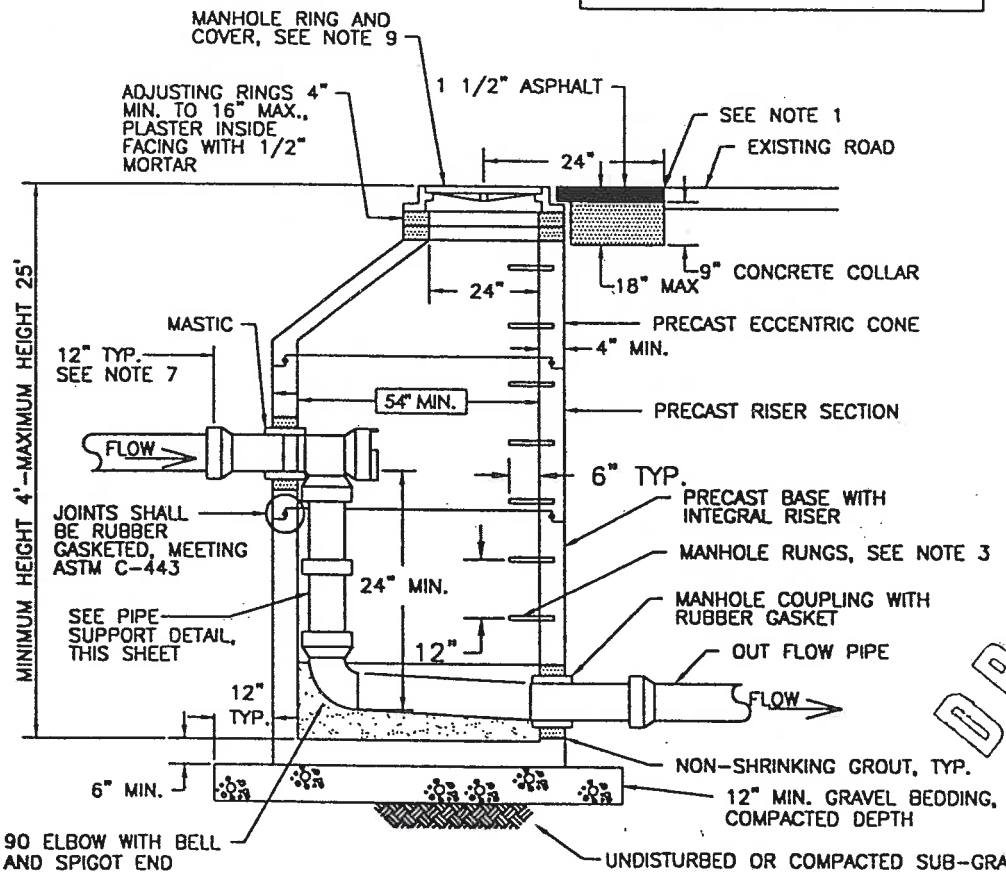
TOP VIEW OF INSIDE DROP MANHOLE



PIPE SUPPORT (SEE NOTE 10)



SEE CITY STANDARD DETAIL SS7 FOR OUTSIDE DROP MANHOLE. 48" DIA. MANHOLE AND SPECIAL CONDITIONS.



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PUBLIC WORKS DEPARTMENT

INSIDE DROP SANITARY SEWER 54" DIAMETER OR LARGER MANHOLE

DRAWN	SCALE	DATE APPROVED	REVISED 1-21-99	CITY STANDARD
FILE NAME ...\SANITARY\IDSANMH.DWG		CHECKED BY	PAGE 1 OF 2	SS2

NOTES FOR: INSIDE DROP SANITARY SEWER MANHOLE (CONT'D)

1. NEAT LINE CUTS SHALL BE SEALED AT TOP WITH A HOT PAVING GRADE ASPHALT AND FACE OF CUT TACKED.

2. TOP OF SHELF, SLOPE 1/2" PER FOOT, CONSTRUCT IN FIELD CHANNEL AND SHELF TO THE CROWN OF PIPE.

3. MANHOLE RUNG SHALL CONFORM TO SECTION R, ASTM C 478 (AASHTO M-199) AND MEET ALL WISHA REQUIREMENTS. MANHOLE RUNGS SHALL BE PARALLEL OR APPROXIMATELY RADIAL AT THE OPTION OF THE MANUFACTURER, EXCEPT THAT ALL STEPS IN ANY MANHOLE SHALL BE SIMILAR. PENETRATION OF OUTER WALL BY A LEG IS PROHIBITED. SEE STANDARD MANHOLE STEP AND LADDER DETAIL.

4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.

5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS MANHOLE WALL THICKNESS. MINIMUM DISTANCE BETWEEN HOLES IS 8".

6. PRECAST CONCRETE MANHOLE COMPONENTS SHALL CONFORM TO ASTM C 478.

7. FLEXIBLE JOINTS SHALL BE RUBBER GASKETED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. MORTARED, DRY-PACKED, OR CAST-IN-PLACE JOINTS WILL BE PERMITTED ONLY FOR CONNECTIONS TO OR THROUGH MANHOLES. A FLEXIBLE GASKETED JOINT SHALL BE INSTALLED WITHIN ONE (1) FOOT OF EACH CONNECTION TO MANHOLES. CONNECTIONS TO MANHOLE WITH CONCRETE PIPE SHALL BE CEMENT MORTARED. CONNECTIONS TO THESE STRUCTURES WITH PVC PIPE SHALL UTILIZE A MANHOLE COUPLING AND RUBBER GASKET.

8. ALL SEWERS SHALL BE DESIGNED AND CONSTRUCTED TO GIVE MEAN VELOCITIES, WHEN FLOWING FULL, OF NOT LESS THAN 2.0 FEET PER SECOND. THE FOLLOWING MINIMUM SLOPES SHOULD BE PROVIDED; HOWEVER, SLOPES GREATER THAN THESE ARE DESIRABLE:

SEWER SIZE (INCHES)	MINIMUM SLOPE (FEET PER 100 FEET)
8	0.40
10	0.28
12	0.22
14	0.17
15	0.15
16	0.14
18	0.12
21	0.10
24	0.08
27	0.07
30	0.06
36	0.05

9. MANHOLE RING AND COVER: THE COVER SHALL BE MARKED WITH "SEWER" IN TWO (2) INCH RAISED LETTERS (SEE CITY STANDARD M3 FOR ADDITIONAL INFORMATION).

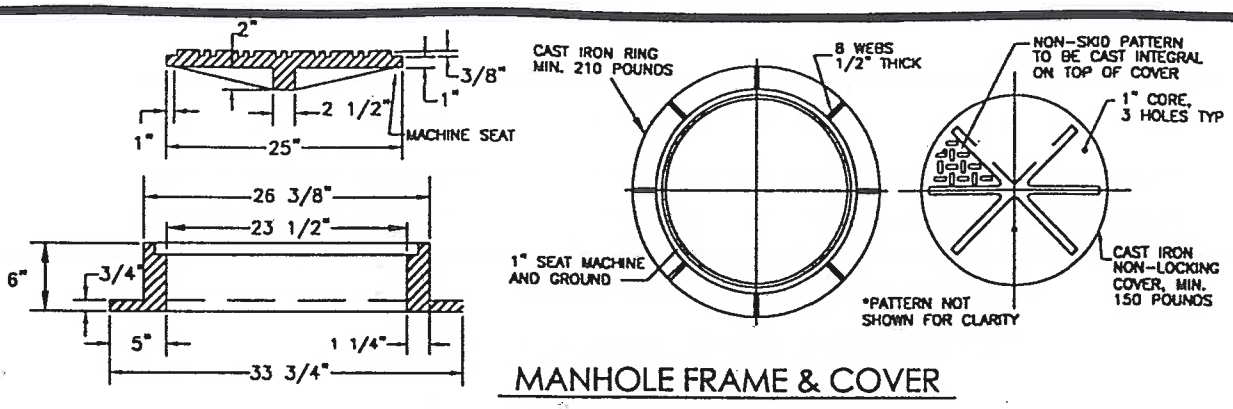
10. STAINLESS STEEL PIPE CLAMP WITH 1/2" DIAMETER STAINLESS STEEL THREADED ROD WITH WASHER AND NUT EACH SIDE OF CLAMP. PROVIDE 1/2" DIAMETER DROP-IN ANCHOR WITH JAMB NUT AT WALL.

SUMNER INCORPORATED 1891

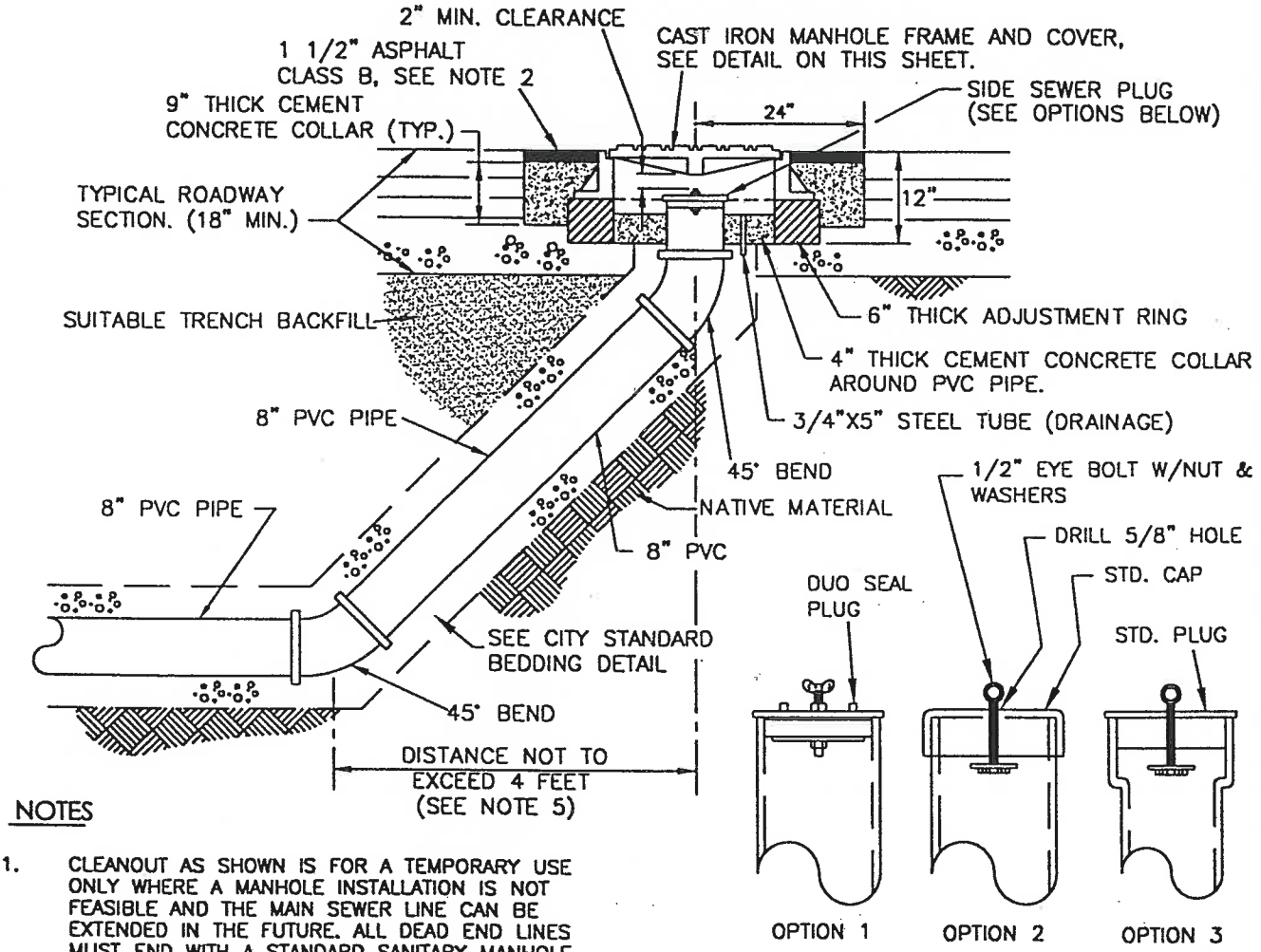
PUBLIC WORKS DEPARTMENT

INSIDE DROP SANITARY SEWER MANHOLE

DRAWN	SCALE	DATE APPROVED	REVISED 1-22-99	CITY STANDARD
FILE NAME ...\SANITARY\IDSSMHNT.DWG		CHECKED BY	PAGE 2 OF 2	SS2



MANHOLE FRAME & COVER



SEWER PLUG OPTIONS

NOTES

1. CLEANOUT AS SHOWN IS FOR A TEMPORARY USE ONLY WHERE A MANHOLE INSTALLATION IS NOT FEASIBLE AND THE MAIN SEWER LINE CAN BE EXTENDED IN THE FUTURE. ALL DEAD END LINES MUST END WITH A STANDARD SANITARY MANHOLE.
2. NEAT LINE CUT SHALL BE SEALED AT THE TOP WITH A HOT PAVING GRADE ASPHALT AND FACE OF CUT TACKED.
3. ALL MATERIAL SHALL CONFORM TO THE 1991 STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION PREPARED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION AND AMERICAN PUBLIC WORKS ASSOCIATION, WASHINGTON STATE CHAPTER.
4. MACHINE BEARING FACES OF FRAME AND COVER TO INSURE POSITIVE FIT.
5. MAIN LINE CLEAN OUT REQUIRED WHEN DISTANCE FROM PIPE INVERT TO FINISH GRADE IS LESS THAN 4 FEET. THAT IS THE ONLY TIME THE MAIN LINE CLEAN OUT MAY TAKE THE PLACE OF A MANHOLE. DISTANCE FROM CLEAN OUT TO NEXT DOWN STREAM MANHOLE, NOT TO EXCEED 150 FEET.

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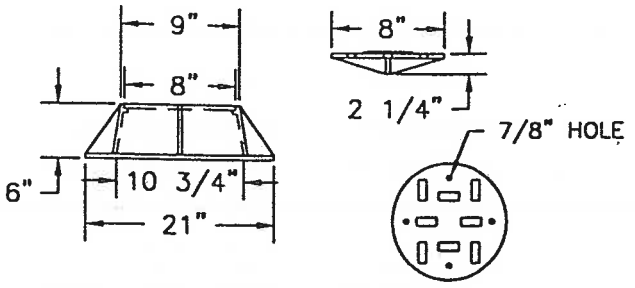
SUMNER
INCORPORATED 1891

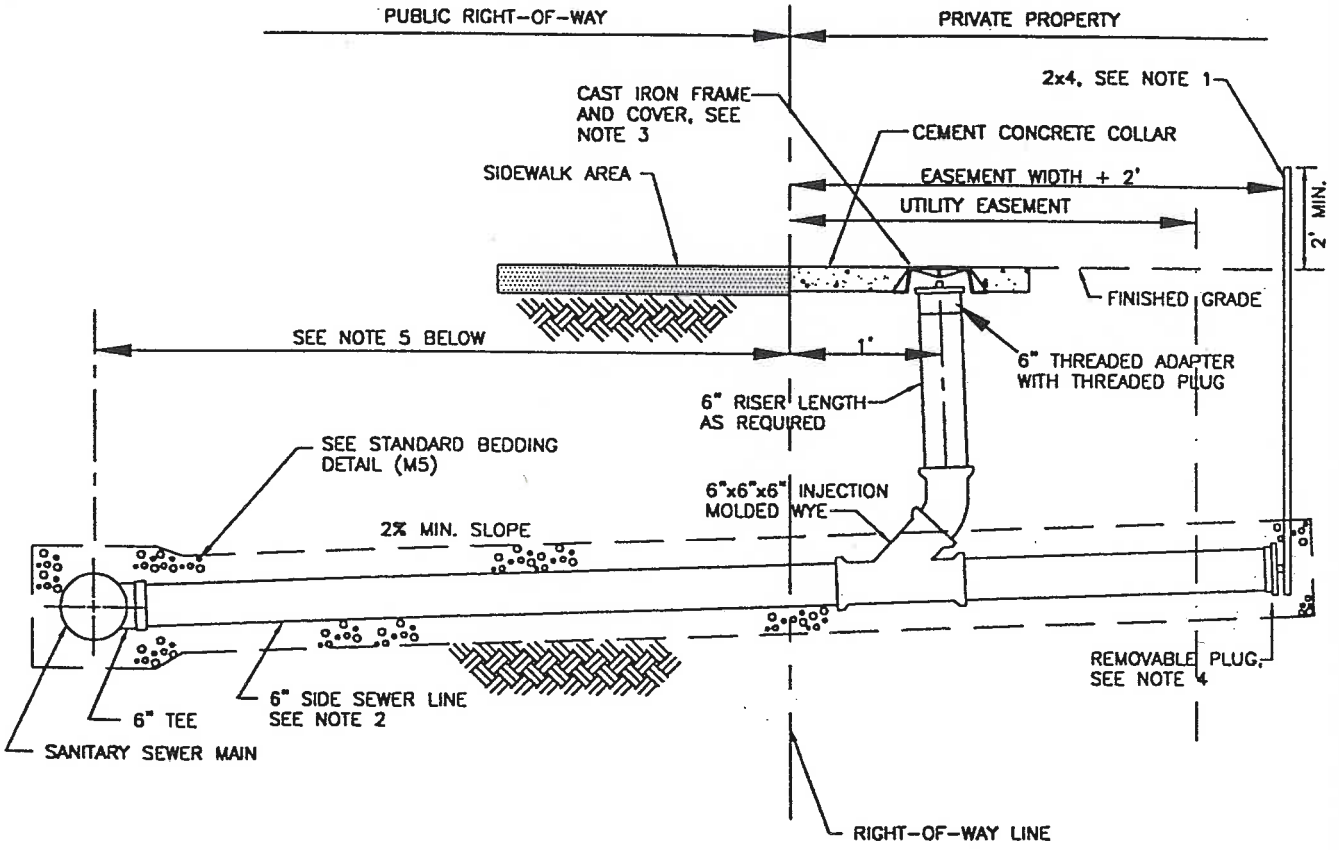
PUBLIC WORKS DEPARTMENT

MAIN LINE CLEAN OUT

DRAWN	SCALE	DATE APPROVED	REVISED 1-22-99	CITY STANDARD
FILE NAME ...\SANITARY\CLEANOUT.DWG		CHECKED BY	PAGE 1 OF 1	SS3



FRAME AND COVER SECTION



1. PRESSURE TREATED 2"x4"x8'. EXPOSED 2"x4"x8' PAINTED WHITE WITH 'SEWER' IN BLACK 2" LETTERS ON THE STREET SIDE OF POST. THE DEPTH FROM FINISHED GRADE TO PIPE MARKED ON BOTH SIDES IN BLACK LETTERS.
2. SANITARY SEWER PIPE MATERIAL SHALL BE PVC, ASTM D3034, SDR 35, OR EQUAL.
3. CONCRETE COLLAR SHALL BE PROVIDED AROUND CAST IRON FRAME AS DIRECTED BY CITY ENGINEER.
4. END OF SIDE SEWER SHALL HAVE A FIVE (5) FOOT MINIMUM OF COVER.
5. WHEN THE DISTANCE BETWEEN CENTER OF THE MAIN AND THE RIGHT-OF-WAY LINE IS LESS THAN 6 FEET, THE CLEAN OUT WILL BE MOVED BACK TO WITHIN 1 FOOT OF THE UTILITY EASEMENT LINE.

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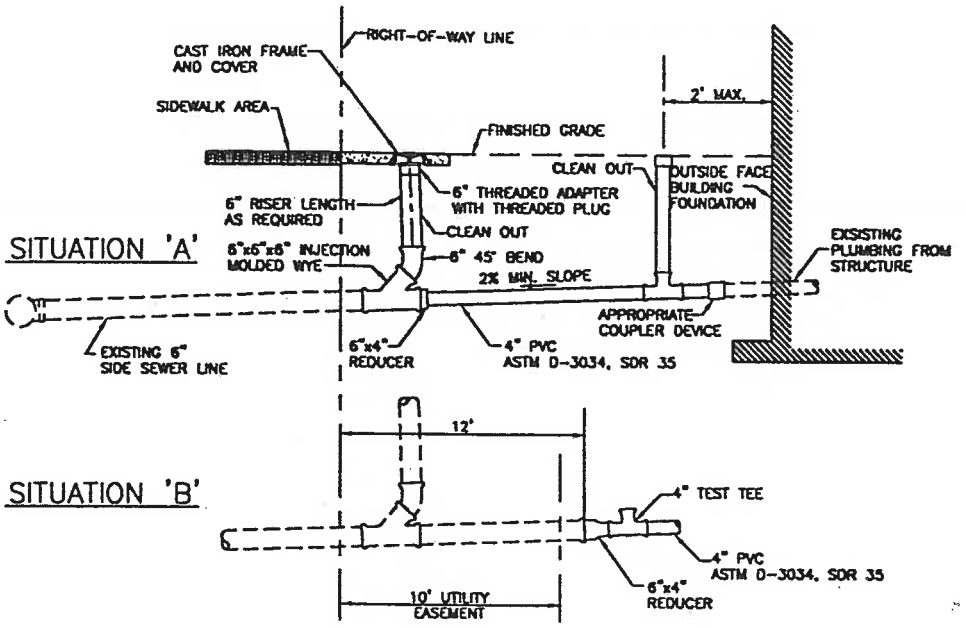
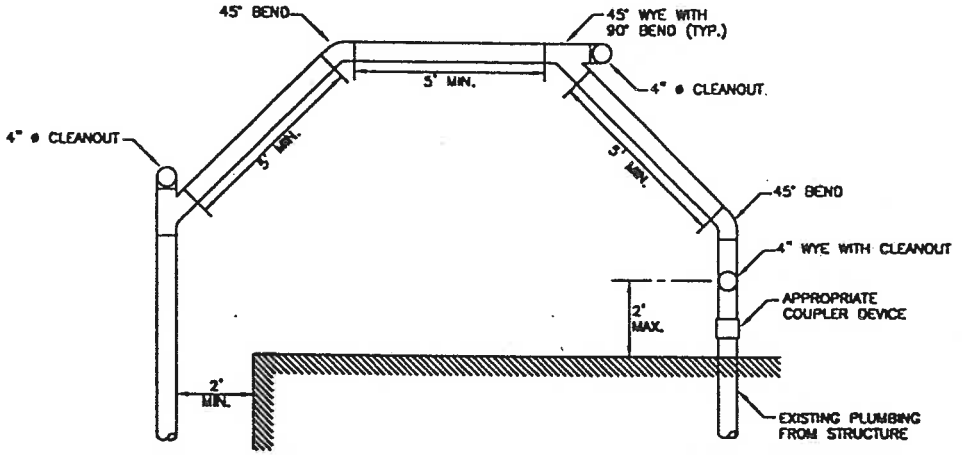
PUBLIC WORKS DEPARTMENT

SIDE SEWER

DRAWN	SCALE	DATE APPROVED	REVISED 1-20-99	CITY STANDARD SS4
FILE NAME ...\SANITARY\SIDESEW.DWG		CHECKED BY	PAGE 1 OF 1	



TYPICAL SIDE/BUILDING SEWER PROFILE



TYPICAL SIDE/BUILDING SEWER PROFILE

1. DO NOT REMOVE PLUG FROM SIDE SEWER UNTIL INSPECTOR IS PRESENT.
2. THERE SHALL BE A MINIMUM OF 1 FOOT COVER OVER SIDE SEWER.
3. A CLEANOUT IS REQUIRED AT EVERY OTHER BEND AS SHOWN AND EVERY 100 FEET.
4. SIDE SEWER TRENCH BEDDING SHALL HAVE 4" OF PEA GRAVEL BELOW THE PIPE AND 6" OF PEA GRAVEL ABOVE THE PIPE OR AS APPROVED BY THE CITY ENGINEER.
5. SIDE SEWER SHALL BE WATER TESTED WITH A 6' HEAD WITH AN INFLATABLE BALL INSERTED AT THE TEST TEE AND AT THE CLEANOUT AT THE HOUSE.
6. NO 90° BENDS WILL BE ALLOWED.

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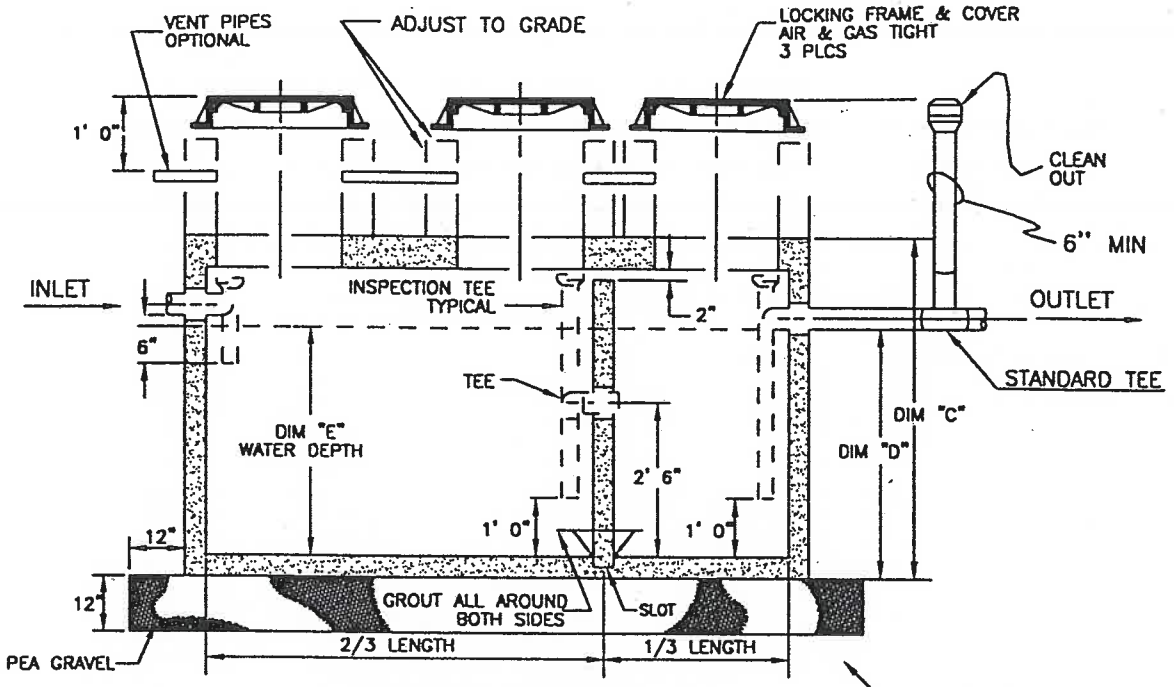
SUMNER INCORPORATED 1891

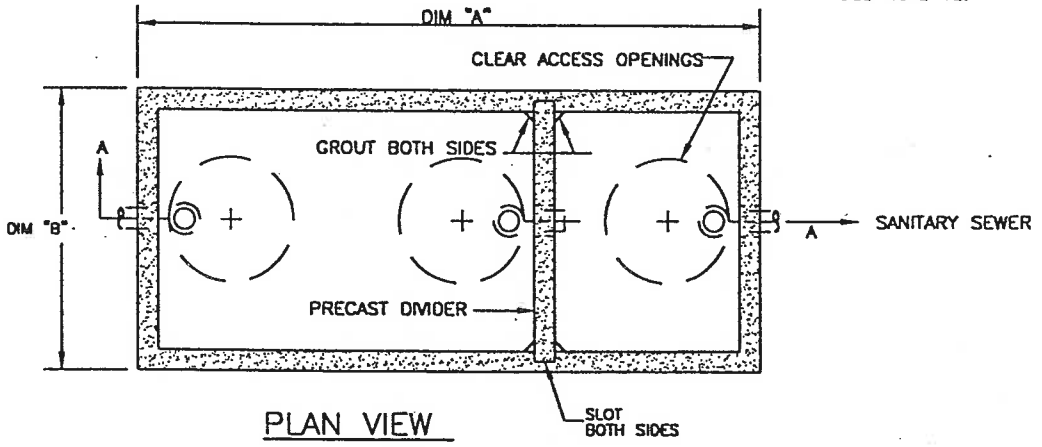
PUBLIC WORKS DEPARTMENT

SIDE SEWER SERVICE

DRAWN	SCALE 1" : 5'	DATE APPROVED	REVISED 1-23-99	CITY STANDARD SS5
FILE NAME ...\SANITARY\SIDESERV-SS5.DWG		CHECKED BY	PAGE 1 OF 1	



SECTION VIEW AA



PLAN VIEW

* MANUFACTURE AND MODEL NUMBER
* MINIMUM INTERCEPTOR SIZE = 750 GALLON

PLUMBING FIXTURES SERVED:

NUMBER OF FLOOR SINKS
NUMBER OF THREE COMPARTMENT SINKS
NUMBER OF TWO COMPARTMENT SINKS
NUMBER OF FLOOR DRAINS
DISHWASHER AND ANY OTHER FIXTURES

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NOTES:

1. CONCRETE: 28 DAY COMPRESSIVE STRENGTH fc = 4500 psi
2. REBAR: ASTM A-615 GRADE 60
3. MESH: ASTM A-185 GRADE 65
4. DESIGN: ACI-318-83 BUILDING CODE
   ASTM C-857 "MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES"
5. LOADS: H-20 TRUCK WHEEL w/30% IMPACT PER AASHTO
6. FILL w/CLEAN WATER PRIOR TO START-UP OF SYSTEM
7. CONTRACTOR TO SUPPLY & INSTALL ALL PIPING & SAMPLING TEES

SUMNER
INCORPORATED 1891

PUBLIC WORKS DEPARTMENT

GREASE INTERCEPTOR GUIDELINES

DRAWN	SCALE	DATE APPROVED	REVISED 2-5-99	CITY STANDARD
FILE NAME ...\SANITARY\INTERC.DWG		CHECKED BY	PAGE 1 OF 2	SS6

GENERAL NOTES:

1. EACH GREASE INTERCEPTOR SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL CITY CODES AND THE CONDITIONS OF THE APPROVED DESIGN.

2. THE INTERCEPTORS SHALL BE INSTALLED ON LEVEL UN-DISTURBED SOIL WITH A TOTAL LOAD BEARING CAPACITY OF A MINIMUM OF 2000 lb/sq ft. THE INTERCEPTORS SHALL BE SET ON A LAYER OF PEA GRAVEL. 12" MINIMUM IN THICKNESS.

3. CARE SHALL BE TAKEN NOT TO DROP THE INTERCEPTOR INTO THE HOLE AND NOT TO OTHERWISE DAMAGE THE INTERCEPTORS DURING BACKFILL.

4. THE GREASE INTERCEPTOR SHALL BE DESIGNED AND INSTALLED TO RECIEVE GRAY WATER ONLY. BLACK WATER SHALL BE CARRIED BY A SEPARATE SIDE SEWER.

5. EACH GREASE INTERCEPTOR SHALL BE INSTALLED AND CONNECTED THAT IT SHALL BE EASILY ACCESSIBLE FOR INSPECTION, CLEANING AND REMOVAL AT ALL TIMES. INTERCEPTORS SHALL BE PLACED AS CLOSE AS PRACTICAL TO THE FIXTURES SERVED. MANHOLE COVERS SHALL BE GAS TIGHT IN CONSTRUCTION AND HAVE A MINIMUM OPENING OF 20" IN DIAMETER.

6. THE DESIGN ENGINEER SHALL PROVIDE THE CITY OF SUMNER ENGINEERING DEPARTMENT WITH A LETTER OF INSPECTION CERTIFYING THAT THE INSTALLATION WAS PERFORMED IN ACCORDANCE WITH ALL REGULATIONS AND THE APPROVED PLAN.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FINAL LOCATION OF THE INTERCEPTOR/S AND FOR THE PUMPING AND FILLING, PER CITY REQUIREMENTS, OF ANY EXISTING TANKS THAT MAY BE DISCONNECTED FROM THE EX. SYSTEM.

8. VENTING FOR GREASE INTERCEPTOR SHALL BE IN ACCORDANCE WITH CHAPTERS 4,5, & 7 OF THE UNIFORM PLUMBING CODE – 1982 OR AS ADOPTED BY THE CITY OF SUMNER.

9. THE SEWER LINES AND GREASE INTERCEPTOR SHALL REMAIN UNDER THE OWNERSHIP OF THE PROPERTY OWNER.

10. GREASE INTERCEPTORS LOCATED IN A PAVED AREA SHALL COMPLY WITH HS-20 LOADING STANDINGS.

11. ALL BUILDING SEWER INSTALLATION MUST COMPLY WITH CITY OF SUMNER BUILDING SEWER REQUIREMENTS.

12. IN AREAS OF UNSUITABLE SUB-GRADE, OVEREXCAVATION SHALL BE REQUIRED. A GEOTEXTILE FABRIC (MIRAFI 600X OR EQUAL AS APPROVED BY THE CITY ENGINEER) SHALL BE PLACED AGAINST THE NATIVE SUBGRADE AND THEN FOUNDATION MATERIAL PLACED TO BRING IT BACK TO GRADE. THE FOLLOWING MATERIAL SHALL BE USED AS FOUNDATION MATERIAL AS SPECIFIED IN SECTION 9-03.9 (1), BALLAST, OF THE STANDARD SPECIFICATIONS:

BALLAST SHALL CONSIST OF CRUSHED, PARTIALLY CRUSHED, OR NATURALLY OCCURING GRANULAR MATERIAL.

SIEVE SIZE	PERCENT PASSING*
2 1/2" SQUARE	100
2" SQUARE	65-100
1" SQUARE	50-85
1/2" SQUARE	30-50
U.S. NO. 40	16 MAX.
U.S. NO. 200	9.0 MAX.
DUST RATIO: PASSING U.S. NO. 200 / PASSING U.S. NO. 40	2.3 MAX.
SAND EQUIVALENT:	35 MIN.

*ALL PERCENTAGES ARE BY WEIGHT.

THE PORTION OF BALLAST RETAINED ON 1/4 INCH SQUARE SIEVE SHALL NOT CONTAIN MORE THAN 0.2% WOOD WASTE.

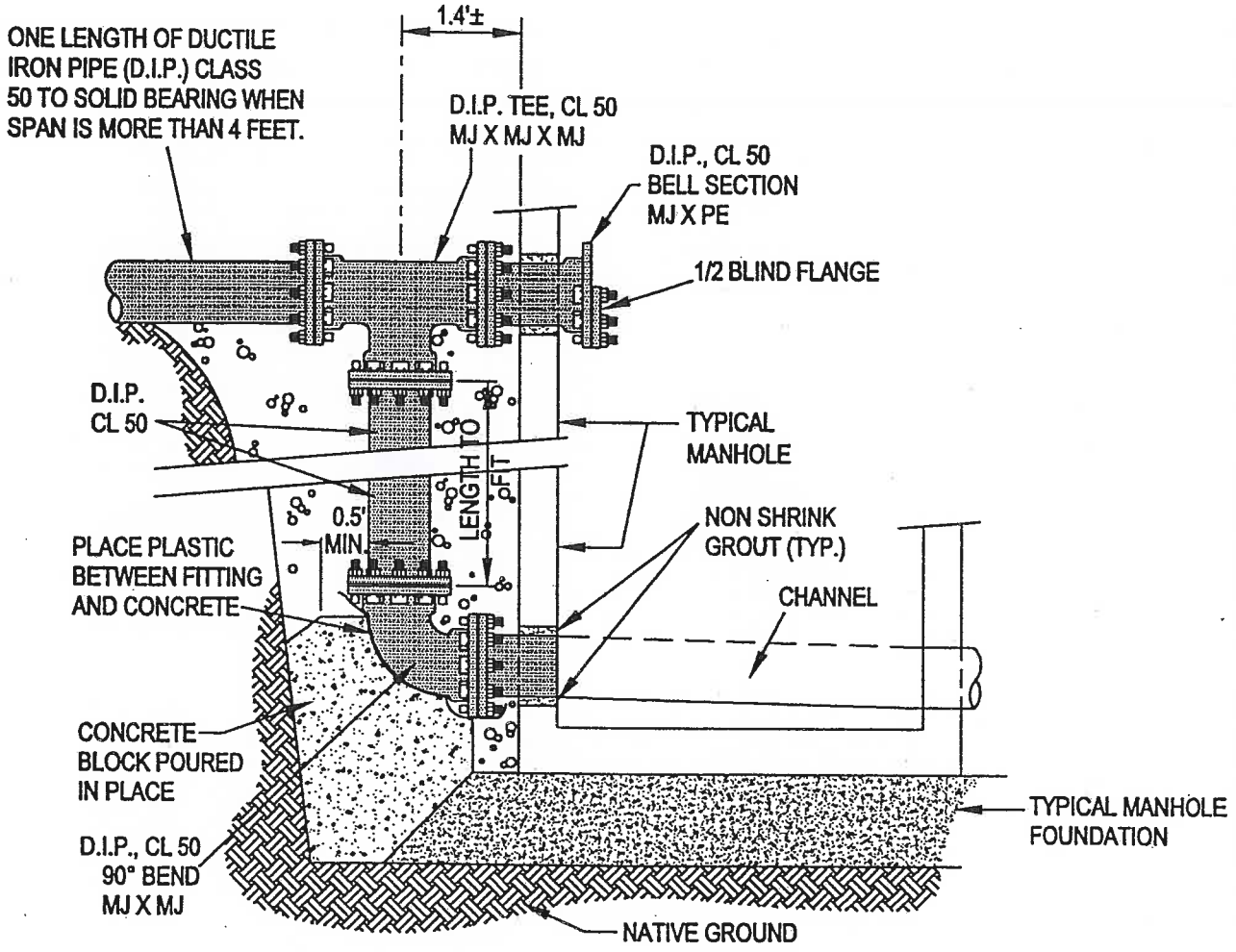
DESIGN CRITERIA SOURCE:
1991 UNIFORM PLUMBING CODE – APPENDIX H

	DIM "A"	DIM "B"	DIM "C"	DIM "D"	WATER DEPTH DIM "E"
750	7'-0"	4'8"	7'-0"	4'-3"	3'-11"
950	7'-0"	4'-8"	7'-0"	5'-3"	4'-11"
1000	9'-0"	5'-0"	7'-2"	4'-2"	3'-10"
1250	9'-0"	5'-0"	7'-2"	5'-2"	4'-10"
1500	11'-2"	5'-8"	7'-2"	4'-4"	4'-0"
1750	11'-2"	5'-8"	7'-2"	4'-11"	4'-7"
2000	12'-8"	6'-8"	8'-0"	4'-7"	3'-10"
2500	12'-8"	6'-8"	8'-0"	5'-6"	4'-9"
2750	12'-8"	6'-8"	8'-0"	6'-0"	5'-3"
3000	15'-7"	9'-7"	8'-6.5"	5'-0"	3'-9"
4000	15'-7"	9'-7"	8'-6.5"	6'-3"	5'-0"
5000	19'-11"	9'-11"	8'-11"	6'-2"	4'-9"
6000	19'-11"	9'-11"	8'-11"	7'-2"	5'-9"

INCORPORATED 1891
SUMNER
PUBLIC WORKS DEPARTMENT

GREASE INTERCEPTOR GUIDELINES

DRAWN	SCALE	DATE APPROVED	REVISED 2-25-99	CITY STANDARD SS6
FILE NAME ...\SANITARY\INTERCNT-SS6.DWG		CHECKED BY	PAGE 2 OF 2	



NOTES:

1. OUTSIDE DROPS MUST BE CONSTRUCTED WITH DUCTILE IRON PIPE AS SHOWN. CONCRETE ENCASED PVC IS NOT ACCEPTABLE.
2. USE RESTRAINED FITTINGS AT ALL CONNECTION POINTS.
3. OUTSIDE DROP IS TO BE USED ON 48" DIAMETER MANHOLES AND SPECIAL SITUATIONS AS DETERMINED BY THE CITY ENGINEER. AN INSIDE DROP CAN ONLY BE USED ON 54" DIAMETER MANHOLES AND LARGER AND ONLY IF APPROVED BY THE CITY ENGINEER.

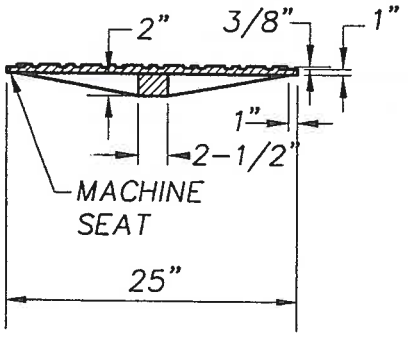
DRAFT

SUMNER

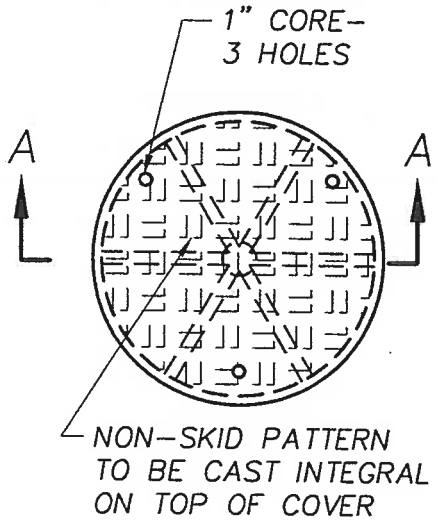
PUBLIC WORKS DEPARTMENT

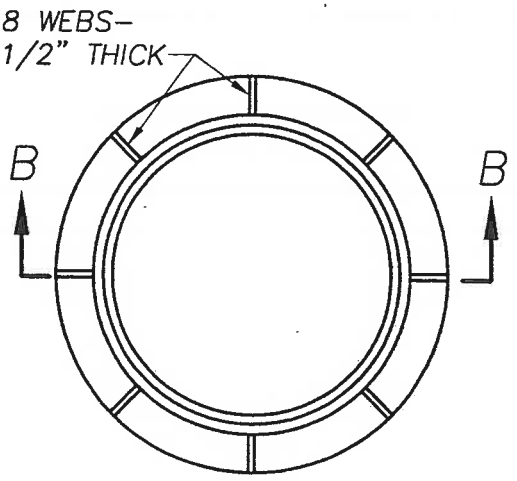
OUTSIDE DROP CONNECTION FOR SANITARY SEWER MANHOLES

DRAWN	SCALE	DATE APPROVED	REVISED	CITY STANDARD
T. WESSEL	NOT TO SCALE		3-11-99	SS7
FILE NAME ...\SANSEWER\OUTSIDE-DROPSS7.DWG		CHECKED BY	PAGE 1 OF 1	



SECTION A-A



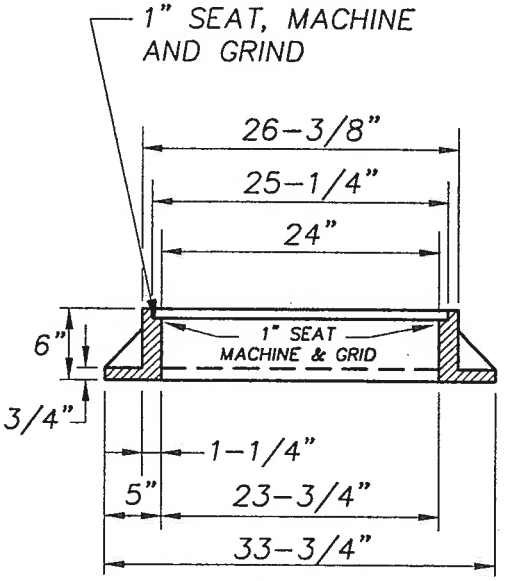


FRAME PLAN

NOTES:

1. COVERS SHALL HAVE THE WORD "SEWER" IN 2" RAISED LETTERS WHEN USED IN CONNECTION WITH SANITARY SEWER AND "DRAIN" WHEN IN CONNECTION WITH STORM SEWER INSTALLATION OR "WATER" WHEN IN CONNECTION WITH WATER DISTRIBUTION INSTALLATION.

2. MINIMUM WEIGHT:
   COVER - 165 POUNDS
   FRAME - 235 POUNDS
   TOTAL - 400 POUNDS



SECTION B-B

MANHOLE FRAME AND COVER DETAIL

NO SCALE

FILE: 152750F45
JOB: 11-1713-02
DATE: 05-09-00

CITY OF SUMNER
STANDARD DETAIL SS-8

APPENDIX G

Environmental Checklist

ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. Name of proposed project, if applicable:

Sewer Comprehensive Plan Update

2. Name of applicant:

City of Sumner

3. Address and phone number of applicant and contact person:

1104 Maple St
Sumner, WA 98390-1423
Bill Shoemaker, Public Works Director

4. Date checklist prepared:

May 2000

5. Agency requesting checklist:

City of Sumner

6. Proposed timing or schedule (including phasing, if applicable):

January 2000

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

This proposal is an update of the City's 1989 Comprehensive Sewer Plan. The City will update this Comprehensive Plan periodically as the need arises.

Expansion of the City's wastewater treatment plant has been proposed and is currently being designed. In preparation for plant expansion, the City commissioned Grey and Osborne to prepare the Wastewater Treatment Facility Final Comprehensive Facility Plan Addendum No. 1, *which contains its own SEPA Checklist.*

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

None

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.**

No

10. **List any government approvals or permits that will be needed for your proposal, if known.**

City of Sumner Determination of Non-significance
Pierce County
Washington Department of Ecology approval

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.)**

The Sewer Comprehensive Plan will be used to aid the City in budgeting for future maintenance, expansion of service and equipment replacement.

The area, which the comprehensive plan addresses, includes portions of the Puyallup and Stuck (White) River Valleys. The current plan allows this primarily agricultural area to develop into residential, commercial and industrial areas. The Sewer Comprehensive Plan addresses the concerns and needs presented in providing sewer service to these areas.

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 area is located within the city limits for the City of Sumner in northern Pierce County, in the following sections:

T20N R 4E, Sections: 1, 2, 11, 12, 13, 14, 23, 24 and 25.

T 20N, R 5E, Sections: 6, 7, 19, 20, 29 and 30.

In general the region is bounded by the City of Edgewood on the west, the City of Bonney Lake on the east, the King-Pierce County line on the north and SR 410 and unincorporated Pierce County on the south.

TO BE COMPLETED BY APPLICANT

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____.

The valley floor region is generally flat with slopes ranging from 0 to 5 percent. The hillsides have slopes ranging from 20 to 70 percent.

b. What is the steepest slope on the site (approximate percent slope)?

At the east and west hillsides slopes maybe in excess of 100 percent.

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.

The valley floor region is primarily composed of Puyallup, Sultan, Puget, Snohomish and Briscott series. These soils are poorly drained alluvial deposits. The soils are well suited for agriculture and urban development with excessive wetness as the limiting factor.

The hillsides and upland region soils are predominately Alderwood series loam. These soils drain moderately well, and are located on slopes ranging from 0 to 70 percent. Alderwood soils are suitable for timber, pasture, row crops and urban development. Other soils found in the upland areas include Everett, Indianola, Kapowsin and Kitsap series. Everett and Indianola soils are excessively draining, while Kapowsin and Kitsap series are poorly drained.

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

Evidence of recent slides can be seen on the hillsides above both East Valley Highway and West Valley Highway. The East Hill, from SR 410 to the King/Pierce County Line has a history of unstable soils.

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

New sewer mains may be backfilled with either native or imported fill material (approximately 1 cubic yard per foot of pipe). The imported material will be obtained from local suppliers if necessary.

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

describe.

Yes. Any construction documents for future projects will include erosion control requirements for construction of individual projects.

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

Any proposed pipeline projects will be constructed beneath existing paved areas or along the shoulder of existing right-of-ways. Any proposed pump stations improvements will require additional impervious surface area.

h. Proposed measures to reduce or control erosion, or other impacts to the earth if any:

Measures for controlling erosion during construction will include: Coordinating activities with periods of dry weather and use of BMP for control of erosion.

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.

Odors generated by vehicular emissions during construction and wastewater odors from sewer mains following construction.

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:

Dust suppression measures will be implemented during construction. Odor control measures will be implemented at conveyance facilities to reduce odor emissions.

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.

The Puyallup, Stuck (White) River, Salmon Creek, Van Ogles Creek, Drainage District

#24 Ditch and Puget Sound Energy's Causeway are the major surface waters in the comprehensive plan area. Salmon and Van Ogles Creeks are tributary to the Puyallup River. Drainage District #24 Ditch and Puget Sound Energy Causeway are tributary to the Stuck River. Wetlands are interspersed throughout the service area and are discussed and shown in the Sumner Stormwater Comprehensive Plan. Swamps, bogs, marshes and seasonal ponds are found in the Sumner area. The City maintains a local Shoreline Management Plan, and has prepared an inventory of wetlands within the City Comprehensive Planning Area based upon U.S. Fish and Wildlife Service, Washington Department of Ecology and U.S. Army Corps of Engineers definitions and field methodologies.

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.**

Yes, implementation of the Comprehensive Plan will require construction adjacent to or passing through wetlands or surface waters. Each project will require separate SEPA checklists. The impacts and descriptions of projects will occur at the time of project action.

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.**

Does not apply.

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

None.

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

Some future improvements may lie within the 100-year flood plain as shown on FEMA Flood Insurance Map for the City of Sumner (not provided). This determination will be made on a project specific basis.

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.**

Implementation of the Comprehensive Sewer Plan will allow service to the City of Sumner. Discharge will increase from the treatment plant from the current flow rate. The effluent from the City of Sumner, the City of Bonney Lake and unincorporated Pierce County will be treated to WDOE standards prior to discharge.

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.

To be determined on a project specific basis.

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.

None. The Comprehensive Plan proposes service to areas currently have no service or are served by on-site septic systems.

c. Water Runoff (including storm water):

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.

None.

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

No.

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

N/A.

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
- X pasture
- X 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?

To be determined on a project specific basis.

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

None anticipated or known of.

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

To be determined on a project specific basis.

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*, other
mammals: *deer*, bear, elk, *beaver*, other
fish: bass, *salmon, trout*, herring, shellfish, other:

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

Chinook salmon and bull trout in the White River are listed as endangered species in the Puyallup River System. There are no known endangered species located within the confines of the UGA boundary.

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

The Puyallup and Stuck Rivers are migration routes for Pacific Northwest Salmon species. Migratory waterfowl may use surface waters. Deer pass through the watershed area.

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

N/A

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.

Implementation of the Comprehensive Plan will require electricity for process equipment,

heating, pump stations and lighting for many individual proposed projects.

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

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:

Motor efficiencies and horsepower requirements will be taken into consideration when choosing mechanical equipment for pump stations and other equipment.

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.

No.

1) Describe special emergency services that might be required.

None.

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

None.

b. Noise

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

None.

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.

Short-term noise increases during construction of facilities proposed under the comprehensive plan. No long-term noise changes are anticipated.

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

Construction equipment must meet State of Washington standards for noise protection.

Noise producing equipment will be chosen on a project specific basis.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

Pipeline work and installation will be within the public right-of-way and easements. The adjoining properties are zoned for residential, commercial and industrial uses.

b. Has the site been used for agriculture? If so, describe.

Yes, various farms in the area produce rhubarb, flower bulbs, turf, cabbage and other vegetable crops.

c. Describe any structures on the site.

Various residential, commercial and industrial buildings exist in the service area.

d. Will any structures be demolished? If so, what?

None anticipated.

e. What is the current zoning classification of the site?

Zoning is described in the City of Sumner Comprehensive Plan and discussed in Chapter 3 of this plan. Zoning categories include: low, medium and high-density residential, commercial, industrial, parks and public use.

f. What is the current comprehensive plan designation of the site?

Same as 8e.

g. If applicable, what is the current shoreline master program designation of the site?

Urban, Conservancy and Natural.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

To be determined on a project specific basis.

i. Approximately how many people would reside or work in the completed project?

N/A.

j. Approximately how many people would the completed project displace?

N/A.

k. Proposed measures to avoid or reduce displacement impacts, if any:

N/A.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

Project does not alter the existing or proposed land uses for the City.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

The Comprehensive Plan would not directly provide any housing units. Indirectly, the project would allow for development of previously undeveloped land.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any:

None.

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?

N/A.

b. What views in the immediate vicinity would be altered or obstructed?

None.

c. Proposed measures to reduce or control aesthetic impacts, if any:

None.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

None.

c. What existing off-site sources of light or glare may affect your proposal?

None.

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

N/A.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Current recreational opportunities are inventoried and evaluated in the "Sumner Parks and Recreational Plan (on file at City of Sumner Public Works Department).

b. Would the proposed project displace any existing recreational uses? If so, describe.

No.

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

N/A.

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.

There are several historic homes and sites within the service area.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

The Muckleshoot and Puyallup Indian Tribes place great cultural significance on the fishery resources. Any adverse impacts to streams, rivers, lakes and wetlands may also be injurious to the Indian culture.

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

In the event any archeological evidence is uncovered during any proposed construction, work will immediately halt and the appropriate agency or tribe will be contacted. Fisheries impacts will be mitigate, where appropriate for stream crossings.

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.

N/A.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

The City of Sumner is served by Pierce Transit.

c. How many parking spaces would the completed project have? How many would the project eliminate?

N/A.

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).

No, although some sewer lines replacement and new sewer construction are likely to be included in future road improvements.

e. Will the project use (or occur in immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

N/A.

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

N/A/

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.

The sewer system is a public service that will be provided along with many other public

services to any new development within the City of Sumner.

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

None.

16. Utilities

a. Circle utilities currently available at the site: <u>electricity, natural gas, water, refuse service, telephone, sanitary sewer</u>, 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.

The only utilities proposed in this Comprehensive Plan are new sanitary sewer mains and pump stations. On-site excavation, pipe laying and hauling activities, occurring during the construction phase, may require additional temporary quantities of some utilities or services. Other utilities including water, telephone and electricity are likely to be a part of any residential, commercial or industrial development.

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: _____

Date Submitted: _____

D. SUPPLEMENTAL SHEET FOR NON-PROJECT 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 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?**

   The Comprehensive Plan provides for additional growth within the drainage basin and would result in an increase of discharge at the outfall from the wastewater treatment plant. This effluent is discharged under an NPDES permit for the City. Construction activities for various projects proposed under the Plan would result in construction related emissions and noise. Each project will comply with SEPA requirements for the individual project.

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

   The Comprehensive Plan provides for additional sewer service within the UGA planning boundaries. The additional service will allow for increased development and the resulting impacts on plants, animals, and marine life.

   The Comprehensive Plan will allow for improved levels of sewage treatment to areas currently without service or served by on-site septic systems. The resulting treatment will protect and conserve the basin's ground and surface waters. Construction projects will be primarily within existing right-of-way and roads.

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

   The operation of pump stations and treatment facilities will require energy. The additional service will allow for increased development and the resulting impacts on energy and natural resources.

   Equipment will be obtained with energy efficiency as a consideration for cost impacts on operation as well as energy conservation.

4. **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?

The Comprehensive Plan will provide for additional sewer service within the UGA planning boundaries. The additional service will allow for increased development and the resulting impacts on environmentally sensitive areas.

Each project will comply with SEPA requirements for the individual project. Construction will primarily be within existing right-of-way and roads.

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 Plan is compatible with other existing plans.

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

The Plan provides for additional sewer service within the UGA. Transportation and other public services will be impacted by additional growth. This Plan is in response to additional demand for service.

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

The Plan is required under the Revised Code of Washington (RCW) 90.48.110 and is a means of protecting the environment.