Report

Salmon Creek Wastewater Management System

Wastewater Facilities Plan/ General Sewer Plan Amendment

Prepared for

Clark County
Department of Public Works

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Prepared by

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Contents

Appendixes

SECTION 1

Introduction

The Salmon Creek Wastewater Management System (SCWMS) provides wastewater service to residents living within the Clark Regional Wastewater District (District), the City of Battle Ground (Battle Ground), City of Ridgefield (Ridgefield) and the Meadow Glade and Hockinson rural centers. Figure 1-1 describes the system service area.

1.1 Plan Objectives

This Wastewater Facilities Plan/General Sewer Plan Update (Plan Update) serves to provide an update to the 2004 Plan to address several changes since the development of the Salmon Creek Wastewater Management System Wastewater Facilities Plan/General Sewer Plan, CH2M HILL, June 2004 (2004 Plan). These changes are generally as follows:

- Implementation of an ammonia limit in the facility NPDES Permit, issued June 30, 2005
- Modification of influent BOD loads as described in *Salmon Creek Wastewater Treatment Plant Rerating Study*, CH2M HILL, January 2009 (Rerating Study)
- Plan for inclusion of Ridgefield service area into SCWMS
- Updated SCTP Biosolids Utilization Plan
- Plan for implementation of dewatering improvements at the facility

The basis for these changes and subsequent impact to the SCWMS planned improvements are documented in this Plan Update.

1.3 Plan Organization

Organization of this report is based on the 2004 Plan; numbering of sections and major headings is consistent between the documents. If major headings do not require updating, they have not been included and the original text from the 2004 Plan is unchanged. The following is an outline of the information provided in subsequent sections.

Section 2, Background Information. This section documents demographic and technical information for the updated SCWMS service area.

Section 3, Future Conditions. This section documents projections for future demographics and resulting flows and waste loads for the SCWMS service area.

Section 4, Alternatives. This section documents alternatives to delivering Ridgefield flow to the SCMWS.

Section 5, Recommended Alternative. Technical details of the recommended alternative, as modified/impacted by the changes since the 2004 Plan, are provided in this section.

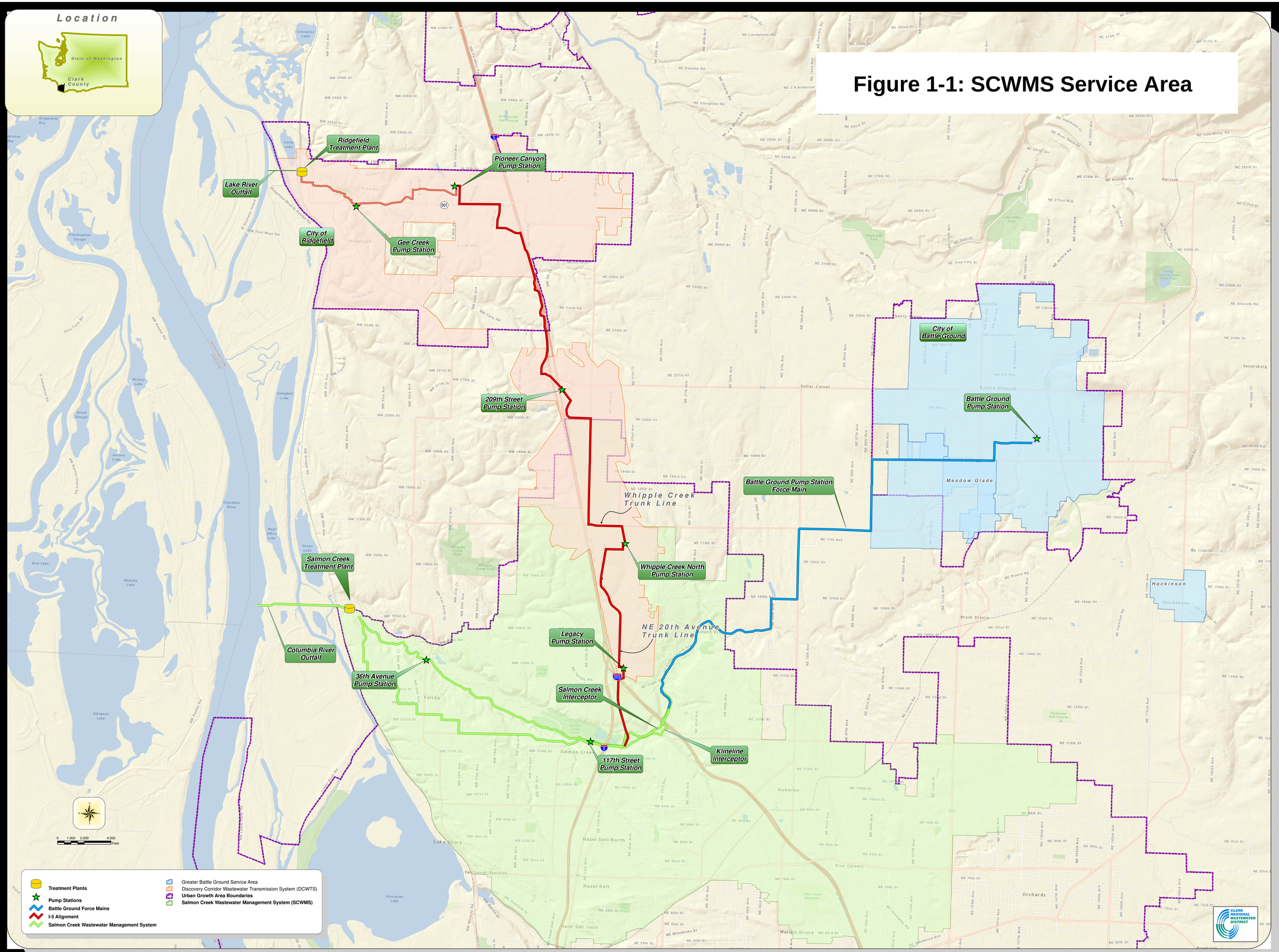
Section 6, Financial. Documentation of changes to system ownership and financial basis.

1.4 Related Documents

This Plan relies on the planning documents prepared by each jurisdiction that contributes to the SCWMS. The following documents are utilized as the basis for this Plan.

- HDSD Comprehensive General Sewer Plan, MacKay & Sposito, March 2001
- Salmon Creek Wastewater Management System Wastewater Facilities Plan/General Sewer Plan, CH2M HILL, June 2004 (2004 Plan)
- National Pollutant Discharge Elimination System (NPDES) Permit WA0023639, reissued March 15, 2012 and included as Appendix A.
- Ridgefield General Sewer Plan/Facilities Plan, Gray and Osborne, December 2007 (Ridgefield GSP/FP)
- Ridgefield Sewer Capital Facilities Plan, Grey and Osborne, 2008
- Salmon Creek Wastewater Treatment Plant Rerating Study, CH2M HILL, January 2009 (Rerating Study), included as Appendix B
- Biosolids Processing and Utilization Review for the Salmon Creek Treatment Plant (SCTP), Brown and Caldwell, September 2010 (Utilization Review), included as Appendix C
- City of Battle Ground General Sewer Plan, Gray & Osborne, 2011 (Battle Ground GSP)
- Salmon Creek Treatment Plant Dewatering Equipment Replacement Project Engineering Report, Brown and Caldwell, May 2011 (Dewatering ER), included as Appendix D
- Draft Discovery Corridor Wastewater Transmission System Engineering Report, OTAK, 2012

Figure 1-1: SCWMS Service Area



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SECTION 2

Background Information

This section updates the demographics of the SCWMS service area to address incorporation of Ridgefield as well as changes reflected in planning documents from contributing jurisdictions.

2.2 Demography and Land Use

The SCWMS provides sewage treatment service to the District, Battle Ground, Ridgefield and the Meadow Glade and Hockinson communities.

2.2.1 SCWMS Service Area

The SCWMS service area is generally shown on Figure 1-1. The service area will expand to include the City of Ridgefield.

Ridgefield

The sewer service area for the City of Ridgefield is contained within the city limits and current planned expansions of their urban growth boundary. The current city limits and the urban growth boundary were amended on December 15, 2009 by Clark County Ord. 2009-12-15 and Ord. 2009-12-21. The City is currently amending their General Sewer Plan to address sewer needs in this UGA.

The City of Ridgefield's current population is estimated at 4,975 (City of Ridgefield Web Site; estimates as of April 1, 2011), and the current city limits are approximately 4,600 acres. With the recent urban growth boundary amendment approved by the Clark County Board of Commissioners in December of 2009, the urban growth boundary for the City encompasses a total area of approximately 6,000 acres (CC Comprehensive Plan amendment, 2009).

2.3 Current Conveyance and Treatment Processes

This section describes the existing SCWMS. System capacity and performance are summarized, and major characteristics and limitations are described.

2.3.3 Existing Design Capacity and Wastewater Flow and Character

Basis of Conveyance System Capacity

The 36th Avenue Pump Station has a design firm peak flow capacity of 13.4 mgd. The 117th Street Pump Station has a design firm peak flow capacity of 18 mgd.

Basis of Treatment Plant Capacity

Based on the Phase 4 expansion, the SCTP has a rated capacity of 11.3 mgd average annual flow, 14.95 mgd maximum month average flow, and 28.3 mgd peak hour flow. Total

suspended solids (TSS) maximum month average daily loading is 28,200 pounds per day (ppd). Biochemical Oxygen Demand (BOD) maximum month average daily loading is 25,400 ppd.

Wastewater Flow and Loading Characteristics

Household sizes, unit flow rates and unit loading rates vary significantly between the District, Battle Ground and Ridgefield. Therefore, these data were developed separately. Table 2-1 presents this information.

TABLE 2-1
Summary of Contributing Wastewater Flow and Load Characteristics

Characteristic/ Jurisdiction	Value	Reference
Household Densities (equivalent population/ERU)		
Battle Ground	2.59	Page 6-2, Battle Ground GSP, June 2009
District	2.43	Table 3-1, SCWMS FP/GSP, July 2004
Ridgefield	2.53	Table I-1, Appendix I, Ridgefield Sewer Capital Facilities Plan, 2008
Per Capita Flow Rate (gallons/capita/day)		
Battle Ground	100	Table 6.6, Battle Ground GSP, June 2009
District	100	Table 3-7, SCWMS FP/GSP, July 2004
Ridgefield	89.6	Ridgefield Sewer Capital Facilities Plan, 2008 and Ridgefield General Sewer Plan/Facilities Plan, December 2007[1]
Per Capita BOD Loading Rate (pounds/capita/day)		
Battle Ground	0.18	Table 3-7, SCWMS FP/GSP, July 2004, and Rerating Study, January 2009[2]
District	0.18	Table 3-7, SCWMS FP/GSP, July 2004, and Rerating Study, January 2009[2]
Ridgefield	0.20	Ridgefield GSP/FP, December 2007[3]
Per Capita TSS Loading Rate (pounds/capita/day)		
Battle Ground	0.18	Table 3-7, SCWMS FP/GSP, July 2004
District	0.19	Table 3-7, SCWMS FP/GSP, July 2004
Ridgefield	0.20	Ridgefield GSP/FP, December 2007[3]

[1] Based on 140 gpcd MM flow, Table I.1, Appendix I, Ridgefield Sewer Capital Facilities Plan, 2008 and ratio of AA:MM flow of 0.64:1 from page 6-16 of City of Ridgefield General Sewer Plan/Facilities Plan
[2] Accounting for BOD reporting error
[3] Based on 0.5 lb/EDU/day (Page 6-17), 2.53 persons/household

TKN Loads

An influent TKN value of 35 mg/L was determined to be appropriate in the 2004 Plan. TKN data for Ridgefield wastewater flows is not available. Given the relatively small proportional contribution of Ridgefield flows, and the similar characteristics of the service area (primarily residential in nature) an influent concentration of 35 mg/L is still considered an appropriate design value. The assumed ratio of TKN:Ammonia is 1.2.

2.3.11 Current Biosolids Management, Production and Characteristics

Biosolids application occurs during the dry weather months in coordination with the crop rotation cycle for the sites. Between land application opportunities and during the wet weather storage period, dewatered biosolids are loaded into the biosolids storage facility bunkers. During the application periods, stored dewatered biosolids are unloaded from the bunkers and transported to the application sites.

Biosolids Production

From the period of 2004 - 2009, the SCTP generated approximately 1,300 dry tons per year of dewatered biosolids. The solids concentration of the biosolids averaged 13.6 percent.

2.3.14 Seasonal Loading Variations

Peaking factors to capture seasonal variability were developed in the 2004 Plan and considered to be representative for the original service area. Values for the original SCTP service area are unchanged from the 2004 Plan and reiterated in Table 2-2.

TABLE 2-2
Summary of Peaking Factors for Original SCWMS Service Area

Flow/Load Condition	Wet Weather (Jan-Apr, Nov-Dec)	Dry Weather (May-Oct)
Flows (mgd)		
Minimum Hour	NA	0.25
Minimum Month	NA	0.78
Average Daily	1.10	0.93
Maximum Month	1.32	1.01
Maximum 7-Day	1.45	1.10
Maximum Day	1.76	1.29
Peak Hour	2.50	NA
BOD (ppd)		
Average Daily	1.05	0.96
Maximum Month	1.23	1.11
Maximum 7-Day	1.40	1.40
Maximum Day	1.98	1.92
TSS (ppd)		
Average Daily	1.03	0.98
Maximum Month	1.31	1.15
Maximum 7-Day	1.54	1.29
Maximum Day	2.07	1.74

NA: Not applicable to sizing of future facilities.

Peaking factors for Ridgefield contributions were developed as part of the Ridgefield Planning efforts and are utilized for Ridgefield contributions. Table 2-3 describes the Ridgefield flow peaking factors, taken from TM 2- RFPS Flow Projections. A maximum month: average annual load peaking factor of 1.4 for Ridgefield wastewater flows is documented on page 6-17 of the Ridgefield GSP/FP and is utilized for Ridgefield contributions.

TABLE 2-3
Ridgefield Flow Peaking Factors

Year	Peak Hour PF
2014	3.2
2024	2.75
2029	2.59
2034	2.5

Observed SCTP plant data should be captured and utilized to develop system-wide peaking factors as part of the next SCWMS facilities planning effort.

2.4.4 Review of Water Quality Regulations and Discharge Permit Requirements

The Environmental Protection Agency (EPA) approved the marine Water Quality Assessment 305(b) report and 303(d) list on December 21, 2012. This is the current water quality assessment and 303(d) list of impaired waterbodies for the state of Washington, including updated assessments for marine waters. The Columbia River in the vicinity of the SCTP outfall discharge has been included for the following parameters:

- Temperature
- DO

These constituents have been on the 303(d) list for some time and were identified in the 2004 Master Plan. That document offers potential water quality, treatment, discharge and permit issues associated with those parameters in Table 2-25.

SECTION 3

Future Conditions

This section provides updated projections for flows and waste loads for the revised SCWMS service area. These values incorporate updated planning values from the contributing jurisdictions, developed subsequent to the 2004 Plan.

Ridgefield contributions are not anticipated until the Discovery Corridor Wastewater Transmission System project is online in 2016. However, for planning purposes, Ridgefield values are included here.

3.1 Planning Period

The planning period for the SCWMS is unchanged from the 2004 plan and is defined by the following schedule:

- 2008—Year 1 of 20-year planning period
- 2013—Year 5 of 20-year planning period
- 2018—Year 10 of 20-year planning period
- 2028—Year 20 of 20-year planning period

Where supporting plans do not specifically align with these planning periods, interpolation is utilized to develop a consistent set of values.

3.2 Future Demography and Land Use

3.2.1 Population Projections

ERU and equivalent population projections for each contributing jurisdiction are described in Table 3-1 at the end of this section. ERU projections are based on their respective GSPs and household densities reflected in Table 2-1.

3.3 Flow and Waste Load

Flow, load, and biosolids projections for the 20-year planning period were made based on system characteristics detailed in Section 2 and population projections described above. Table 3-1 at the end of this section summarizes the population, connection, and flow values for the 20-year planning period.

3.3.1 Future Flows and Loadings

To estimate future annual average flow and loads at the SCTP, historical per capita flow and load data are applied to projected population estimates. Peaking factors are applied to the resulting values to estimate other scenarios necessary for sizing facilities at the SCTP and influent pumping facilities. Table 3-1 summarizes the per capita flow and load factors

established in Section 2 and used for estimating future flow and loads at the SCTP. Peaking factors used are summarized in Section 2.

TABLE 3-2
Per Capita Flow and Load Factors

Parameter	Battle Ground	District	Ridgefield
Per capita flow rate	100 gpcd	100 gpcd	89.6 gpcd
Per capita biochemical oxygen demand (BOD) rate	0.18 ppcd	0.18 ppcd	0.20 ppcd
Per capita total suspended solids (TSS) rate	0.19 ppcd	0.19 ppcd	0.20 ppcd

gpcd = gallons per capita per day
ppcd = pounds per capita per day

Using the per capita factors in Table 3-2, projected flows and loads for the next 20 years were developed. Table 3-3, Table 3-4, and Table 3-5 give the projected flows and loads at the SCTP for 5-, 10-, and 20-year planning periods, including projected variations in seasonal, monthly, weekly, daily, and hourly flow and loads typically required for facility sizing.

Based on information presented in Section 2, an influent TKN concentration of 35 mg/L will be used in this report. As summarized in Table 3-3, Table 3-4, and Table 3-5, this results in a dry weather TKN loading of 3,400 pounds per day (ppd) in 2013, 4,300 ppd in 2018, and 6,600 ppd in 2028.

Summary of Population, Connection, and Flow Projections

Population, connection, and flow projections are summarized in Table 3-1 for each jurisdiction for each year of the planning period.

It should be noted that current SCTP influent flows are consistently less than 2008 projections, as a result of the lack of growth over the last 5 years. The dates presented herein are planning values, consistent with supporting plans. It may be that 2013 projections are not realized until 2018 or later. The flow values and subsequent phasing presented in Section 5, rather than the dates shown should be utilized as the basis for decisions to increase system capacity.

TABLE 3-3
Design Flows and Loads for 5-Year (2008-2013) Planning Interval

Flow/Load Condition	Annual (Jan-Dec)	Wet Weather (Jan-Apr, Nov-Dec)	Dry Weather (May-Oct)
Equivalent Population			
Original Service Area	110,271	-	-
Ridgefield	7,196	-	-
Flows (mgd)			
Minimum Hour	-	-	2.9
Minimum Month	-	-	9.1
Average Daily	11.7	12.9	10.9
Maximum Month	-	15.6	11.8

TABLE 3-3
Design Flows and Loads for 5-Year (2008-2013) Planning Interval

Flow/Load Condition	Annual (Jan-Dec)	Wet Weather (Jan-Apr, Nov-Dec)	Dry Weather (May-Oct)
Maximum 7-Day	-	17.0	12.9
Maximum Day	-	20.6	15.1
Peak Hour	-	29.6	-
BOD (lb/d)			
Average Daily	21,500	22,500	20,700
Maximum Month	-	26,700	24,300
Maximum 7-Day	-	30,000	30,200
Maximum Day	-	42,600	41,300
TSS (lb/d)			
Average Daily	22,400	23,400	21,600
Maximum Month	-	28,300	25,100
Maximum 7-Day	-	34,500	28,800
Maximum Day	-	56,700	38,900
TKN Loadings			
Average Annual	Design Concentration (mg/L)		35
Average Annual	Design Loading (ppd)		3,400

TABLE 3-4
Design Flows and Loads for 10-Year (2008-2018) Planning Interval

Flow/Load Condition	Annual (Jan-Dec)	Wet Weather (Jan-Apr, Nov-Dec)	Dry Weather (May-Oct)
Equivalent Population		-	-
Original Service Area	134,578	-	-
Ridgefield	13,536	-	-
Flows (mgd)			
Minimum Hour	-	-	3.6
Minimum Month	-	-	11.5
Average Daily	14.7	16.1	13.7
Maximum Month	-	19.7	14.9
Maximum 7-Day	-	21.3	16.2
Maximum Day	-	25.9	18.9
Peak Hour	-	37.3	-
BOD (lb/d)			
Average Daily	27,200	28,500	26,200
Maximum Month	-	34,000	31,000
Maximum 7-Day	-	38,200	38,200
Maximum Day	-	53,800	52,200
TSS (lb/d)			
Average Daily	28,300	29,600	27,600
Maximum Month	-	35,900	32,000

TABLE 3-4
Design Flows and Loads for 10-Year (2008-2018) Planning Interval

Flow/Load Condition	Annual (Jan-Dec)	Wet Weather (Jan-Apr, Nov-Dec)	Dry Weather (May-Oct)
Maximum 7-Day	-	43,500	36,400
Maximum Day	-	71,600	49,100
TKN Loadings			
Average Annual	Design Concentration (mg/L)		35
Average Annual	Design Loading (ppd)		4,300

TABLE 3-5
Design Flows and Loads for 20-Year (2008-2028) Planning Interval

Flow/Load Condition	Annual (Jan-Dec)	Wet Weather (Jan-Apr, Nov-Dec)	Dry Weather (May-Oct)
Equivalent Population			
Original Service Area	196,252	-	-
Ridgefield	33,922	-	-
Flows (mgd)			
Minimum Hour	-	-	5.6
Minimum Month	-	-	17.7
Average Daily	22.7	24.9	21.2
Maximum Month	-	30.7	23.0
Maximum 7-Day	-	32.9	25.0
Maximum Day	-	40.0	29.2
Peak Hour	-	56.9	-
BOD (lb/d)			
Average Daily	42,500	44,500	41,000
Maximum Month	-	53,500	49,200
Maximum 7-Day	-	59,600	59,700
Maximum Day	-	84,100	81,600
TSS (lb/d)			
Average Daily	44,000	46,000	42,500
Maximum Month	-	56,300	50,600
Maximum 7-Day	-	67,800	56,700
Maximum Day	-	111,600	76,600
TKN Loadings			
Maximum Month	Design Concentration (mg/L)		35
Maximum Month	Design Loading (ppd)		6,600

TABLE 3-1
Summary of Salmon Creek Service Area Projections

Date	ERUs					Equivalent Population					Average Annual Flow (mgd)					Maximum Month Flow (mgd)				
	Battle Ground	District	Meadow Glade/ Hockinson	Ridgefield	Total	Battle Ground	District	Meadow Glade/ Hockinson	Ridgefield	Total	Battle Ground	District	Meadow Glade/ Hockinson	Ridgefield	Total	Battle Ground	District	Meadow Glade/ Hockinson	Ridgefield	Total
31-Dec-09	7,924	29,548	832	1,862	39,720	19,368	71,802	2,023	4,711	97,726	1.94	7.18	0.20	0.42	9.74	2.56	9.50	0.27	0.66	12.99
31-Dec-10	7,924	30,730	854	1,862	41,370	20,523	74,674	2,075	4,711	101,798	2.05	7.47	0.21	0.42	10.15	2.72	9.88	0.27	0.66	13.53
31-Dec-11	8, 373	31,959	879	2,189	43,401	21,686	77,661	2,136	5,539	106,832	2.17	7.77	0.21	0.50	10.64	2.87	10.28	0.28	0.78	14.20
31-Dec-12	8,822	33,238	904	2,517	45,481	22,849	80,767	2,198	6,368	111,983	2.28	8.08	0.22	0.57	11.15	3.02	10.69	0.29	0.89	14.89
31-Dec-13	9,272	34,567	930	2,844	47,613	24,014	83,998	2,259	7,196	117,467	2.40	8.40	0.23	0.64	11.67	3.18	11.11	0.30	1.01	15.60
31-Dec-14	9,723	35,950	955	3,172	49,799	25,183	87,358	2,320	8,024	122,885	2.52	8.74	0.23	0.72	12.21	3.33	11.56	0.31	1.12	16.32
31-Dec-15	10,176	37,388	980	3,499	52,043	26,356	90,852	2,381	8,852	128,442	2.64	9.09	0.24	0.79	12.75	3.49	12.02	0.32	1.24	17.06
31-Dec-16	10,628	38,883	1005	4,116	54,632	27,527	94,486	2,442	10,413	134,868	2.75	9.45	0.24	0.93	13.38	3.64	12.50	0.32	1.46	17.92
31-Dec-17	11,082	40,439	1017	4,733	57,272	28,702	98,266	2,472	11,974	141,415	2.87	9.83	0.25	1.07	14.02	3.80	13.00	0.33	1.68	18.80
31-Dec-18	11,537	42,056	1029	5,350	59,972	29,881	102,196	2,501	13,536	148,114	2.99	10.22	0.25	1.21	14.67	3.95	13.52	0.33	1.89	19.70
31-Dec-19	11,993	43,738	1042	5,967	62,740	31,062	106,284	2,531	15,097	154,973	3.11	10.63	0.25	1.35	15.34	4.11	14.06	0.33	2.11	20.62
31-Dec-20	12,450	45,488	1054	6,584	65,576	32,246	110,535	2.561	16,658	162,000	3.22	11.05	0.26	1.49	16.03	4.27	14.62	0.34	2.33	21.56
31-Dec-21	12,910	47,307	1066	7,741	69,024	33,437	114,957	2,590	19,585	170,569	3.34	11.50	0.26	1.75	16.85	4.42	15.21	0.34	2.74	22.72
31-Dec-22	13,369	49,200	1098	8,898	72,566	34,626	119,555	2,669	22,513	179,363	3.46	11.96	0.27	2.02	17.70	4.58	15.82	0.35	3.15	23.90
31-Dec-23	13,830	51,168	1130	10,056	76,184	35,820	124,337	2,747	25,441	188,345	3.58	12.43	0.27	2.28	18.57	4.74	16.45	0.36	3.56	25.12
31-Dec-24	14,298	53,214	1163	11,213	79,887	37,032	129,311	2,825	28,368	197,535	3.70	12.93	0.28	2.54	19.46	4.90	17.11	0.37	3.97	26.35
31-Dec-25	14,755	55,343	1195	12,370	83,663	38,215	134,483	2,903	31,296	206,898	3.83	13.45	0.29	2.80	20.36	5.06	17.79	0.38	4.38	27.61
31-Dec-26	15,220	57,557	1227	12,716	86,720	39,420	139,863	2,982	32,171	214,436	3.94	13.99	0.30	2.88	21.11	5.22	18.51	0.39	4.50	28.62
31-Dec-27	15,686	59,859	1259	13,062	89,866	40,627	145,457	3,059	33,047	222,190	4.06	14.55	0.31	2.96	21.88	5.38	19.25	0.40	4.63	29.65
31-Dec-28	16,154	62,253	1292	13,408	93,107	41,839	151,275	3,139	33,922	230,175	4.18	15.13	0.31	3.04	22.66	5.54	20.01	0.42	4.75	30.71

Biosolids Projections

Biosolids quantities were projected by applying modeled plant performance to the projected flows and loads discussed above. Table 3-6 summarizes the biosolids projections. Projected influent loads are shown in the first two rows and the various process assumptions are provided in the notes.

TABLE 3-6
Solids Production for 20-Year (2008-2028) Planning Period

Year	5-Year (2008-2013) Planning Interval	10-Year (2008-2018) Planning Interval	20-Year (2008-2028) Planning Interval
Influent Loads			
Average annual BOD (ppd)	21,500	27,200	42,500
Average annual TSS (ppd)	22,400	28,300	44,000
Primary Sludge Production			
TSS (ppd)	11,200	14,200	22,000
VSS (ppd)	9,500	12,000	18,700
Volume (gpd)	31,200	39,500	61,300
WAS Production			
TSS (ppd)	12,800	16,200	25,300
VSS (ppd)	10,900	13,800	21,500
Volume (gpd)	180,000	228,000	357,600
TWAS Production			
TSS (ppd)	11,500	14,600	22,800
VSS (ppd)	9,800	12,400	19,400
Volume (gpd)	25,100	31,700	49,700
Digester Feed			
TSS (ppd)	22,700	28,700	44,800
VSS (ppd)	19,300	24,400	38,100
Volume (gpd)	56,300	71,200	111,100
Digested Sludge			
TSS (ppd)	9,200	11,600	18,100
VSS (ppd)	5,800	7,300	11,400
Dewatered Sludge			
Volume (DT/year)	1,400	1,800	2,800

These biosolids projections are based on the following assumptions about plant performance characteristics:
- Primary Clarifier performance: 50% TSS removal, 30% BOD removal.
- Primary sludge: 4.3% solids, VSS/TSS = 0.85.
- WAS production = 0.85 lb WAS/lb BOD applied to secondary process.
- WAS: 0.85% solids, VSS/TSS = 0.85.
- WAS thickened to 5.5% solids before blending and digestion.
- Thickening capture rate = 90%.
- Digester performance: 70% VSS reduction.
- Dewatering capture rate = 85%.

SECTION 4

Alternatives Analysis

This section documents updated criteria and analyses.

4.2 Design Criteria

The design criteria described below form the basis for alternative evaluations and system planning presented in this section and in Section 5.

4.2.1 Flows

Projected flows within the 20-year planning horizon are developed in Section 3.3.1 and are summarized in Table 3-3, Table 3- 4, and Table 3-5. These represent the values expected at the SCTP throughout the planning horizon.

4.2.2 Nutrients

Projected nutrient loading within the 20-year planning horizon is developed in Section 3.3.1 and summarized in Table 3-3, Table 3- 4, and Table 3-5.

4.2.5 Biosolids

Biosolids quantities were projected in Section 3.3.1. Table 3-6 summarizes these projections and the major assumptions used in their development. These biosolids projections form the basis for sizing and evaluating the solids handling portions of the future expansions.

4.2.7 Treatment Requirements

The treatment plant currently operates under NPDES Permit No. WA-0023639, issued on March 15, 2012. Under the terms of this permit, included as Appendix A, the SCTP is required to provide secondary treatment for wastewater discharged to the Columbia River.

The effluent limits and requirements for the SCTP are defined in Section S1.A of the NPDES permit. The treated effluent discharge has both mass load and concentration limits for 5-day BOD (BOD_5) and TSS. These are shown in Table 4-1.

TABLE 4-1
SCTP NPDES Discharge Requirements

Parameters	30-Day Average [a]		7-Day Average [a]	
Biochemical Oxygen Demand, BOD_5[b]	30 mg/L	3,741 ppd	45 mg/L	5,612 ppd
Total Suspended Solids, TSS[b]	30 mg/L	3,741` ppd	45 mg/L	5,612 ppd
Fecal Coliform	200/100 mL		400/100 mL	
Total Ammonia (as NH_3-N)	18.7 mg/L		37.5 mg/L (Max Daily)[b]	
pH	Shall be between 6.0 and 9.0 standard units			

TABLE 4-1
SCTP NPDES Discharge Requirements

Parameters	30-Day Average [a]	7-Day Average [a]

[a] Arithmetic mean except for fecal coliform, which is a geometric mean.

[b] Highest allowable daily discharge (average measurement of the pollutant measured during a calendar day)
mg/L = milligrams per liter.
mL = milliliter.
ppd = pounds per day.

These current mass load limits are based on the state regulation for secondary treatment standards (WAC 173-221-040). The permit further requires 85 percent removal of BOD_5 and TSS. Treated effluent also includes limitations for bacteria (fecal coliform) and pH. These discharge limits and requirements are specific for the treated effluent. No untreated emergency sanitary sewer bypasses are allowed in the SCTP NPDES Permit.

These limits provide the basis for the phasing of the Recommended Alternative, described in Section 5.

4.5 Alternative Treatment Process Evaluation

Modifications to the design criteria do not materially change the recommended treatment improvements for the SCTP for the planning horizon. Rather, the timing and implementation of improvements is modified. This is described in detail in Section 5.

4.6 Biosolids Management Evaluation

In September 2010, Brown and Caldwell completed the Biosolids Processing and Utilization Review (Utilization Review) for the Salmon Creek Treatment Plant (SCTP). This Plan Update relies on the alternative evaluation and recommendations documented in that work. Details and findings are taken directly from that work and reiterated below.

4.6.1 Alternatives Development and Analysis

Biosolids treatment and management options were developed and combined into comprehensive alternatives for the biosolids program. An evaluation was provided which considered both cost and non-cost criteria to benefit the decision making process for future improvements at SCTP.

The elements of the biosolids treatment and management options were combined into several comprehensive alternatives to provide a holistic approach to evaluating biosolids management for the County. The following biosolids management alternatives were proposed:

1. Class B digestion and optimized land application

2. Class B digestion and 100 percent local land application with extended storage

3. Class B digestion and 100 percent long-haul land application

4. Digestion and offsite composting to produce a Class A soil amendment

5. Thermal drying of biosolids at the Westside Facility to produce a Class A fertilizer product

6. Onsite thermal drying at SCTP using natural gas to produce a Class A fertilizer product

7. Class A digestion and optimized land application

8. Seasonal thermal drying at SCTP using digester gas to produce approximately 30 percent dried product with continued Class B land application

Cost Evaluation

A 20-year NPV analysis was conducted using 2009 dollars. Results of this analysis are presented in Table 4-2. The 20-year NPV analysis was calculated using a 3.5 percent inflation rate and 5 percent discount rate.

TABLE 4-2
Biosolids Management NPV Analysis

Alternative	Description	Capital Cost, dollars	Operating Cost, dollars	20-year NPV, dollars
1	Class B digestion and optimized land application	1,496,000	253,000	7,884,000
2	Class B digestion and 100 percent local land application with extended storage	6,559,000	235,000	12,012,000
3	Class B digestion and 100 percent long-haul land application	1,496,000	359,000	9,967,000
4	Digestion and offsite composting at the Westside Facility to produce a Class A soil amendment	1,496,000	463,000	12,416,000
5	Thermal drying of biosolids at the Westside Facility to produce a Class A fertilizer product	7,316,000	22,000	7,477,000
6	Onsite thermal drying at SCTP using natural gas to produce a Class A fertilizer product	4,982,000	252,000	12,974,000
7	Class A digestion and optimized land application	6,840,000	591,000	19,386,000
8	Seasonal thermal drying at SCTP using digester gas to produce approximately 30 percent dried product with continued Class B land application	4,285,000	324,000	11,814,000

Based on the NPV analysis, Alternatives 1 and 5 represent the most economically competitive approaches to biosolids management for the County and SCTP. Alternative 1 aims to optimize land application of biosolids by increasing local land application while maintaining land application in Central Washington. This approach offers significant flexibility with respect to locations for biosolids land application while minimizing capital costs. Alternative 5 includes thermal drying using waste heat from the Westside Facility incinerator to produce a Class A biosolids product. A regional thermal dryer at the Westside Facility would also allow the City of Vancouver to dry incinerator ash, greatly reducing their ash disposal costs. A teamed approach with Vancouver is required, resulting in mutual benefits for both agencies.

Nonmonetary Evaluation

Non-cost criteria were developed to add perspective to the evaluation of alternatives. In general, alternatives with Class A technology score higher. Alternatives that produce a marketable biosolids product are also favored. Class B alternatives bear some risk of changing regulations and public acceptance. Alternative 6 has the greatest potential to reduce truck traffic out of SCTP. Class A product will have fewer regulatory siting requirements and costs relative to Class B products.

Scoring for non-cost criteria were developed. Alternatives 5 and 6 (thermal drying) have the highest non-cost scores. Alternative 6 has a high score, in part because it would reduce truck traffic out of the SCTP, but it also has a high cost. Alternative 5 has the highest non-cost score in addition to the lowest 20 year NPV cost, making this the preferred alternative. Alternative 1 (Optimized land application) had a relatively low non-cost score due to continuing uncertainty about cost and land availability.

Summary

Conclusions and recommendations are reiterated below:

- Each of the comprehensive alternatives will benefit from a dewatering upgrade at SCTP. The current recommendation is to look further at screw press dewatering due to a combination of factors including performance, operability, and low energy consumption. Additional pilot testing and visits to local installations will be conducted during predesign. Investment in the dewatering upgrade will have a payback in less than 9 years due to savings on biosolids handling and transportation. The recommended approach includes minimizing size and redundancy of new equipment and using at least one existing BFP for backup.
- To increase local land application of biosolids, permitting of additional local sites was recommended. Optimized local and long-haul biosolids utilization is the most cost-effective biosolids utilization alternative. It is relatively easy to implement and provides immediate benefits until a final determination of thermal drying feasibility is reached. Continuing with the NSF (long-haul) contract for off-season is also recommended as an optimization measure.
- Indirect dryers appear to be the most versatile equipment for SCTP alternatives, considering footprint and available sources of fuel. The most significant cost of the system is natural gas usage, which can be reduced by using excess biogas or waste heat. Further investigation into thermal drying at the Westside Facility utilizing waste heat from the plant incinerator provides a cost-effective solution to producing dried Class A biosolids. Technical issues and the approach to financing require further development during a more detailed predesign study.
- An economic analysis for the installation of IC engines at SCTP shows that this option does not have a positive NPV, and therefore gas utilization was not included in the biosolids management alternatives with the exception of seasonal thermal drying (Alternative 8). Additional funding or economic incentives for CHP systems may warrant reconsideration at a future time.

SECTION 5

Recommended Alternative

This section presents the recommended alternative for the 20-year planning period (2008 to 2028), including conveyance improvements, treatment improvements, and outfall improvements.

5.1 Conveyance Improvements

5.1.1 Salmon Creek Interceptor

The Salmon Creek Interceptor from Betts Bridge to I-205 has experienced severe corrosion due to elevated levels of hydrogen sulfide exposure, likely resulting from the introduction of Battle Ground force main flow, prior to implementation of a chemical injection system.

CCTV inspection data from January 2009 shows severe damage through the first several hundred feet immediately downstream of the old Battle Ground force main discharge (Corbin Road to NE 128th Street). The exposed pipe rebar cage along these segments provides a clear indication of the extent of the corrosion. These segments are clearly structurally compromised and require rehabilitation. Further downstream the pipe is severely corroded with some infiltration at pipe joints and cracks in the pipe. It is apparent from the CCTV that these segments require rehabilitation.

5.1.2 Pump Stations

36th Avenue Pump Station

Replacement of the 36th Avenue pumps is recommended as the pumps are approaching the end of their useful life.

117th Street Pump Station

Expansion of the 117th Street Pump Station (formerly called the Klineline Pump Station) will be required when total peak flow to the SCTP exceeds 31.8 mgd. At current peaking factors, this equates to a maximum month flow of approximately 18 mgd.

5.2 Salmon Creek Treatment Plant

This section documents the recommended improvements for the planning horizon, as well as the phasing of those improvements, by unit process.

The recommended development plan for the SCTP is divided into phases for the twenty-year planning period. While the phasing is developed to match stated flow projections for the planning horizon, the intent is to develop a Phased CIP based on flow, rather than hard dates. This allows for appropriate investment in the facility, consistent with the rate of economic growth.

Appendix F in the Facilities Plan provided unit process sizing calculations. These calculations are updated as applicable, building on calculations from the 2009 Rerating study and included in Appendix B. The criteria used for this evaluation are the same as those used in the 2004 Wastewater Facilities Plan/General Sewer Plan with the exception of SRT and Yield, as discussed below, as well as the accounting for nitrification in the calculations for blower demand. An updated Appendix F is included for agency planning purposes; prior to implementation of subsequent phases, additional technical evaluation is required, including development of an updated Facilities Plan/Engineering Report based on site specific data.

5.2.1 Preliminary Treatment

An additional screen and screenings press will be required as part of Phase 6 improvements to meet projected flows.

Grit system will require minor modifications during Phase 6 improvements to remove CMU blocks currently in influent channel.

It is assumed that odor control for the preliminary treatment facility will be required as part of the Phase 6 improvements.

5.2.2 Primary Treatment

It is assumed that odor control for the primary clarifiers will be required as part of the Phase 6 improvements.

One additional primary clarifier will be required as part of each of the Phase 7 and 8 improvements.

5.2.3 Secondary Treatment

Yield is the mass of bacteria grown per pound of BOD removed. Yield controls aeration basin sizing by dictating the mass of BOD that can be treated without exceeding the mass of bacteria that can be stored in the aeration basin. Figure 5-1 highlights plant secondary performance for most of 2010. Beginning mid-year, plant operations staff made a change in how they operate the secondary process, shifting to a SRT of 5.5 day, and moved into a more stable nitrification regime. The corresponding change in secondary yield can be clearly observed. Plant performance under this operating condition has been consistent since that time. For this reason, a secondary yield value of 0.85 is utilized as the basis for secondary process sizing.

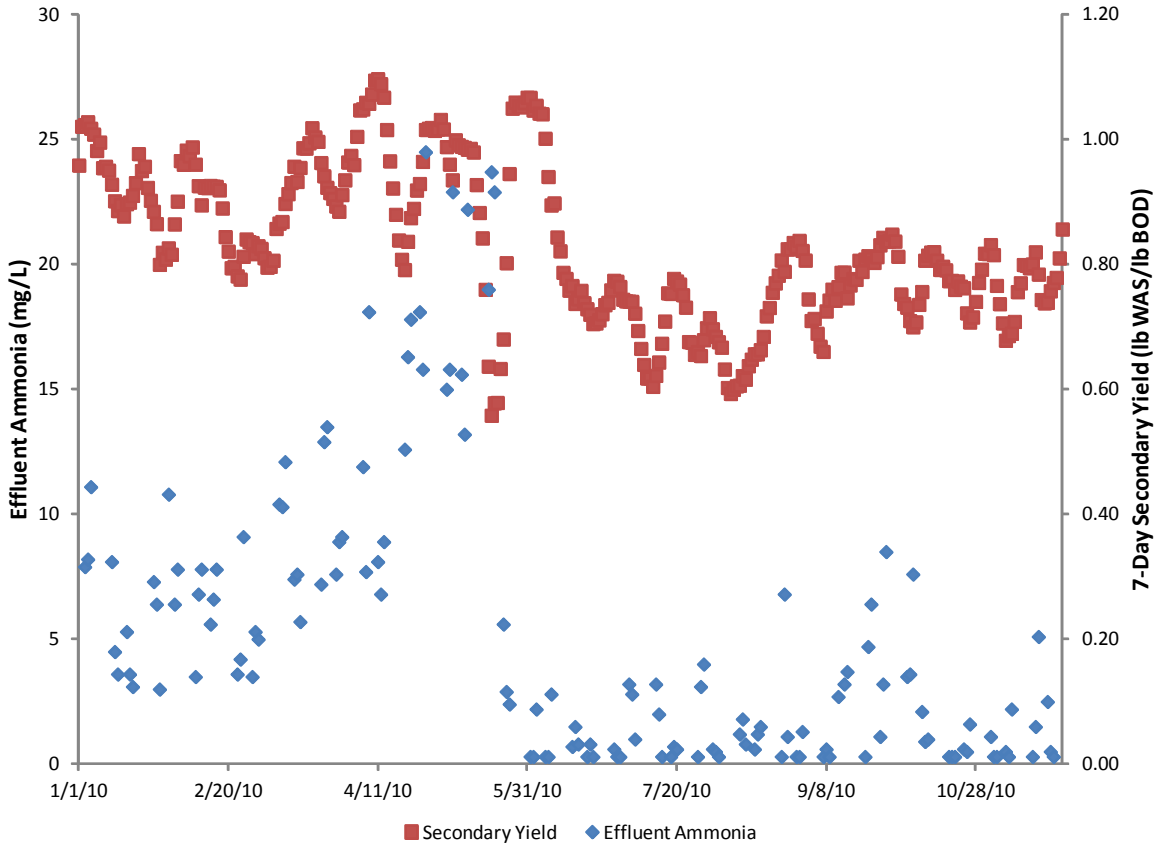

FIGURE 5-1. 2010 SECONDARY PROCESS PERFORMANCE

The Phase 5 Expansion will include one new aeration basin, similar to Aeration Basins 5 and 6.

A new large blower, similar to those serving Aeration Basins 5 and 6, a new 120-foot-diameter secondary clarifier, a new ML splitter box, and a new RAS/WAS pump station will be required as part of the Phase 6 Expansion. Secondary Clarifier 1 will be demolished at this time.

One additional aeration basin will be required as part of each of Phase 7, 8 and 9 expansions. This will require demolition of Secondary Clarifier 2 and construction of an additional 120-foot-diameter clarifier as part of Phase 8. Two additional large blowers will be required as part of Phase 8 and 9 expansions.

5.2.4 Disinfection

A parallel channel and UV unit will be included in the Phase 6 expansion. For the purposes of this document, an identical unit is assumed.

5.2.5 Effluent Conveyance

County staff has observed movement of the bank near the existing outfall over the last several years. Monitoring of outfall status and shoreline condition is recommended to allow for early notification and response for protection/replacement if needed.

A new outfall will be constructed as part of the Phase 5 expansion. It is assumed that a new 48-inch diameter outfall and diffuser designed to accommodate the projected ultimate peak hour flow would be constructed. Alternatively, the new outfall could be designed to supplement the existing 30-inch diameter outfall so that both pipes in tandem could handle the ultimate peak hour flow projection.

Once the Phase 5 improvements are in place, full inspection and rehabilitation of the existing 30-inch outfall and diffuser is recommended if continued use is anticipated.

5.2.6 Solids Handling

WAS Thickening

The nitrification requirement has resulted in a significant reduction in the net biological yield of the facility and therefore reduced the amount of WAS produced from the secondary process. The existing GBTs have capacity to serve the SCTP throughout the planning horizon. They will need to be operated more hours each day and/or more days each week to meet the processing requirements. While these units are currently in good condition, based on their age, replacement may need to occur towards the end of the planning horizon if their condition deteriorates significantly.

Anaerobic Digesters

A third digester is required as part of the Phase 7 Expansion. This improvement may not be required if a Class A solution in partnership with Vancouver is implemented.

Dewatering

As described in the *Dewatering ER* a dewatering screw press will be installed as part of the Dewatering Equipment Replacement Project. One of the existing belt filter presses will be maintained for redundancy. The resulting dewatering system will serve the SCTP throughout the planning horizon.

Biosolids Storage Bunkers

For the duration of the 20-year planning period, the existing storage bunker capacity will be utilized to the extent possible. Dewatered sludge cake in excess of that capacity will be hauled both locally and to eastern Washington as needed so that the combination of bunker storage and hauling is sufficient for the SCTP needs.

5.2.6a Electrical and Control Systems

The County is considering implementation of electrical modifications at Building 35 to improve system reliability. This may include elimination of the 250 kW standby generator, and transfer of those loads to the 1,500 kW generator, or replacement of the 250 kW generator with a larger capacity unit to provide additional backup power capacity. These

modifications are necessary to improve the reliability of the automatic transfer mechanism, and would provide staff with more flexibility in powering systems during a power outage.

Upgrades of older PLCs throughout the facility to newer technology has also been identified as a potential improvement, to be implemented as support for existing PLC software is phased out by the manufacturer.

5.2.12 Costs

Table 5-1 identifies the major components of each phase of improvements, and the construction cost and project cost associated with each. Costs presented herein are order of magnitude costs based on actual costs from SCTP Phase 3 and Phase 4 projects or similar local projects. Construction costs are escalated to January 2011 dollars and include 8.2% sales tax. Project costs include 30% for engineering, legal expenses, and administration costs.

TABLE 5-1
SCTP 20-Year Expansion Costs

Capital Improvement Projects	Construction Cost ($M)	Project Cost ($M)
Phase 5		
Aeration Basin 7	$3.75	$4.87
Parallel Outfall to Columbia River	$8.29	$10.78
Site Improvements	$0.19	$0.24
Phase 6		
Influent Screen 3	$0.34	$0.45
Primary Clarifier Covers/Odor Control System	$2.48	$3.22
Blower Addition	$1.06	$1.38
Secondary Clarifier 5/Demolish Secondary Clarifier 1	$3.07	$3.99
RAS/WAS Pump Station 2	$2.41	$3.14
UV Disinfection Channel 2	$2.58	$3.36
Site Improvements	$1.68	$2.18
Phase 7		
Primary Clarifier 5	$2.29	$2.97
Aeration Basin 8	$3.75	$4.87
Anaerobic Digester 3	$3.45	$4.48
Site Improvements	$1.33	$1.73
Phase 8		
Primary Clarifier 6	$2.29	$2.97
Aeration Basin 9/Blower Addition	$4.81	$6.25
Secondary Clarifier 6/Demolish Secondary Clarifier 2	$3.07	$3.99
Site Improvements	$1.42	$1.85
Phase 9		
Aeration Basin 10/Blower Addition	$4.81	$6.25
Site Improvements	$0.24	$0.31

5.6 Summary

Table 5-2 summarizes the major components of each phase of improvements, cost, flow trigger and associated capacity. Figure 5-1 also generally reflects this information. It should

be noted that the growth projections shown in Figure 5-2 drive the stepped capacity presented. The flow triggers identified in Table 5-2, rather than the dates shown, should be utilized as the basis for decisions to increase system capacity. The expansion flow trigger represent the point at which new capacity must be online. Consistent with Ecology requirements planning for each expansion must begin once flows reach 85% of the rated capacity. This is reflected in Table 5-2.

TABLE 5-2
SCTP Phasing and Costs

Capital Improvement Projects	Project Cost ($M)	Planning Flow Trigger[1] (mgd)	Expansion Flow Trigger[1] (mgd)	Capacity Provided (mgd)
Phase 5	$15.9	12.71	14.95	18.00
Aeration Basin 7				
Parallel Outfall to Columbia River				
Phase 6	$17.7	15.30	18.00	19.60
Influent Screen 3				
Primary Clarifier Covers/Odor Control System				
Blower Addition				
Secondary Clarifier 5/Demo Secondary Clarifier 1				
RAS/WAS Pump Station 2				
UV Disinfection Channel 2				
Phase 7	$14.1	16.66	19.60	23.80
Primary Clarifier 5				
Aeration Basin 8				
Anaerobic Digester 3				
Phase 8	$15.1	20.23	23.80	27.00
Primary Clarifier 6				
Aeration Basin 9/Blower Addition				
Secondary Clarifier 6/Demo Secondary Clarifier 2				
Phase 9	$6.6	22.95	27.00	30.70
Aeration Basin 10/Blower Addition				
Other Planned System Improvements				
Dewatering Equipment Replacement	$1.6			
36th Avenue Pump Station Pump Replacement	$0.8			
117th Street Pump Station Upgrade	$9.5			

[1] Maximum Month basis

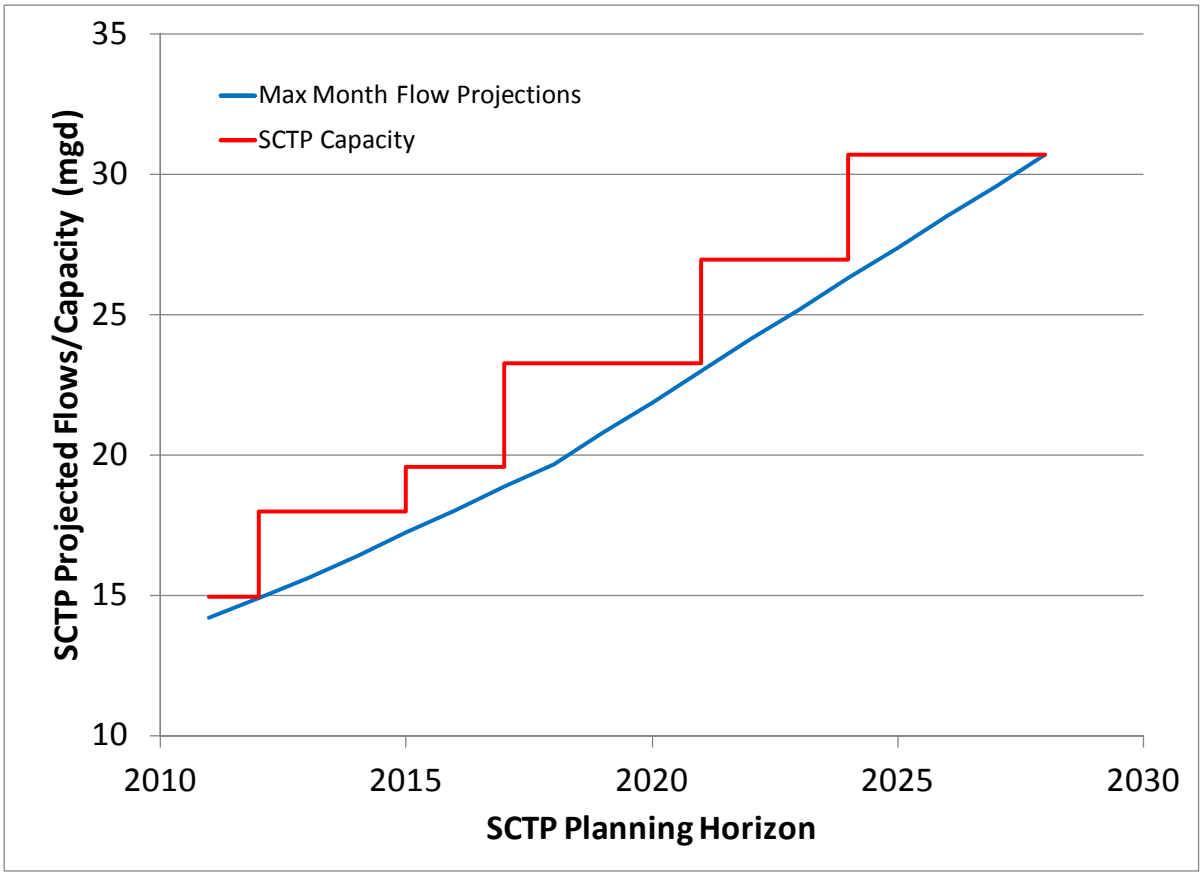

FIGURE 5-2
Planned Capacity of SCTP vs. Growth Projections

SECTION 6

Financial Considerations

This section presents additional financial information, beyond that included in the 2004 Plan, to address the capital financial considerations for the Discovery Corridor Wastewater Transmission System project (DCWTS) as an integral part of forming a new regional sewer utility (Sewer Utility). The rate information presented in the 2004 Plan for Battle Ground is unchanged, since that City does not plan to utilize any capacity provided by the DCWTS project. The rate information presented in the 2004 Plan for the District is modified herein as a result of the additional capital expenditure associated with the DCWTS project.

The Sewer Utility will initially serve the north central area of Clark County (also known as the Discovery Corridor). The DCWTS project infrastructure is necessary to enable the Cities of Battle Ground and Ridgefield, Clark Regional Wastewater District (District), and Clark County (collectively referred to as Partners), to equally access key regional wastewater management services, maximize use of existing facilities, and provide the best opportunity for economic growth in the area.

Regionalization helps to respond to these opportunities by leveraging collective interest and resources to accomplish what would otherwise be unaffordable and/or outside of their own authority/control. In Ridgefield's case, the regional assets will provide more and larger blocks of capacity to attract economic development than it could otherwise afford in the near term (10 years). A regional platform allows jurisdictions to share in and better manage the risk of building too much or too little capacity.

The DCWTS project presents some unique financial considerations for the Partners as they allocate the initial capital costs. This chapter addresses the financial considerations directly associated with the initial capital costs for the DCWTS project and is organized as follows:

- DCWTS Project costs
- Financial capability
- Capital financing plan
- User charges
- Implementation plan

6.1 DCWTS Project Costs

The new regional sewer utility will be formed by the Partners using an "asset-based" approach. Under this approach, each Partner "purchases" capacity in the specific assets they plan to use. Since wastewater infrastructure can take years to plan, permit, design, build and commission (7 to 10 years is common); distribution of capital costs are proportional to projected demand for each jurisdiction. A long term demand forecast is made for each asset a Partner plans to use and they pay a commensurate share based on their planned capacity relative to the total capacity used by all Partners.

The Partners have decided to implement the DCWTS project in up to seven (7) phases as shown in Table 6-1. This has been done because the total capital costs to serve the projected

"buildout" condition approaches $51 million and the financial burden this would place on existing ratepayers. The schedule for each phase will be dependent upon how demands and economic development opportunities evolve. The phasing in Table 6-1 is in accordance with the agreed upon population and employment estimates for the service area. As illustrated, only Ridgefield and the District currently plan to have capacity in the DCWTS project assets. Consequently, DCWTS project capital costs will be distributed to only these two Partners in accordance with the design capacity in each DCWTS project element and each phase. Other Partners may access these assets in the future after purchasing capacity in a subsequent phase and/or unused capacity from another Partner.

TABLE 6-1
DCWTS Project Capital Cost by Phase

		Capital Cost ($1000)		
Phase	Year On Line	Total	Ridgefield(1)	District(1)
1	2016	$ 23,500	$ 18,290	$ 5,209
2	2018	$ 2,270	$ 454	$ 1,816
3	2019	$ 6,000	$ 6,000	$ -
4	2026	$ 2,950	$ 1,355	$ 1,594
5	2032	$ 4,800	$ 3,127	$ 1,673
6	2034	$ 11,150	$ 11,150	$ -
7	2038	$ 725	$ 725	$ -
Total		**$ 51,395**	**$ 41,058**	**$ 10,291**

Notes: All costs in 2011 dollars
(1) Jurisdiction's responsible portion of the total capital costs

The first four (4) phases are expected to meet the region's demands for 20 years under the growth scenario agreed upon by the Partners. However, the $23.5 million capital cost for Phase 1 by 2016, drives the financial approach for the Partners. Operational costs are distributed among the Partners proportional to the actual use of the assets.

6.2 Financial Capability

Wastewater rates have usually been much lower in larger systems because of economies of scale; this is also evident in Clark County as you compare the smaller to larger sewer utilities. Consequently, affordability is one of the key factors for regionalization in the Discovery Corridor. As more stringent environmental requirements are adopted, affordability problems may become evident for larger utility systems too.

The financial capacity of each Partner is largely a factor of their number of customers, median household income (MHI) and outstanding debt. For Ridgefield, their financial capacity is especially sensitive to the magnitude of up front capital costs. This is because the existing number of customers is forecast to increase by about 250 percent (see Table 6-2); the current customer base represents only 30 to 35 percent the forecasted amount through the 20-year financial planning period. However, Ridgefield is believed to have the largest potential for near-term economic development to stimulate the local economy. The District has the largest rate base (over 15 times that of Ridgefield) and only one-third of the DCWTS

project capital commitments in the same period. Battle Ground and the County currently do not have a capacity interest and consequently no capital investments in the DCWTS Project; therefore financial considerations for Battle Ground and Clark County are not discussed further in this chapter.

TABLE 6-2
District and Ridgefield ERU Forecast

Year	2012	2017	2022	2027	2031
District	34,748	36,848	39,548	42,848	45,648
Ridgefield	1,977	2,543	3,246	4,137	4,976

As noted Ridgefield proportionally grows by about 250 percent but the District actually adds more customers.

Concern for the ability of residents to pay for utility bills is an ongoing issue, particularly under current economic conditions. To assess the ability of ratepayers to pay for infrastructure programs the EPA established a benchmark of two percent of the Median Household Income (MHI) as the maximum threshold for affordability. Rates below this amount are considered affordable. For Ridgefield, rates would need to approach $120/month and about $90/month for the District to reach this benchmark. Since paying for utility services represents a much higher burden on lower income residents, it is not unusual for the MHI affordability indicator to be well under the two percent threshold for a system as a whole, but for lower income residents, the financial impact of the rates may range from four to eight percent of MHI. As a result, lower income residents may face difficult financial choices (e.g., late or nonpayment of bills, reduced service levels) in meeting basic service needs. Affordability problems may be evident through increasing arrearages, late payments, disconnect notices, service terminations, and uncollectible accounts, etc.) Reduced revenue collections could endanger the utility's financial stability and bond rating as well as create public relations problems. As illustrated in Table 6-3, current rates (excluding local taxes and surcharges) for both Ridgefield and the District are below the 2 percent MHI index established by the EPA.

TABLE 6.3
Current rates and Sewer Development Charges (SDC) fees

	Monthly Rate		Sewer Development Charges
	($/mo)	(% Affordability threshold)	($ per ERU)
District	$34	35%	$6,342
Ridgefield	$55	45%	$7,700 (Programmed to be $10,090 in 2014)

The Partners plan to finance most of the DCWTS project capital costs since the sewer infrastructure will meet forecast capacity demands over a 20 to 30-year period. Capital financing also allows the Partners to better distribute the costs to users over time commensurate with the infrastructure service life of 30 to 50+ years. The Phase 1 DCWTS project capital costs will be financed using a combination of market-based and state administered loan funds.

The financial approach outlined on Figure 6-1 was used to determine the cost allocation and set appropriate rates and fees for financing. This will assure revenues are adequate to fund the Phase 1 DCWTS project, meet financial creditworthiness and establish the financial capacity to cover planned improvements over the next 20 years while maintaining operations.

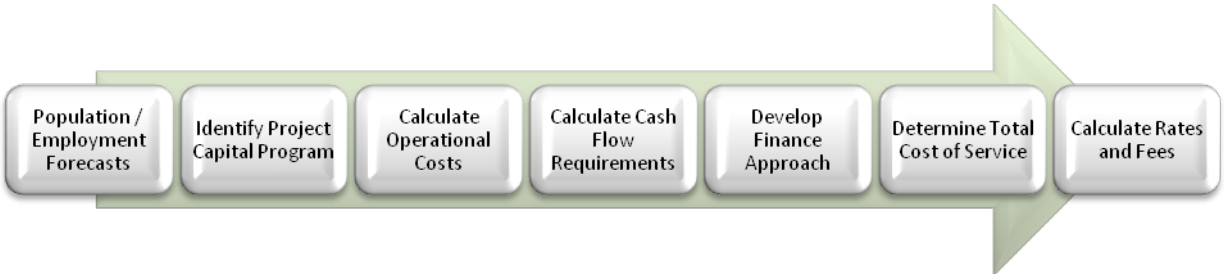

FIGURE 6-1
Financial Planning Approach

6.3 Finance Plan

This section summarizes the financial considerations for the Sewer Utility in preparation for implementing the Phase 1 DCWTS project. A financial plan was developed to assure the Sewer Utility had the financial capacity to pay for this and other improvements while maintaining operations. In order to increase financial capacity with minimal impact to the ratepayers, the Sewer Utility May need to:

1. Increase the existing connection charges.
2. Increase the user charges.
3. Issue Bonds to Finance Capital Projects. The increased user charges and connection fees create financing capacity for the Sewer Utility to issue bonds through 2016 for the construction of the planned capital improvements.
4. Minimize Impact to Ratepayers. The proposed financing plan offers the lowest overall impact to ratepayers. The financing plan offers a balance between rate increases, increases in connection fees, and issuance of debt capital. Changes to the mix of funding sources as well as the financing terms (e.g., terms on revenue bonds) could materially affect the impact on user charges.

The Partners have developed a capital finance plan which relies upon a combination of debt funding instruments. These will be secured with monthly rates and connection fee revenues. The Partners have decided to keep connection fees fixed at current programmed levels to help support economic development. The following are the key financial factors and assumptions for the capital financing plan:

- Debt Instruments
  - Public Works Trust Fund (PWTF) - state administered low interest revolving loan fund. The term and interest rate are 20 years and 0.5 percent respectively.

    - As a result of an earlier application, Ridgefield has been approved for up to $10 million that can be applied to their portion of the Phase 1 DCWTS project capital cost.
    - The District is currently applying for the same funds for their eligible portion of the DCWTS project up to approximately $8.2 million.
  - Municipal Bonds. For the balance of the Phase 1 DCWTS project not covered with PWTF resources, the Sewer Utility will issue municipal bonds (likely underwritten by the District until the agency is functioning) for the balance of the capital not covered through the PWTF resources. The term and interest for this funding is assumed 30 years and 5 percent respectively.
- Connection Fees (Sewer Development Charges) – Each Partner is responsible for establishing appropriate rates and connections fees for their community. These are in compliance with regional Sewer Utility financial policies. Although SDC funds can provide revenue to offset pressure on the rates, they cannot be used to secure municipal debt. Consequently, the SDCs are shown to illustrate that new customers will generate revenue to purchase capacity:
  - Ridgefield: $7,700 (2012 and 2013) increasing to $10,090 in 2014 through the planning period
  - District: $6,340 fixed through the planning period
- Cost allocations for the DCWTS project as outlined in Table 6-1
- Construction costs escalated each year for inflation at 3 percent
- 90-day operating reserves to provide service protection from unforeseen conditions, interruptions / changes in cash flow, and provide confidence to financial institutions.
- Debt coverage ratio of 1.25 (market debt only). Describes how much of the annual debt payment is covered by projected rate revenues.

6.4 User Charges

A financial assessment was prepared to determine the impacts to customer rates over the financing period. Since Ridgefield is responsible for the largest portion of the DCWTS project cost and has the smallest rate base, their rates will be most sensitive to the proposed costs. Conversely, the District has a large rate base and responsible for a smaller share of the costs. Based on the assumptions previously described, user fees (excluding local taxes and surcharges) will need to average the following over the finance period to pay for Phase 1 DCWTS project capital costs:

- District:
  - Rates - $37/mo
  - SDC - $6,342/ERU
- Ridgefield
  - Rates – $90/mo
  - SDC – $10,090/ERU (post 2013)

The projected rates for each agency fall below the maximum affordability MHI index.

APPENDIX A – NPDES PERMIT

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DEPARTMENT OF ECOLOGY
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March 15, 2012

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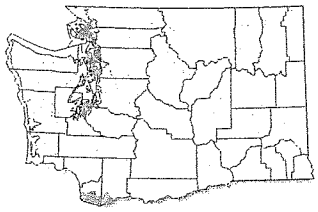

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15100 Northwest McCann Road
Vancouver, WA 98685

RE: National Pollutant Discharge Elimination System (NPDES) Permit Issuance for Salmon Creek Wastewater Treatment Plant

Dear Ms. Hust:

Enclosed is NPDES Permit No. WA0023639 for Salmon Creek Wastewater Treatment Plant. Also enclosed is the Department of Ecology's (Ecology) response to comments received during the public comment period of the draft permit. The permit is issued by Ecology in conformance with the Water Pollution Control Law [Chapter 90.48 Revised Code of Washington (RCW)], and as authorized by the U.S. Environmental Protection Agency (EPA) acting under the Federal Clean Water Act.

Submission of an application for permit renewal or continued discharge must be received by Ecology no later than **April 1, 2016** [Washington Administrative Code (WAC) 173-220-180]. Please contact Carey Cholski, Permit Administrator, at 360-407-6279, or by e-mail at carey.cholski@ecy.wa.gov for an application form.

It is possible to eliminate mailings and ensure Ecology receives your DMRs on time by submitting your DMRs electronically. Ecology has released a new on-line system for facilities to enter discharge-monitoring reports. This new system, WaWebDMR, allows almost all permit holders to enter data into a secure on-line system.

We encourage you to try WaWebDMR. Once you begin using it, you will not have to mail your DMRs to Ecology. You will also receive an e-mailed report verifying data receipt.

For more information please go to the WAWebDMR home page: http://www.ecy.wa.gov/programs/wq/permits/paris/webdmr.html. Or call Tonya Wolfe in our Headquarters Technical Assistance Unit (360-407-7097), or Carey Cholski in our Southwest Region (360-407-6279).

You have the right to appeal this permit within 30 days upon receipt of this document. Pursuant to Chapter 43.21B RCW, your appeal must be filed with the Pollution Control Hearings Board, and served on the Department of Ecology, within 30 days of the date of your receipt of this document.

If you choose to appeal this decision, your notice of appeal must contain: (1) a copy of the permit modification you are appealing, and (2) a copy of the application for the permit/modification.

Any appeal must contain the following in accordance with the rules of the hearings board:

a. The appellant's name and address;
b. The coverage date and number of the permit appealed;
c. A description of the substance within the permit that is the subject of the appeal;

d. A clear, separate, and concise statement of every error alleged to have been committed;
e. A clear and concise statement of the facts which the requester relies to sustain his or her statements of error; and
f. A statement setting forth the relief sought.

You must file your appeal with The Pollution Control Hearings Board.

Mail your appeal to:

The Pollution Control Hearings Board
P.O. Box 40903
Olympia, Washington 98504-0903

OR

Deliver your appeal in person to:

The Pollution Control Hearings Board
1111 Israel Road Southwest, Suite 301
Tumwater, Washington 98501

Your appeal must also be served on:

The Department of Ecology
Appeals Coordinator
P.O. Box 47608
Olympia, Washington 98504-7608

In addition, please send a copy of your appeal to:

Dave Knight, P.E.
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, Washington 98504-7775

For additional information: Environmental Hearings Office Website: http://www.eho.wa.gov

If you have any questions on this action, please contact Dave Knight at 360-407-627, or by e-mail at david.j.knight@ecy.wa.gov.

Sincerely,

Robert W. Bergquist, LEED© AP
Southwest Region Manager
Water Quality Program

RWB:CC(0023639)
Enclosures

cc: Bill Barron, Clark County Department of Public Works
Mike Lidgard, EPA Region 10
John Peterson, Clark Regional Wastewater District
Scott Sawyer, City of Battle Ground

DEPARTMENT OF
ECOLOGY
State of Washington

Issuance Date: March 15, 2012
Effective Date: April 1, 2012
Expiration Date: March 31, 2017

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT NO. WA0023639

State of Washington
DEPARTMENT OF ECOLOGY
Olympia, Washington 98504-7775

In compliance with the provisions of
The State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington
and
The Federal Water Pollution Control Act
(The Clean Water Act)
Title 33 United States Code, Section 1251 et seq.

Clark County Department of Public Works
P.O. Box 9810
Vancouver, WA 98666-9810
For

Salmon Creek Wastewater Treatment Plant,

Clark Regional Wastewater District, and

City of Battle Ground

For Their Respective Sewage Collection Systems

Plant Location: Salmon Creek WWTP: 15100 NW McCann Road Vancouver, WA 98685	Receiving Water: Columbia River between River mile 95 and 96
Water Body I.D. No.: Old ID No. WA-CR-1010 New ID No. 1220169456238	Discharge Location: Latitude: 45.73274 Longitude: -122.75691
Plant Type: Municipal secondary, activated sludge with UV disinfection	

is authorized to discharge in accordance with the special and general conditions that follow.

Robert W. Bergquist, LEED© AP
Southwest Regional Manager
Water Quality Program
Washington State Department of Ecology

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SPECIAL CONDITIONS

GENERAL CONDITIONS

SUMMARY OF PERMIT REPORT SUBMITTALS

Refer to the Special and General Conditions of this permit for additional submittal requirements.

Submittals for Salmon Creek Wastewater Treatment Plant

Permit Section	Submittal	Frequency	First Submittal Date
S2.B.	Pretreatment Quarterly Monitoring Report	Quarterly	August 15, 2012 (see S2.B for details)
S2.B.	Pretreatment Annual Monitoring Report	Annually	February 15, 2013 (See S2.B for details)
S2.B.	Sludge production Report (See table & footnote 5)	Annually	February 15, 2013
S2.B.	Biosolids Monitoring Report (See table & footnote 5)	Annually	February 15, 2013
S3.	Discharge Monitoring Report	Monthly	May 15, 2012
S3.E.	Reporting Permit Violations	As necessary	
S4.F.	Other Reporting	As necessary	
S4.B.	Plans for Maintaining Adequate Capacity	As necessary	
S4.F.	Wasteload Assessment	Annually	February 15, 2013
S8.B.	Acute Toxicity Compliance Monitoring Reports	4/year	July 15, 2012 (Reports due with March, June, September, and December DMRs each year)
S8.C.	Acute Toxicity: "Causes and Preventative Measures for Transient Events."	As necessary	
S8.C.	Acute Toxicity TI/TRE Plan	As necessary	
S9.A.	Chronic Toxicity Characterization Data	2/year	December 15, 2012, and June 15, 2013
S9.C.	Chronic Toxicity Compliance Monitoring Reports	If required under S10.A & B. then sample 2/year and submit on dates at the right.	October 15, 2013, **if required by a limit.**
S9.D.	Chronic Toxicity: "Causes and Preventative Measures for Transient Events."	As necessary	
S9.D.	Chronic Toxicity TI/TRE Plan	As necessary	
S9.E.	Chronic Toxicity Effluent Characterization with Permit Renewal Application	1/permit cycle	April 1, 2016

Permit Section	Submittal	Frequency	First Submittal Date
S10.	Outfall Evaluation	1/permit cycle	October 15, 2015
G1.	Notice of Change in Authorization	As necessary	
G4.	Reporting Planned Changes	As necessary	
G5.	Engineering Report for Construction or Modification Activities	As necessary	
G7.	Application for Permit Renewal	1/permit cycle	April 1, 2016
G21.	Reporting Anticipated Non-compliance	As necessary	
G22.	Reporting Other Information	As necessary	

Submittals for Clark Regional Wastewater District

Permit Section	Submittal	Frequency	First Submittal Date
S4.D.	Notification of New or Altered Sources	As necessary	
S4.E.	Infiltration and Inflow Evaluation	Annually	February 15, 2013
S5.B.	O&M Manual for Collection System	As necessary	
S6.F.	Pretreatment Report (Option 2- With existing program)	Annually	February 15, 2013

Submittals for the City of Battle Ground

Permit Section	Submittal	Frequency	First Submittal Date
S4.D.	Notification of New or Altered Sources	As necessary	
S4.E.	Infiltration and Inflow Evaluation	Annually	February 15, 2013
S5.B.	O&M Manual for Collection System	As necessary	
S6.D.	Industrial User Survey	1/permit cycle	February 15, 2015

SPECIAL CONDITIONS

The term "Permittee" applies to each of the entities named on the cover of this permit, with the following clarifications:

The Clark County Department of Public Works is the Permittee responsible for operation of the Salmon Creek Wastewater Treatment Plant. As such, this Permittee is responsible for operation, maintenance, monitoring, reporting and all other permit requirements related to the ultimate treatment and discharge of treated sewage from the Salmon Creek Wastewater Treatment Plant. This Permittee's responsibilities also include any permit requirements related to conveyance systems or trunk lines under Clark County's ownership.

The city of Battle Ground and the Clark Regional Wastewater District are the Permittees responsible for operation of the sewage collection, conveyance and storage facilities within their jurisdictions or under their ownership. As such, these Permittees are responsible for all operation, maintenance, monitoring, reporting and compliance with all other permit requirements related to their respective sewage collection, conveyance and storage systems. Included among the applicable requirements for these Permittees are the sections regarding implementation of the Inflow/Infiltration management and pretreatment programs within their jurisdictions. Where a permit condition related to the sewage collection, conveyance and storage systems applies to only one of these entities, it will be specified in the appropriate section.

Each of the Permittees shall be held independently responsible for compliance with the permit requirements applicable to their operations as discussed above.

S1. DISCHARGE LIMITS

A. Effluent Limits

All discharges and activities authorized by this permit shall be consistent with the terms and conditions of this permit. The discharge of any of the following pollutants more frequently than, or at a level in excess of, that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

EFFLUENT LIMITS[a]: OUTFALL # 001		
Parameter	**Average Monthly**	**Average Weekly**
Biochemical Oxygen Demand (5 day)	30 mg/L, 3,741 lbs/day 85% removal of influent BOD	45mg/L, 5,612 lbs/day
Total Suspended Solids	30 mg/L, 3,741 lbs/day 85% removal of influent TSS	45 mg/L, 5,612 lbs/day
Fecal Coliform Bacteria	200 /100 ml	400 /100 ml
pH	Daily minimum is equal to or greater than 6.0 and the daily maximum is less than or equal to 9.0.	
Acute Whole Effluent Toxicity (WET)[c]	"No acute toxicity detected in a test concentration representing the acute critical effluent concentration (ACEC)."	

EFFLUENT LIMITATIONS[a]: OUTFALL # 001		
Parameter	**Average Monthly**	**Maximum Daily[b]**
Total Ammonia (as NH_3-N)	18.7 mg/L	37.5 mg/L
[a]The average monthly and weekly effluent limitations are based on the arithmetic mean of the samples taken with the exception of fecal coliform, which is based on the geometric mean.		
[b]The maximum daily effluent limitation is defined as the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day.		
[c]Permittee should note that there also may be additional effluent limits in S9. Acute Toxicity and S10. Chronic Toxicity.		

B. Mixing Zone Descriptions

The maximum boundaries of the mixing zones are defined as follows:

Chronic Mixing Zone—extends in a downstream direction for a distance of not more than 217 feet from the discharge ports and upstream for a distance of not more than 217 feet.

The Phase IV chronic mixing zone ratio is 65:1

Acute Mixing Zone—extends in a downstream direction for a distance of not more than 22 feet from the discharge ports and upstream for a distance of not more than 22 feet.

The Phase IV acute mixing zone ratio is 18:1

S2. MONITORING REQUIREMENTS

A. Monitoring Schedule

The Permittee shall monitor in accordance with the following schedule:

Category	Parameter	Units	Sample Point	Minimum Sampling Frequency	Sample Type
Wastewater Influent	BOD_5	mg/L lbs/day	Influent	5/week	24-hour composite[c]
Wastewater Influent	TSS	mg/L lbs/day	Influent	5/week	24-hour composite[c]
Wastewater Influent	Flow	MGD	Influent	Continuous[a]	Recording on-line

Category	Parameter	Units	Sample Point	Minimum Sampling Frequency	Sample Type
Wastewater Effluent	BOD_5	mg/L	Final Effluent	5/week	24-hour composite[c]
		lbs/day	Final Effluent	5/week	24-hour composite[c]
		% removal	Final Effluent	5/week	Calculation
Wastewater Effluent	TSS	mg/L	Final Effluent	5/week	24-hour composite[c]
		lbs/day	Final Effluent	5/week	24-hour composite[c]
		% removal	Final Effluent	5/week	Calculation
Wastewater Effluent	pH	Standard Units	Final Effluent	Continuous[a]	measurement
Wastewater Effluent	Fecal Coliform	Org./100 ml	Final Effluent	Daily	Grab
Wastewater Effluent	Total Ammonia	mg/L	Final Effluent	3/week[d]	24-hour composite[c]
Wastewater Effluent	Temperature[b]	°C	Final Effluent	Continuous[a] (report daily maximums)	Recording On-line
Pretreatment	As specified in section below in S2.B.				
Acute Toxicity Testing	As specified in S9	Effluent			24-hour composite[c]
Chronic Toxicity Testing	As specified in S10	Effluent			24-hour composite[c]

[a] Continuous means uninterrupted except for brief lengths of time for calibration, for power failure, or for unanticipated equipment repair or maintenance. Sampling shall be taken three times per day when continuous monitoring is not possible.

[b] For analog recorders, to determine the daily average, use the temperature on the hour from the chart for the 24-hour period and calculate the average of the values.

[c] 24-hour composite means a series of individual samples collected over a 24-hour period into a single container, and analyzed as one sample.

[d] "3/week" means three times during each calendar week and on a rotational basis throughout the days of the week, except weekends and holidays.

B. Pretreatment Monitoring

The Permittee shall conduct monitoring at the frequency shown below with reports due 45 days after the end of each respective monitoring period. The Permittee shall submit the first quarterly monitoring report (for second quarter 2012) by **August 15, 2012**, and the first report for pollutants monitored annually by **February 15, 2013** (for the year 2012).

Parameter	Units	Sampling Point	Sampling Frequency	Sample Type
Total Metals[1] (Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Mo, Ni, Se, Ag, Tl, Zn)	mg/L	Influent, Effluent	Quarterly[5,6]	24-hour composite[2]
Total Metals[1] (Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Mo, Ni, Se, Ag, Tl, Zn)	mg/Kg dry weight	Final Sludge	Quarterly[5,6]	Composite of four grab samples
Phenol, cyanide, oil & grease	mg/L	Influent, Effluent	Annually[7]	Grab
Phosphorus, sulfate, sulfide, chloride, fluoride, boron, nitrate, total inorganic nitrogen, acetone, styrene, iron, hardness, salinity, total dissolved solids	mg/L	Influent, effluent	Annually[7]	Grab
The 111 Pollutants listed in Table II of appendix D of 40 CFR part 122 (volatiles, acid compounds, base/neutrals, & pesticides)[3]	mg/L	Influent, effluent	Annually[7]	Grab for volatiles, 24-hr composite for all else.
Pollutants listed in Table II, III, and IV of appendix D of 40 CFR part 122	mg/Kg of dry weight	Final Sludge	Annually[7]	Composite of four grab samples
Biosolids production data[4]	Dry tons per year, gallons, percent moisture	Final sludge	Annually[7]	Measurement

1. (Sb) Antimony, (As) arsenic, (Be) beryllium, (Cd) cadmium, (Cr) chromium, (Cu) copper, (Pb) lead, (Hg) mercury, (Mo) molybdenum, (Ni) nickel, (Se) selenium, (Ag) silver, (Tl) thallium, and (Zn) zinc reported as total metal present. Mercury shall be analyzed using EPA method 1631 (current revision of 40 CFR part 136).

2. 24-hour composite is required unless use of clean sampling protocols (EPA method 1669) would conflict, in which case a 'clean' grab sample may be used.

Parameter	Units	Sampling Point	Sampling Frequency	Sample Type
[3] A reasonable attempt shall be made to identify all other substances (in addition to quantifying the listed substances above), and to quantify all pollutants shown to be present by gas chromatograph / mass spectrometer (GC/MS) analysis per 40 CFR 136, appendix A, Methods 624 and 625. Determinations shall be attempted from all peaks with responses greater than 1.5 µg/L. Non-substituted aliphatic compounds may be expressed as total hydrocarbon content. Identification shall be attempted by a laboratory capable of comparing sample mass spectra to a computerized library of mass spectra, with visual confirmation by an experienced analyst.				
[4] The Permittee shall monitor the sludge for beneficial use or disposal in accordance with the requirements of the Statewide General Biosolids Permit and WAC 173-308. Sludge and biosolids production shall be reported annually with the first report due by **February 15, 2013**, and each year thereafter.				
[5] Quarterly is defined as: January – March, report due by May 15th April – June, report due by August 15th July – September, report due by November 15th October – December, report due by February 15th				
[6] Mercury is to be sampled semi-annually which is defined as: January – June, report due by August 15th July – December, report due by February 15th				
[7] Annually is defined as January – December and reports due by February 15th of each year.				

C. Sampling and Analytical Procedures

Samples and measurements taken to meet the requirements of this permit shall be representative of the volume and nature of the monitored parameters, including representative sampling of any unusual discharge or discharge condition, including bypasses, upsets and maintenance-related conditions affecting effluent quality.

Sampling and analytical methods used to meet the monitoring requirements specified in this permit shall conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136 or to the latest revision of *Standard Methods for the Examination of Water and Wastewater* (APHA), unless otherwise specified in this permit or approved in writing by Ecology.

D. Flow Measurement

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the quantity of monitored flows. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted industry standard for that type of device. Frequency of calibration shall be in conformance with manufacturer's recommendations and at a minimum frequency of at least one calibration per year. Calibration records shall be maintained for at least three years.

E. Laboratory Accreditation

All monitoring data required by Ecology shall be prepared by a laboratory registered or accredited under the provisions of, *Accreditation of Environmental Laboratories*, Chapter 173-50 Washington Administrative Code (WAC). Flow, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement. Conductivity and pH shall be accredited if the laboratory must otherwise be registered or accredited. Ecology exempts crops, soils, and hazardous waste data from this requirement pending accreditation of laboratories for analysis of these media.

S3. REPORTING AND RECORDKEEPING REQUIREMENTS

The Permittee must monitor and report in accordance with the following conditions. Falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

A. Reporting

The first monitoring period begins on the effective date of the permit. The Permittee must:

1. Submit monitoring results each month.

2. Summarize, report, and submit monitoring data obtained during each monitoring period on a Discharge Monitoring Report (DMR) form provided, or otherwise approved, by Ecology.

3. Submit DMR forms monthly whether or not the facility was discharging. If the facility did not discharge during a given monitoring period, submit the form as required with the words "NO DISCHARGE" entered in place of the monitoring results.

4. Ensure that DMR forms are postmarked or received by Ecology no later than the 15th day of the month following the completed monitoring period, unless otherwise specified in this permit.

5. Send report(s) to Ecology at:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

All laboratory reports providing data for organic and metal parameters must include the following information: sampling date, sample location, date of analysis, parameter name, CAS number, analytical method/number, method detection limit (MDL), laboratory practical quantitation limit (PQL), reporting units, and concentration detected. Analytical results from samples sent to a contract laboratory must include information on the chain of custody, the analytical method, QA/QC results, and documentation of accreditation for the parameter.

B. Records Retention

The Permittee must retain records of all monitoring information for a minimum of three years. Such information must include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

C. Recording of Results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place, method, and time of sampling or measurement.

2. The individual who performed the sampling or measurement.

3. The dates the analyses were performed.

4. The individual who performed the analyses.

5. The analytical techniques or methods used.

6. The results of all analyses.

D. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Condition S2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the Permittee's DMR.

E. Reporting Permit Violations

The Permittee must take the following actions when it violates or is unable to comply with any permit condition:

- Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the noncompliance and correct the problem.

- If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling to Ecology within 30 days of sampling.

1. Immediate Reporting

The Permittee must report any failure of the disinfection system immediately to the Department of Ecology's Regional Office 24-hour number listed below:

Southwest Regional Office 360-407-6300

The Permittee must report any failure of the disinfection system, any collection system overflows, or any plant bypass discharging to a waterbody used as a source of drinking water immediately to the Department of Ecology and the Department of Health, Drinking Water Program at the numbers listed below:

Southwest Regional Office	360-407-6300
Department of Health Drinking Water Program	360-521-0323 (business hours) 360-481-4901 (after business hours)

2. Twenty-Four (24)-Hour Reporting

The Permittee must report the following occurrences of noncompliance by telephone, to Ecology at 360-407-6300, within 24 hours from the time the Permittee becomes aware of any of the following circumstances:

a. Any noncompliance that may endanger health or the environment, unless previously reported under subpart 1, above.

b. Any unanticipated **bypass** that exceeds any effluent limitation in the permit (See Part S5.F., "Bypass Procedures").

c. Any **upset** that exceeds any effluent limitation in the permit (See G.15, "Upset").

d. Any violation of a maximum daily or instantaneous maximum discharge limitation for any of the pollutants in Section S1.A of this permit.

e. Any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limitation in the permit.

3. Report Within Five Days

The Permittee must also provide a written submission within five days of the time that the Permittee becomes aware of any event required to be reported under subparts 1 or 2, above. The written submission must contain:

a. A description of the noncompliance and its cause.

b. The period of noncompliance, including exact dates and times.

c. The estimated time noncompliance is expected to continue if it has not been corrected.

d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

e. If the noncompliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.

4. Waiver of Written Reports

Ecology may waive the written report required in subpart 3, above, on a case-by-case basis upon request if a timely oral report has been received.

5. All Other Permit Violation Reporting

The Permittee must report all permit violations, which do not require immediate or within 24 hours reporting, when it submits monitoring reports for S3.A ("Reporting"). The reports must contain the information listed in paragraph E.3, above. Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

6. Report Submittal

The Permittee must submit reports to the address listed in S3.

F. Other Reporting

The Permittee must report a spill of oil or hazardous materials in accordance with the requirements of RCW 90.56.280 and chapter 173-303-145. You can obtain further instructions at the following website:
http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm.

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.

The Permittee must submit a new application or supplement at least 180 days prior to commencement of discharges, resulting from the activities listed below, which may result in permit violations. These activities include: any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility.

G. Maintaining a Copy of This Permit

The Permittee must keep a copy of this permit at the facility and make it available upon request to Ecology inspectors.

S4. FACILITY LOADING

A. Design Criteria

Flows or waste loadings of the following design criteria for the permitted treatment facility shall not be exceeded:

Parameter	Phase IV Design Quantity
Monthly average flow (max. month)	14.95 MGD
BOD_5 influent loading	25,400 lbs/day
TSS influent loading	28,200 lbs/day

B. Plans for Maintaining Adequate Capacity

The Permittee shall submit to Ecology a plan and a schedule for continuing to maintain capacity when:

1. The actual flow or waste load reaches 85 percent of any one of the design criteria in S4.A for three consecutive months; or

2. when the projected increase would reach design capacity within five years,

Whichever occurs first. If such a plan is required, it shall contain a plan and schedule for continuing to maintain capacity. The capacity as outlined in this plan must be sufficient to achieve the effluent limitations and other conditions of this permit. This plan shall address any of the following actions or any others necessary to meet the objective of maintaining capacity.

3. Analysis of the present design including the introduction of any process modifications that would establish the ability of the existing facility to achieve the effluent limits and other requirements of this permit at specific levels in excess of the existing design criteria specified in paragraph A above.

4. Reduction or elimination of excessive infiltration and inflow of uncontaminated ground and surface water into the sewer system.

5. Limitation on future sewer extensions or connections or additional waste loads.

6. Modification or expansion of facilities necessary to accommodate increased flow or waste load.

7. Reduction of industrial or commercial flows or waste loads to allow for increasing sanitary flow or waste load.

Engineering documents associated with the plan must meet the requirements of WAC 173-240-060, "Engineering Report," and be approved by Ecology prior to any construction. If the Permittee intends to apply for State or Federal funding for the design or construction of a facility project, the plan must also meet the requirements of a "Facility Plan" as described in 40 CFR 35.2030. The plan shall specify any contracts, ordinances, methods for financing, or other arrangements necessary to achieve this objective.

C. Duty to Mitigate

The Permittee is required to take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment

D. Notification of New or Altered Sources

The Permittee shall submit written notice to Ecology whenever any new discharge or a substantial change in volume or character of an existing discharge into the Publicly Owned Treatment Works (POTW) is proposed which: (1) would interfere with the operation of, or exceed the design capacity of, any portion of the POTW; (2) is not part of an approved general sewer plan or approved plans and specifications; or (3) would be subject to pretreatment standards under 40 CFR Part 403 and Section 307(b) of the Clean Water Act. This notice shall include an evaluation of the POTWs ability to adequately transport and treat the added flow and/or waste load, the quality and volume of effluent to be discharged to the POTW, and the anticipated impact on the Permittee's effluent [40 CFR 122.42(b)].

E. Infiltration and Inflow Evaluation

1. The Permittees shall each conduct an infiltration and inflow evaluation. This evaluation shall be based on the flows received through their respective collection systems. Refer to the Department of Ecology *Information Manual for Treatment Plant Operators* (publication # 040-10-020) and U.S. EPA publication, *I/I Analysis and Project Certification*, available as Publication No. 97-03 at: Publications Office, Department of Ecology, P.O. Box 47600, Olympia, Washington 98504-7600.

2. A report shall be prepared by the City of Battle Ground and the Clark Regional Wastewater District which summarizes any measurable infiltration and inflow. If infiltration and inflow either meet the EPA threshold for "excessive" inflow or infiltration per the above manual, or have increased by more than 15 percent from that found in the first report based on equivalent rainfall, the report shall contain a plan and a schedule for: (1) locating the sources of infiltration and inflow; and (2) correcting the problem.

3. The reports shall be submitted by **February 15, 2013**, and **annually** thereafter.

F. Wasteload Assessment

The Permittee shall conduct an **annual** assessment of flow and waste load to the Salmon Creek WWTP and submit a report to Ecology by **February 15, 2013,** and **annually** thereafter. The report shall contain the following: an indication of compliance or noncompliance with the permit effluent limitations; a comparison between the existing and design monthly average dry weather and wet weather flows, peak flows, BOD, and total suspended solids loadings; and the percentage increase in these parameters since the last annual report. The report shall also state the present and design population or population equivalent, projected population growth rate, and the estimated date upon which the design capacity is projected to be reached, according to the most restrictive of

the parameters above. The interval for review and reporting may be modified if Ecology determines that a different frequency is sufficient.

S5. OPERATION AND MAINTENANCE

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

A. Certified Operator

An operator certified for at least a Class IV plant by the state of Washington shall be in responsible charge of the day-to-day operation of the wastewater treatment plant. An operator certified for at least a Class III plant shall be in charge during all regularly scheduled shifts.

B. Operation and Maintenance (O&M) Program

The Permittees shall institute an adequate operation and maintenance program for the entire sewage system. Maintenance records shall be maintained on all major electrical and mechanical components of the treatment plant, as well as the sewage system pumping stations and equalization lagoon aeration, mixing, and pumping equipment. Such records shall clearly specify the frequency and type of maintenance recommended by the manufacturer and shall show the frequency and type of maintenance performed. These maintenance records shall be available for inspection at all times. Prior to placing new equipment into operation, the Permittee shall submit a new or revised O&M manual that integrates the equipment and satisfies chapter 173-240 WAC.

The requirements to develop, maintain, and follow an Operations and Maintenance Manual **applies to all Permittees** to the extent that they are responsible for mechanical components.

The approved Operations and Maintenance Manual shall be kept available at the Salmon Creek WWTP and all operators shall follow the instructions and procedures of this manual.

In addition, the **Clark Regional Wastewater District and the City of Battle Ground** shall develop, submit, and maintain O&M manuals for pump stations, lagoons, equalization basins and other critical components that are used throughout the collection system.

These O&M Manuals shall be prepared by the Permittees in accordance with WAC 173-240-080 and be submitted to Ecology for approval. In addition to requirements of WAC 173-240-080 (1) through (5) the O&M Manual shall include:

1. Emergency procedures for plant shutdown and cleanup in event of wastewater system upset or failure.

2. Wastewater system maintenance procedures that contribute to the generation of process wastewater

3. Any directions to maintenance staff when cleaning, or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (e.g. defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine.)

C. Short-term Reduction

If a Permittee contemplates a reduction in the level of treatment that would cause a violation of permit discharge limitations on a short-term basis for any reason, and such reduction cannot be avoided, the Permittee shall give written notification to Ecology, if possible, 30 days prior to such activities, detailing the reasons for, length of time of, and the potential effects of the reduced level of treatment. This notification does not relieve the Permittee of its obligations under this permit.

D. Electrical Power Failure

The Permittee is responsible for maintaining adequate safeguards to prevent the discharge of untreated wastes or wastes not treated in accordance with the requirements of this permit during electrical power failure at the treatment plant and/or sewage lift stations either by means of alternate power sources, standby generator, or retention of inadequately treated wastes.

The Permittee shall maintain Reliability Class II (EPA 430/9-74-001) at the wastewater treatment plant, which requires a backup power source sufficient to operate all vital components and critical lighting and ventilation during peak wastewater flow conditions, except vital components used to support the secondary processes (i.e., mechanical aerators or aeration basin air compressors) need not be operable to full levels of treatment, but shall be sufficient to maintain the biota.

E. Prevent Connection of Inflow

The Permittees (Clark Regional Wastewater District and Battle Ground) shall strictly enforce their sewer ordinances and not allow the connection of inflow (roof drains, foundation drains, etc.) to the sanitary sewer system.

F. Bypass Procedures

Bypass, which is the intentional diversion of waste streams from any portion of a treatment facility, is prohibited, and Ecology may take enforcement action against a Permittee for bypass unless one of the following circumstances (1, 2, or 3) is applicable.

1. Bypass for essential maintenance without the potential to cause violation of permit limits or conditions.

   Bypass is authorized if it is for essential maintenance and does not have the potential to cause violations of limitations or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass.

The Permittee shall submit prior notice, if possible at least 10 days before the date of the bypass.

2. Bypass which is unavoidable, unanticipated and results in noncompliance of this permit.

This bypass is permitted only if:

a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

b. There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment downtime (but not if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance), or transport of untreated wastes to another treatment facility.

c. Ecology is properly notified of the bypass as required in Condition S3E of this permit.

3. Bypass which is anticipated and has the potential to result in noncompliance of this permit

The Permittee shall notify Ecology at least 30 days before the planned date of bypass. The notice shall contain: (1) a description of the bypass and its cause; (2) an analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing; (3) a cost-effectiveness analysis of alternatives including comparative resource damage assessment; (4) the minimum and maximum duration of bypass under each alternative; (5) a recommendation as to the preferred alternative for conducting the bypass; (6) the projected date of bypass initiation; (7) a statement of compliance with State Environmental Policy Act (SEPA); (8) a request for modification of water quality standards as provided for in WAC 173-201A-110, if an exceedance of any water quality standard is anticipated; and (9) steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

For probable construction bypasses, the need to bypass is to be identified as early in the planning process as possible. The analysis required above shall be considered during preparation of the engineering report or facilities plan and plans and specifications and shall be included to the extent practical. In cases where the probable need to bypass is determined early, continued analysis is necessary up to and including the construction period in an effort to minimize or eliminate the bypass.

Ecology will consider the following prior to issuing an administrative order for this type bypass:

a. If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.

b. If there are feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.

c. If the bypass is planned and scheduled to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request. The public shall be notified and given an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Approval of a request to bypass will be by administrative order issued by Ecology under RCW 90.48.120.

S6. PRETREATMENT

A. General Requirements

The Permittees shall work with Ecology to ensure that all commercial and industrial users of the POTW are in compliance with the pretreatment regulations promulgated in 40 CFR Part 403 and any additional regulations that may be promulgated under Section 307(b) (pretreatment) and 308 (reporting) of the Federal Clean Water Act.

B. Wastewater Discharge Permit Required

The Permittees shall not allow significant industrial users (SIUs) to discharge wastewater to the Permittee's sewerage system until such user has received a wastewater discharge permit from Ecology in accordance with Chapter 90.48 Revised Code of Washington (RCW) and Chapter 173-216 WAC, as amended.

C. Identification and Reporting of Existing, New, and Proposed Industrial Users

1. The Permittees shall take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging or proposing to discharge to the Permittee's sewerage system (see Appendix B of Fact Sheet for definitions).

2. Within 30 days of becoming aware of an unpermitted existing, new, or proposed industrial user who may be an SIU, the Permittees shall notify such user by registered mail that, if classified as an SIU, they shall be required to apply to Ecology and obtain a State Waste Discharge Permit. A copy of this notification letter shall also be sent to Ecology within this same 30-day period.

3. The Permittees shall also notify all PSIUs, as they are identified, that if their classification should change to an SIU, they shall be required to apply to Ecology for a State Waste Discharge Permit within 30 days of such change.

D. Industrial User Survey (applies to **the City of Battle Ground**)

The Permittee (**the City of Battle Ground**) shall complete and submit to Ecology an Industrial User Survey listing all SIUs and PSIUs discharging to the POTW. The survey shall be conducted once per permit and received by Ecology by **February 15, 2015**. The Permittee shall identify and report all relevant information on all non-residential sources with over 10,000 gallons per day of flow or 20 lbs/day of BOD or TSS loadings as well as all sources of toxic pollutants that are potentially significant. At a minimum, the list of SIUs and PSIUs shall be developed by means of a telephone book search, a water utility billing records search, and a physical reconnaissance of the service area. Information on PSIUs shall at least include: the business name, telephone number, address, description of the industrial process(es), and the known wastewater volumes and characteristics. For assistance with the development of the Industrial User Survey, the Permittee shall refer to Ecology's guidance document entitled "Performing an Industrial User Survey."

E. Duty to Enforce Discharge Prohibitions

1. In accordance with 40 CFR 403.5(a), the Permittees shall not authorize or knowingly allow the discharge of any pollutants into the collection systems or the Salmon Creek WWTP which cause pass through or interference, or which otherwise violates general or specific discharge prohibitions contained in 40 CFR Part 403.5 or WAC-173-216-060.

2. The Permittees shall not authorize or knowingly allow the introduction of any of the following into their treatment works:

   a. Pollutants which create a fire or explosion hazard in the POTW (including, but not limited to waste streams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21).

   b. Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0, or greater than 11.0 standard units, unless the works are specifically designed to accommodate such discharges.

   c. Solid or viscous pollutants in amounts that could cause obstruction to the flow in sewers or otherwise interfere with the operation of the POTW.

   d. Any pollutant, including oxygen demanding pollutants, (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW.

   e. Petroleum oil, nonbiodegradable cutting oil, or products of mineral origin in amounts that will cause interference or pass through.

f. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity which may cause acute worker health and safety problems.

g. Heat in amounts that will inhibit biological activity in the POTW resulting in interference but in no case heat in such quantities such that the temperature at the POTW headworks exceeds 40°C (104°F) unless Ecology, upon request of the Permittee, approves, in writing, alternate temperature limits.

h. Any trucked or hauled pollutants, except at discharge points designated by the Permittee.

i. Wastewaters prohibited to be discharged to the POTW by the Dangerous Waste Regulations (Chapter 173-303 WAC), unless authorized under the Domestic Sewage Exclusion (WAC 173-303-071).

3. All of the following are prohibited from discharge to the sewage collection systems and the **Salmon Creek WWTP** unless approved in writing by Ecology under extraordinary circumstances (such as a lack of direct discharge alternatives due to combined sewer service or the need to augment sewage flows due to septic conditions):

a. Noncontact cooling water in significant volumes.

b. Stormwater, and other direct inflow sources.

c. Wastewaters significantly affecting system hydraulic loading, which do not require treatment, or would not be afforded a significant degree of treatment by the system.

4. The Permittees shall notify Ecology if any industrial user violates the prohibitions listed in this section.

F. Pretreatment Report for the Clark Regional Wastewater District

The **Clark Regional Wastewater District** shall provide to Ecology an annual report that briefly describes its program activities during the previous calendar year. This report shall be submitted no later than **February 15, 2013,** and **annually** thereafter to: Washington Department of Ecology, Southwest Regional Office, P.O. Box 47775, Olympia, Washington 98504-7775.

The report shall include the following information:

1. An updated nondomestic inventory.

2. Results of wastewater sampling at the Salmon Creek treatment plant as specified in S2.B (Pretreatment Monitoring) for the previous year. The Permittee shall calculate removal rates for each pollutant and evaluate the adequacy of the existing local limitations established by the Clark Regional Wastewater District

by Ordinance in prevention of treatment plant interference, pass through of pollutants that could affect receiving water quality, and sludge contamination.

3. Status of program implementation, including:

   a. Any substantial modifications to the pretreatment program as originally approved by Ecology, including staffing and funding levels.

   b. Any interference, upset, or permit violations experienced at the POTW that are directly attributable to wastes from industrial users.

   c. Listing of industrial users inspected and/or monitored, and a summary of the results.

   d. Listing of industrial users scheduled for inspection and/or monitoring for the next year, and expected frequencies.

   e. Listing of industrial users notified of promulgated pretreatment standards and/or local standards as required in 40 CFR 403.8(f)(2)(iii). Indicate which industrial users are on compliance schedules and the final date of compliance for each.

   f. Listing of industrial users issued industrial waste discharge permits.

   g. Planned changes in the pretreatment program implementation plan. (See subsection A.6. below.)

4. Status of compliance activities, including:

   a. Listing of industrial users that failed to submit baseline monitoring reports or any other reports required under 40 CFR 403.

   b. Listing of industrial users that were at any time during the reporting period not complying with federal, state, or local pretreatment standards or with applicable compliance schedules for achieving those standards, and the duration of such noncompliance.

S7. RESIDUAL SOLIDS

Residual solids include screenings, grit, scum, primary sludge, waste activated sludge and other solid waste. The Permittee shall store and handle all residual solids in such a manner so as to prevent their entry into state ground or surface waters. The Permittee shall comply with WAC 173-308 and any associated order for handling biosolids.

S8. ACUTE TOXICITY

A. Effluent Limit for Acute Toxicity

The effluent limit for acute toxicity is: "No acute toxicity detected in a test concentration representing the acute critical effluent concentration (ACEC)."

The ACEC means the maximum concentration of effluent during critical conditions at the boundary of the zone of acute criteria exceedance assigned pursuant to WAC 173-201A-100. The zone of acute criteria exceedance is authorized in Section S1.B of this permit. The ACEC equals 5.6 percent effluent.

In the event of failure to pass the test described in subsection B. of this section for compliance with the effluent limit for acute toxicity, the Permittee is considered to be in compliance with all permit requirements for acute whole effluent toxicity as long as the requirements in Subsection C are being met to the satisfaction of Ecology.

B. Monitoring for Compliance With an Effluent Limit for Acute Toxicity

The Permittee shall conduct monitoring to determine compliance with the effluent limit for acute toxicity. The acute toxicity tests shall be performed using at a minimum 100% effluent, the ACEC, and a control. Acute toxicity testing shall follow protocols, monitoring requirements, and quality assurance/quality control procedures specified in this Section. **Testing shall begin within 60 days of the permit effective date.** A written report shall be submitted to Ecology with the first report due by **July 15, 2012.** Testing shall be done **quarterly** through the life of the permit. The percent survival in 100 percent effluent shall be reported along with all

Compliance monitoring shall be conducted quarterly using each of the species and protocols listed below on a rotating basis:

1. Fathead minnow, *Pimephales promelas* (96 hour static-renewal test, method: EPA/600/4-90/027F)

2. Daphnid, *Ceriodaphnia dubia*, *Daphnia pulex*, or *Daphnia magna* (48 hour static test, method: EPA/600/4-90/027F).

Quarterly monitoring is defined as:

Quarterly means testing and reporting with the March, June, September, and December DMRs.

The Permittee is in violation of the effluent limit for acute toxicity in subsection A. and shall immediately implement Subsection C if any acute toxicity test conducted for compliance monitoring determines a statistically significant difference in survival between the control and the ACEC using hypothesis testing at the 0.05 level of significance (Appendix H, EPA/600/4-89/001). If the difference in survival between the control and the ACEC is less than 10 percent, the hypothesis test shall be conducted at the 0.01 level of significance.

C. Response to Noncompliance With an Effluent Limit for Acute Toxicity

If a toxicity test conducted for compliance monitoring under subsection B. determines a statistically significant difference in response between the ACEC and the control, the Permittee shall begin additional compliance monitoring within one week from the time of receiving the test results. This additional monitoring shall be conducted weekly for four consecutive weeks using the same test and species as the failed compliance test. Testing shall be conducted using a series of at least five effluent concentrations and a control in

order to be able to determine appropriate point estimates. One of these effluent concentrations shall equal the ACEC and be compared statistically to the nontoxic control in order to determine compliance with the effluent limit for acute toxicity as described in Subsection B. The discharger shall return to the original monitoring frequency in Subsection B after completion of the additional compliance monitoring.

If the Permittee believes that a test indicating noncompliance will be identified by Ecology as an anomalous test result, the Permittee may notify Ecology that the compliance test result might be anomalous and that the Permittee intends to take only one additional sample for toxicity testing and wait for notification from Ecology before completing the additional monitoring required in this subsection. The notification to Ecology shall accompany the report of the compliance test result and identify the reason for considering the compliance test result to be anomalous. The Permittee shall complete all of the additional monitoring required in this subsection as soon as possible after notification by Ecology that the compliance test result was not anomalous. If the one additional sample fails to comply with the effluent limit for acute toxicity, then the Permittee shall proceed without delay to complete all of the additional monitoring required in this subsection. The one additional test result shall replace the compliance test result upon determination by Ecology that the compliance test result was anomalous.

If all of the additional compliance monitoring conducted in accordance with this subsection complies with the permit limit, the Permittee shall search all pertinent and recent facility records (operating records, monitoring results, inspection records, spill reports, weather records, production records, raw material purchases, pretreatment records, etc.) and submit a report to Ecology on possible causes and preventive measures for the transient toxicity event which triggered the additional compliance monitoring.

If toxicity occurs in violation of the acute toxicity limit during the additional compliance monitoring, the Permittee shall submit a Toxicity Identification/Reduction Evaluation (TI/RE) plan to Ecology-within 60 days after the sample date. The TI/RE plan shall be based on WAC 173-205-100(2) and shall be implemented in accordance with WAC 173-205-100(3).

D. Sampling and Reporting Requirements

1. All reports for effluent characterization or compliance monitoring shall be submitted in accordance with the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* in regards to format and content. Reports shall contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data on floppy disk for electronic entry into Ecology's database, then the Permittee shall send the disk to Ecology along with the test report, bench sheets, and reference toxicant results.

2. Testing shall be conducted on 24-hour composite effluent samples. Samples taken for toxicity testing shall be cooled to 4 degrees Celsius while being collected and shall be sent to the lab immediately upon completion. The lab shall begin the toxicity testing as soon as possible but no later than 36 hours after sampling was ended.

3. All samples and test solutions for toxicity testing shall have water quality measurements as specified in Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* or most recent version thereof.

4. All toxicity tests shall meet quality assurance criteria and test conditions in the most recent versions of the EPA manual listed in subsection A. and the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* If test results are determined to be invalid or anomalous by Ecology, testing shall be repeated with freshly collected effluent.

5. Control water and dilution water shall be laboratory water meeting the requirements of the EPA manual listed in subsection A or pristine natural water of sufficient quality for good control performance.

6. The whole effluent toxicity tests shall be run on an unmodified sample of final effluent.

7. The Permittee may choose to conduct a full dilution series test during compliance monitoring in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the ACEC.

8. All whole effluent toxicity tests, effluent screening tests, and rapid screening tests that involve hypothesis testing and do not comply with the acute statistical power standard of 29 percent as defined in WAC 173-205-020 must be repeated on a fresh sample with an increased number of replicates to increase the power.

S9. CHRONIC TOXICITY

A. Effluent Characterization

The Permittee shall conduct chronic toxicity testing on the final effluent. The two chronic toxicity tests listed below shall be conducted on each sample taken for effluent characterization.

Testing results from the first sampling event shall be submitted by **December 15, 2012**.

Effluent testing for chronic toxicity shall be conducted **twice in one year**. The Permittee shall conduct chronic toxicity testing during effluent characterization on a series of at least five concentrations of effluent in order to determine appropriate point estimates. This series of dilutions shall include the ACEC. The Permittee shall compare the ACEC to the control using hypothesis testing at the 0.05 level of significance as described in Appendix H, EPA/600/4-89/001. Test results are due by **December 15, 2012,** for the first sampling event and **June 15, 2013,** for the second sampling event. Sampling is again required twice in the last year of the permit if no chronic limit is required and a summary report of the chronic toxicity characterization is due in accordance with S9.E.

Chronic toxicity tests shall be conducted with the following two species and the most recent version of the following protocols:

Freshwater Chronic Toxicity Test Species		Method
Fathead minnow	*Pimephales promelas*	EPA/600/4-91/002
Water flea	*Ceriodaphnia dubia*	EPA/600/4-91/002

B. Effluent Limit for Chronic Toxicity

After completion of effluent characterization, the Permittee has an effluent limit for chronic toxicity if any test conducted for effluent characterization shows a significant difference between the control and the ACEC at the 0.05 level of significance using hypothesis testing (Appendix H, EPA/600/4-89/001) and shall complete all applicable requirements in subsections C, D, and F.

If no significant difference is shown between the ACEC and the control in any of the chronic toxicity tests, the Permittee has no effluent limit for chronic toxicity and only subsections E and F apply.

The effluent limit for chronic toxicity is: "No toxicity detected in a test concentration representing the chronic critical effluent concentration (CCEC)."

In the event of failure to pass the test described in subsection C, of this section, for compliance with the effluent limit for chronic toxicity, the Permittee is considered to be in compliance with all permit requirements for chronic whole effluent toxicity as long as the requirements in subsection D are being met to the satisfaction of Ecology.

The CCEC means the maximum concentration of effluent allowable at the boundary of the mixing zone assigned in Section S1.B pursuant to WAC 173-201A-100. The CCEC equals 1.5 percent effluent.

C. Monitoring for Compliance With an Effluent Limit for Chronic Toxicity

Monitoring to determine compliance **with the effluent limit** (if the Permittee has a permit limit according to S9.B) shall be conducted **twice per year** for the remainder of the permit term using each of the species listed in subsection A on a rotating basis and performed using at a minimum the CCEC, the ACEC, and a control. The report from the monitoring is due by **April 15, and October 15,** each year with the first report due **October 15, 2013.** The Permittee shall schedule the toxicity tests in the order listed in the permit unless Ecology notifies the Permittee in writing of another species rotation schedule.

Compliance with the effluent limit for chronic toxicity means: "No statistically significant difference in response between the control and the test concentration representing the CCEC." The Permittee shall immediately implement subsection D if any chronic toxicity test conducted for compliance monitoring determines a statistically significant difference in response between the control and the CCEC using hypothesis testing at the 0.05 level of significance (Appendix H, EPA/600/4-89/001). If the difference in response between the control and the CCEC is less than 20 percent, the hypothesis test shall be conducted at the 0.01 level of significance.

In order to establish whether the chronic toxicity limit is eligible for removal from future permits, the Permittee shall also conduct this same hypothesis test (Appendix H, EPA/600/4-89/001) to determine if a statistically significant difference in response exists between the ACEC and the control.

D. Response to Noncompliance With an Effluent Limit for Chronic Toxicity

If a toxicity test conducted for compliance monitoring under subsection C determines a statistically significant difference in response between the CCEC and the control, the Permittee shall begin additional compliance monitoring within one week from the time of receiving the test results. This additional monitoring shall be conducted monthly for three consecutive months using the same test and species as the failed compliance test. Testing shall be conducted using a series of at least five effluent concentrations and a control in order to be able to determine appropriate point estimates. One of these effluent concentrations shall equal the CCEC and be compared statistically to the nontoxic control in order to determine compliance with the effluent limit for chronic toxicity as described in subsection C. The discharger shall return to the original monitoring frequency in subsection C after completion of the additional compliance monitoring.

If the Permittee believes that a test indicating noncompliance will be identified by Ecology as an anomalous test result, the Permittee may notify Ecology that the compliance test result might be anomalous and that the Permittee intends to take only one additional sample for toxicity testing and wait for notification from Ecology before completing the additional monitoring required in this subsection. The notification to Ecology shall accompany the report of the compliance test result and identify the reason for considering the compliance test result to be anomalous. The Permittee shall complete all of the additional monitoring required in this subsection as soon as possible after notification by Ecology that the compliance test result was not anomalous. If the one additional sample fails to comply with the effluent limit for chronic toxicity, then the Permittee shall proceed without delay to complete all of the additional monitoring required in this subsection. The one additional test result shall replace the compliance test result upon determination by Ecology that the compliance test result was anomalous.

If all of the additional compliance monitoring conducted in accordance with this subsection complies with the permit limit, the Permittee shall search all pertinent and recent facility records (operating records, monitoring results, inspection records, spill reports, weather records, production records, raw material purchases, pretreatment records, etc.) and submit a report to Ecology on possible causes and preventive measures for the transient toxicity event which triggered the additional compliance monitoring.

If toxicity occurs in violation of the chronic toxicity limit during the additional compliance monitoring, the Permittee shall submit a Toxicity Identification/Reduction Evaluation (TI/RE) plan to Ecology. The TI/RE plan submittal shall be within 60 days after the sample date for the third additional compliance monitoring test. If the Permittee decides to forgo the rest of the additional compliance monitoring tests required in this subsection because one of the first two additional compliance monitoring tests failed to meet the chronic toxicity limit, then the Permittee shall submit the TI/RE plan within 60 days after the sample date for the first additional monitoring test to violate the chronic toxicity limit. The TI/RE plan shall be based on WAC 173-205-100(2) and shall be implemented in accordance with WAC 173-205-100(3).

E. Monitoring When There Is No Permit Limit for Chronic Toxicity

The Permittee shall test final effluent once in the last summer and once in the last winter prior to submission of the application for permit renewal. The data report is **due April 1, 2016.** All species used in the initial chronic effluent characterization or substitutes approved by Ecology shall be used and results submitted to Ecology as a part of the permit renewal application process.

F. Sampling and Reporting Requirements

1. All reports for effluent characterization or compliance monitoring shall be submitted in accordance with the most recent version of Department of Ecology Publication #WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* in regards to format and content. Reports shall contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data on floppy disk for electronic entry into Ecology's database, then the Permittee shall send the disk to Ecology along with the test report, bench sheets, and reference toxicant results.

2. Testing shall be conducted on 24-hour composite effluent samples. Composite samples taken for toxicity testing shall be cooled to 4 degrees Celsius while being collected and shall be sent to the lab immediately upon completion. All other samples must be below 8°C at receipt. The lab shall begin the toxicity testing as soon as possible but no later than 36 hours after sampling was ended. The lab shall store all samples at 4°C in the dark from receipt until completion of the test.

3. All samples and test solutions for toxicity testing shall have water quality measurements as specified in Department of Ecology Publication #WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* or most recent version thereof.

4. All toxicity tests shall meet quality assurance criteria and test conditions in the most recent versions of the EPA manual listed in subsection A and the Department of Ecology Publication #WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* If test results are determined to be invalid or anomalous by Ecology, testing shall be repeated with freshly collected effluent.

5. Control water and dilution water shall be laboratory water meeting the requirements of the EPA manual listed in subsection A or pristine natural water of sufficient quality for good control performance.

6. The whole effluent toxicity tests shall be run on an unmodified sample of final effluent.

7. The Permittee may choose to conduct a full dilution series test during compliance monitoring in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the ACEC and the CCEC.

8. All whole effluent toxicity tests, effluent screening tests, and rapid screening tests that involve hypothesis testing, and do not comply with the chronic statistical power standard of 39 percent as defined in WAC 173-205-020, must be repeated on a fresh sample with an increased number of replicates to increase the power.

S10. OUTFALL EVALUATION

The Permittee shall inspect the submerged portion of the outfall line and diffuser to document its integrity and continued function. If conditions allow for a photographic verification, it shall be included in the report. By **October 15, 2015,** an outfall inspection report shall be submitted to Ecology.

GENERAL CONDITIONS

G1. SIGNATORY REQUIREMENTS

All applications, reports, or information submitted to Ecology shall be signed and certified.

A. All permit applications shall be signed by either a principal executive officer or a ranking elected official.

B. All reports required by this permit and other information requested by Ecology shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described above and submitted to Ecology.

2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

C. Changes to authorization. If an authorization under paragraph B.2 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph B.2 above must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.

D. Certification. Any person signing a document under this section shall make the following certification:

> I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

G2. RIGHT OF INSPECTION AND ENTRY

The Permittee shall allow an authorized representative of Ecology, upon the presentation of credentials and such other documents as may be required by law:

A. To enter upon the premises where a discharge is located or where any records must be kept under the terms and conditions of this permit.

B. To have access to and copy - at reasonable times and at reasonable cost - any records required to be kept under the terms and conditions of this permit.

C. To inspect - at reasonable times - any facilities, equipment (including monitoring and control equipment), practices, methods, or operations regulated or required under this permit.

D. To sample or monitor - at reasonable times - any substances or parameters at any location for purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act.

G3. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated either at the request of any interested person (including the Permittee) or upon Ecology's initiative. However, the permit may only be modified, revoked and reissued, or terminated for the reasons specified in 40 CFR 122.62, 122.64 or WAC 173-220-150 according to the procedures of 40 CFR 124.5.

A. The following are causes for terminating this permit during its term, or for denying a permit renewal application:

1. Violation of any permit term or condition.

2. Obtaining a permit by misrepresentation or failure to disclose all relevant facts.

3. A material change in quantity or type of waste disposal.

4. A determination that the permitted activity endangers human health or the environment, or contributes to water quality standards violations and can only be regulated to acceptable levels by permit modification or termination [40 CFR Part 122.64(3)].

5. A change in any condition that requires either a temporary or permanent reduction, or elimination of any discharge or sludge use or disposal practice controlled by the permit [40 CFR Part 122.64(4)].

6. Nonpayment of fees assessed pursuant to RCW 90.48.465.

7. Failure or refusal of the Permittee to allow entry as required in RCW 90.48.090.

B. The following are causes for modification but not revocation and reissuance except when the Permittee requests or agrees:

1. A material change in the condition of the waters of the state.

2. New information not available at the time of permit issuance that would have justified the application of different permit conditions.

3. Material and substantial alterations or additions to the permitted facility or activities which occurred after this permit issuance.

4. Promulgation of new or amended standards or regulations having a direct bearing upon permit conditions, or requiring permit revision.

5. The Permittee has requested a modification based on other rationale meeting the criteria of 40 CFR Part 122.62.

6. Ecology has determined that good cause exists for modification of a compliance schedule, and the modification will not violate statutory deadlines.

7. Incorporation of an approved local pretreatment program into a municipality's permit.

C. The following are causes for modification or alternatively revocation and reissuance:

1. Cause exists for termination for reasons listed in A1 through A7 of this section, and Ecology determines that modification or revocation and reissuance is appropriate.

2. Ecology has received notification of a proposed transfer of the permit. A permit may also be modified to reflect a transfer after the effective date of an automatic transfer (General Condition G8) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new Permittee.

G4. REPORTING PLANNED CHANGES

The Permittee shall, as soon as possible, but no later than 60 days prior to the proposed changes, give notice to Ecology of planned physical alterations or additions to the permitted facility, production increases, or process modification which will result in: 1) the permitted facility being determined to be a new source pursuant to 40 CFR 122.29(b); 2) a significant change in the nature or an increase in quantity of pollutants discharged; or 3) a significant change in the Permittee's sludge use or disposal practices. Following such notice, and the submittal of a new application or supplement to the existing application, along with required engineering plans and reports, this permit may be modified, or revoked and reissued pursuant to 40 CFR 122.62(a) to specify and limit any pollutants not previously limited. Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by this permit constitutes a violation of the terms and conditions of this permit.

G5. PLAN REVIEW REQUIRED

Prior to constructing or modifying any wastewater control facilities, an engineering report and detailed plans and specifications shall be submitted to Ecology for approval in accordance with Chapter 173-240 WAC. Engineering reports, plans, and specifications shall be submitted at least 180 days prior to the planned start of construction unless a shorter time is approved by Ecology. Facilities shall be constructed and operated in accordance with the approved plans.

G6. COMPLIANCE WITH OTHER LAWS AND STATUTES

Nothing in this permit shall be construed as excusing the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G7. DUTY TO REAPPLY

The Permittee shall apply for permit renewal by **April 1, 2016.**

G8. TRANSFER OF THIS PERMIT

In the event of any change in control or ownership of facilities from which the authorized discharge emanate, the Permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to Ecology.

A. Transfers by Modification

Except as provided in paragraph (B) below, this permit may be transferred by the Permittee to a new owner or operator only if this permit has been modified or revoked and reissued under 40 CFR 122.62(b)(2), or a minor modification made under 40 CFR 122.63(d), to identify the new Permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

B. Automatic Transfers

This permit may be automatically transferred to a new Permittee if:

1. The Permittee notifies Ecology at least 30 days in advance of the proposed transfer date.

2. The notice includes a written agreement between the existing and new Permittees containing a specific date transfer of permit responsibility, coverage, and liability between them.

3. Ecology does not notify the existing Permittee and the proposed new Permittee of its intent to modify or revoke and reissue this permit. A modification under this subparagraph may also be minor modification under 40 CFR 122.63. If this notice is not received, the transfer is effective on the date specified in the written agreement.

G9. REDUCED PRODUCTION FOR COMPLIANCE

The Permittee, in order to maintain compliance with its permit, shall control production and/or all discharges upon reduction, loss, failure, or bypass of the treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

G10. REMOVED SUBSTANCES

Collected screenings, grit, solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall not be resuspended or reintroduced to the final effluent stream for discharge to state waters.

G11. DUTY TO PROVIDE INFORMATION

The Permittee shall submit to Ecology, within a reasonable time, all information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee shall also submit to Ecology upon request, copies of records required to be kept by this permit.

G12. OTHER REQUIREMENTS OF 40 CFR

All other requirements of 40 CFR 122.41 and 122.42 are incorporated in this permit by reference.

G13. ADDITIONAL MONITORING

Ecology may establish specific monitoring requirements in addition to those contained in this permit by administrative order or permit modification.

G14. PAYMENT OF FEES

The Permittee shall submit payment of fees associated with this permit as assessed by Ecology.

G15. PENALTIES FOR VIOLATING PERMIT CONDITIONS

Any person who is found guilty of willfully violating the terms and conditions of this permit shall be deemed guilty of a crime, and upon conviction thereof shall be punished by a fine of up to $10,000 and costs of prosecution, or by imprisonment in the discretion of the court. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

Any person who violates the terms and conditions of a waste discharge permit shall incur, in addition to any other penalty as provided by law, a civil penalty in the amount of up to $10,000 for every such violation. Each and every such violation shall be a separate and distinct offense, and in case of a continuing violation, every day's continuance shall be deemed to be a separate and distinct violation.

G16. UPSET

Definition – "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of the following paragraph are met.

A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that: 1) an upset occurred and that the Permittee can identify the cause(s) of the upset; 2) the permitted facility was being properly operated at the time of the upset; 3) the Permittee submitted notice of the upset as required in Condition S3.E; and 4) the Permittee complied with any remedial measures required under S4.C of this permit.

In any enforcement preceding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

G17. PROPERTY RIGHTS

This permit does not convey any property rights of any sort, or any exclusive privilege.

G18. DUTY TO COMPLY

The Permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

G19. TOXIC POLLUTANTS

The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.

G20. PENALTIES FOR TAMPERING

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than two years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this Condition, punishment shall be a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four years, or by both.

G21. REPORTING ANTICIPATED NON-COMPLIANCE

The Permittee shall give advance notice to Ecology by submission of a new application or supplement thereto at least 180 days prior to commencement of such discharges, of any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility or activity which may result in noncompliance with permit limits or conditions. Any maintenance of facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, shall be scheduled during noncritical water quality periods and carried out in a manner approved by Ecology.

G22. REPORTING OTHER INFORMATION

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it shall promptly submit such facts or information.

G23. COMPLIANCE SCHEDULES

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

APPENDIX A

LIST OF POLLUTANTS WITH ANALYTICAL METHODS, DETECTION LIMITS AND QUANTITATION LEVELS

The Permittee must use the specified analytical methods, detection limits (DLs) and quantitation levels (QLs) in the following table for permit and application required monitoring unless:

- Another permit condition specifies other methods, detection levels, or quantitation levels.
- The method used produces measurable results in the sample and EPA has listed it as an EPA-approved method in 40 CFR Part 136.

If the Permittee uses an alternative method, not specified in the permit and as allowed above, it must report the test method, DL, and QL on the discharge monitoring report or in the required report.

When the permit requires the Permittee to measure the base neutral compounds in the list of priority pollutants, it must measure all of the base neutral pollutants listed in the table below. The list includes EPA required base neutral priority pollutants and several additional polynuclear aromatic hydrocarbons (PAHs). The Water Quality Program added several PAHs to the list of base neutrals below from Ecology's Persistent Bioaccumulative Toxics (PBT) List. It only added those PBT parameters of interest to Appendix A that did not increase the overall cost of analysis unreasonably.

Ecology added this appendix to the permit in order to reduce the number of analytical "non-detects" in permit-required monitoring and to measure effluent concentrations near or below criteria values where possible at a reasonable cost.

CONVENTIONAL PARAMETERS

Pollutant & CAS No. *(if available)*	**Recommended Analytical Protocol**	**Detection (DL)**[1] *µg/L unless specified*	**Quantitation Level (QL)**[2] *µg/L unless specified*
Biochemical Oxygen Demand	SM5210-B		2 mg/L
Chemical Oxygen Demand	SM5220-D		10 mg/L
Total Organic Carbon	SM5310-B/C/D		1 mg/L
Total Suspended Solids	SM2540-D		5 mg/L
Total Ammonia (as N)	SM4500-NH3-GH		0.3 mg/L
Flow	Calibrated device		
Dissolved oxygen	SM4500-OC/OG		0.2 mg/L

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
Temperature (max. 7-day avg.)	Analog recorder or Use micro-recording devices known as thermistors		0.2° C
pH	SM4500-H^+ B	N/A	N/A

NONCONVENTIONAL PARAMETERS

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
Total Alkalinity	SM2320-B		5 mg/L as CaCO3
Chlorine, Total Residual	SM4500 Cl G		50.0
Color	SM2120 B/C/E		10 color units
Fecal Coliform	SM 9221D/E,9222	N/A	N/A
Fluoride (16984-48-8)	SM4500-F E	25	100
Nitrate-Nitrite (as N)	SM4500-NO3-E/F/H		100
Nitrogen, Total Kjeldahl (as N)	SM4500-NH3-C/E/FG		300
Ortho-Phosphate (PO_4 as P)	SM4500- PE/PF	3	10
Phosphorus, Total (as P)	SM4500-PE/PF	3	10
Oil and Grease (HEM)	1664A	1,400	5,000
Salinity	SM2520-B		3 PSS
Settleable Solids	SM2540 -F		100
Sulfate (as mg/L SO_4)	SM4110-B		200
Sulfide (as mg/L S)	SM4500-S^2F/D/E/G		200
Sulfite (as mg/L SO_3)	SM4500-SO3B		2000
Total Coliform	SM 9221B, 9222B, 9223B	N/A	N/A

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
Total dissolved solids	SM2540 C		20 mg/L
Total Hardness	SM2340B		200 as CaCO3
Aluminum, Total (7429-90-5)	200.8	2.0	10
Barium Total (7440-39-3)	200.8	0.5	2.0
BTEX (benzene +toluene + ethylbenzene + m,o,p xylenes)	EPA SW 846 8021/8260	1	2
Boron Total (7440-42-8)	200.8	2.0	10.0
Cobalt, Total (7440-48-4)	200.8	0.05	0.25
Iron, Total (7439-89-6)	200.7	12.5	50
Magnesium, Total (7439-95-4)	200.7	10	50
Molybdenum, Total (7439-98-7)	200.8	0.1	0.5
Manganese, Total (7439-96-5)	200.8	0.1	0.5
NWTPH Dx	Ecology NWTPH Dx	250	250
NWTPH Gx	Ecology NWTPH Gx	250	250
Tin, Total (7440-31-5)	200.8	0.3	1.5
Titanium, Total (7440-32-6)	200.8	0.5	2.5

PRIORITY POLLUTANTS

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
METALS, CYANIDE & TOTAL PHENOLS			
Antimony, Total (7440-36-0)	200.8	0.3	1.0
Arsenic, Total (7440-38-2)	200.8	0.1	0.5
Beryllium, Total (7440-41-7)	200.8	0.1	0.5
Cadmium, Total (7440-43-9)	200.8	0.05	0.25
Chromium (hex) dissolved (18540-29-9)	SM3500-Cr EC	0.3	1.2

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
METALS, CYANIDE & TOTAL PHENOLS			
Chromium, Total (7440-47-3)	200.8	0.2	1.0
Copper, Total (7440-50-8)	200.8	0.4	2.0
Lead, Total (7439-92-1)	200.8	0.1	0.5
Mercury, Total (7439-97-6)	1631E	0.0002	0.0005
Nickel, Total (7440-02-0)	200.8	0.1	0.5
Selenium, Total (7782-49-2)	200.8	1.0	1.0
Silver, Total (7440-22-4)	200.8	0.04	0.2
Thallium, Total (7440-28-0)	200.8	0.09	0.36
Zinc, Total (7440-66-6)	200.8	0.5	2.5
Cyanide, Total (57-12-5)	335.4	5	10
Cyanide, Weak Acid Dissociable	SM4500-CN I	5	10
Phenols, Total	EPA 420.1		50
ACID COMPOUNDS			
2-Chlorophenol (95-57-8)	625	1.0	2.0
2,4-Dichlorophenol (120-83-2)	625	0.5	1.0
2,4-Dimethylphenol (105-67-9)	625	0.5	1.0
4,6-dinitro-o-cresol (534-52-1) (2-methyl-4,6,-dinitrophenol)	625/1625B	1.0	2.0
2,4 dinitrophenol (51-28-5)	625	1.0	2.0
2-Nitrophenol (88-75-5)	625	0.5	1.0
4-nitrophenol (100-02-7)	625	0.5	1.0
Parachlorometa cresol (59-50-7) (4-chloro-3-methylphenol)	625	1.0	2.0
Pentachlorophenol (87-86-5)	625	0.5	1.0
Phenol (108-95-2)	625	2.0	4.0
2,4,6-Trichlorophenol (88-06-2)	625	2.0	4.0

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
VOLATILE COMPOUNDS			
Acrolein (107-02-8)	624	5	10
Acrylonitrile (107-13-1)	624	1.0	2.0
Benzene (71-43-2)	624	1.0	2.0
Bromoform (75-25-2)	624	1.0	2.0
Carbon tetrachloride (56-23-5)	624/601 or SM6230B	1.0	2.0
Chlorobenzene (108-90-7)	624	1.0	2.0
Chloroethane (75-00-3)	624/601	1.0	2.0
2-Chloroethylvinyl Ether (110-75-8)	624	1.0	2.0
Chloroform (67-66-3)	624 or SM6210B	1.0	2.0
Dibromochloromethane (124-48-1)	624	1.0	2.0
1,2-Dichlorobenzene (95-50-1)	624	1.9	7.6
1,3-Dichlorobenzene (541-73-1)	624	1.9	7.6
1,4-Dichlorobenzene (106-46-7)	624	4.4	17.6
Dichlorobromomethane (75-27-4)	624	1.0	2.0
1,1-Dichloroethane (75-34-3)	624	1.0	2.0
1,2-Dichloroethane (107-06-2)	624	1.0	2.0
1,1-Dichloroethylene (75-35-4)	624	1.0	2.0
1,2-Dichloropropane (78-87-5)	624	1.0	2.0
1,3-dichloropropene (mixed isomers) (1,2-dichloropropylene) (542-75-6)[3]	624	1.0	2.0
Ethylbenzene (100-41-4)	624	1.0	2.0
Methyl bromide (74-83-9) (Bromomethane)	624/601	5.0	10.0
Methyl chloride (74-87-3)	624	1.0	2.0

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
METALS, CYANIDE & TOTAL PHENOLS			
(Chloromethane)			
Methylene chloride (75-09-2)	624	5.0	10.0
1,1,2,2-Tetrachloroethane (79-34-5)	624	1.9	2.0
Tetrachloroethylene (127-18-4)	624	1.0	2.0
Toluene (108-88-3)	624	1.0	2.0
1,2-Trans-Dichloroethylene (156-60-5) (Ethylene dichloride)	624	1.0	2.0
1,1,1-Trichloroethane (71-55-6)	624	1.0	2.0
1,1,2-Trichloroethane (79-00-5)	624	1.0	2.0
Trichloroethylene (79-01-6)	624	1.0	2.0
Vinyl chloride (75-01-4)	624/SM6200B	1.0	2.0
BASE/NEUTRAL COMPOUNDS (compounds in bold are Ecology PBTs)			
Acenaphthene (83-32-9)	625	0.2	0.4
Acenaphthylene (208-96-8)	625	0.3	0.6
Anthracene (120-12-7)	625	0.3	0.6
Benzidine (92-87-5)	625	12	24
Benzyl butyl phthalate (85-68-7)	625	0.3	0.6
Benzo(*a*)anthracene (56-55-3)	625	0.3	0.6
Benzo(b)fluoranthene (3,4-benzofluoranthene) (205-99-2)[4]	610/625	0.8	1.6
Benzo(j)fluoranthene (205-82-3)[4]	625	0.5	1.0
Benzo(k)fluoranthene (11,12-benzofluoranthene) (207-08-9)[4]	610/625	0.8	1.6
Benzo(r,s,t)pentaphene (189-55-9)	625	0.5	1.0

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
METALS, CYANIDE & TOTAL PHENOLS			
Benzo(*a*)pyrene (50-32-8)	610/625	0.5	1.0
Benzo(*ghi*)Perylene (191-24-2)	610/625	0.5	1.0
Bis(*2-chloroethoxy)*methane (111-91-1)	625	5.3	21.2
Bis(*2-chloroethyl*)ether (111-44-4)	611/625	0.3	1.0
Bis(*2-chloroisopropyl*)ether (39638-32-9)	625	0.3	0.6
Bis(*2-ethylhexyl*)phthalate (117-81-7)	625	0.1	0.5
4-Bromophenyl phenyl ether (101-55-3)	625	0.2	0.4
2-Chloronaphthalene (91-58-7)	625	0.3	0.6
4-Chlorophenyl phenyl ether (7005-72-3)	625	0.3	0.5
Chrysene (218-01-9)	610/625	0.3	0.6
Dibenzo (a,j)acridine (224-42-0)	610M/625M	2.5	10.0
Dibenzo (a,h)acridine (226-36-8)	610M/625M	2.5	10.0
Dibenzo(a-*h*)anthracene (53-70-3)(1,2,5,6-dibenzanthracene)	625	0.8	1.6
Dibenzo(a,e)pyrene (192-65-4)	610M/625M	2.5	10.0
Dibenzo(a,h)pyrene (189-64-0)	625M	2.5	10.0
3,3-Dichlorobenzidine (91-94-1)	605/625	0.5	1.0
Diethyl phthalate (84-66-2)	625	1.9	7.6
Dimethyl phthalate (131-11-3)	625	1.6	6.4
Di-n-butyl phthalate (84-74-2)	625	0.5	1.0
2,4-dinitrotoluene (121-14-2)	609/625	0.2	0.4
2,6-dinitrotoluene (606-20-2)	609/625	0.2	0.4

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
BASE/NEUTRAL COMPOUNDS (compounds in bold are Ecology PBTs)			
Di-n-octyl phthalate (117-84-0)	625	0.3	0.6
1,2-Diphenylhydrazine (*as Azobenzene*) (122-66-7)	1625B	5.0	20
Fluoranthene (206-44-0)	625	0.3	0.6
Fluorene (86-73-7)	625	0.3	0.6
Hexachlorobenzene (118-74-1)	612/625	0.3	0.6
Hexachlorobutadiene (87-68-3)	625	0.5	1.0
Hexachlorocyclopentadiene (77-47-4)	1625B/625	0.5	1.0
Hexachloroethane (67-72-1)	625	0.5	1.0
Indeno(*1,2,3-cd*)Pyrene (193-39-5)	610/625	0.5	1.0
Isophorone (78-59-1)	625	0.5	1.0
3-Methyl cholanthrene (56-49-5)	625	2.0	8.0
Naphthalene (91-20-3)	625	0.3	0.6
Nitrobenzene (98-95-3)	625	0.5	1.0
N-Nitrosodimethylamine (62-75-9)	607/625	2.0	4.0
N-Nitrosodi-n-propylamine (621-64-7)	607/625	0.5	1.0
N-Nitrosodiphenylamine (86-30-6)	625	0.5	1.0
Perylene (198-55-0)	625	1.9	7.6
Phenanthrene (85-01-8)	625	0.3	0.6
Pyrene (129-00-0)	625	0.3	0.6
1,2,4-Trichlorobenzene (120-82-1)	625	0.3	0.6
DIOXIN			
2,3,7,8-Tetra-Chlorodibenzo-P-Dioxin (176-40-16)	1613B	1.3 pg/L	5 pg/L

PESTICIDES/PCBs			
Aldrin (309-00-2)	608	0.025	0.05
alpha-BHC (319-84-6)	608	0.025	0.05
beta-BHC (319-85-7)	608	0.025	0.05
gamma-BHC (58-89-9)	608	0.025	0.05
delta-BHC (319-86-8)	608	0.025	0.05
Chlordane (57-74-9) [5]	608	0.025	0.05
4,4'-DDT (50-29-3)	608	0.025	0.05
4,4'-DDE (72-55-9)	608	0.025	0.05[10]
4,4' DDD (72-54-8)	608	0.025	0.05
Dieldrin (60-57-1)	608	0.025	0.05
alpha-Endosulfan (959-98-8)	608	0.025	0.05
beta-Endosulfan (33213-65-9)	608	0.025	0.05
Endosulfan Sulfate (1031-07-8)	608	0.025	0.05
Endrin (72-20-8)	608	0.025	0.05
Endrin Aldehyde (7421-93-4)	608	0.025	0.05
Heptachlor (76-44-8)	608	0.025	0.05
Heptachlor Epoxide (1024-57-3)	608	0.025	0.05
PCB-1242 (53469-21-9) [6]	608	0.25	0.5
PCB-1254 (11097-69-1)	608	0.25	0.5
PCB-1221 (11104-28-2)	608	0.25	0.5
PCB-1232 (11141-16-5)	608	0.25	0.5
PCB-1248 (12672-29-6)	608	0.25	0.5
PCB-1260 (11096-82-5)	608	0.13	0.5
PCB-1016 (12674-11-2) [6]	608	0.13	0.5
Toxaphene (8001-35-2)	608	0.24	0.5

1. Detection level (DL) or detection limit means the minimum concentration of an analyte (substance) that can be measured and reported with a 99percent confidence that the analyte concentration is greater than zero as determined by the procedure given in 40 CFR part 136, Appendix B.

2. Quantitation Level (QL) also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample

weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1, 2, or 5) x 10^n, where n is an integer. (64 FR 30417).

ALSO GIVEN AS: The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency December 2007).

3. 1, 3-dichloroproylene (mixed isomers) You may report this parameter as two separate parameters: cis-1, 3-dichlorpropropene (10061-01-5) and trans-1, 3-dichloropropene (10061-02-6).

4. Total Benzofluoranthenes - Because Benzo(b)fluoranthene, Benzo(j)fluoranthene and Benzo(k)fluoranthene co-elute you may report these three isomers as total benzofluoranthenes.

5. Chlordane – You may report alpha-chlordane (5103-71-9) and gamma-chlordane (5103-74-2) in place of chlordane (57-74-9). If you report alpha and gamma-chlordane, the DL/PQLs that apply are 0.025/0.050.

6. PCB 1016 & PCB 1242 – You may report these two PCB compounds as one parameter called PCB 1016/1242.

ADDENDUM TO THE FACT SHEET
FOR NATIONAL POLLUTANT DISCHARGE
ELIMINATION SYSTEM (NPDES)
PERMIT NO. WA0023639

I. GENERAL INFORMATION

Facility: Salmon Creek Wastewater Treatment Plant
15100 Northwest McCann Road
Vancouver, WA 98685

II. APPLICATION REVIEW

The Clark County Department of Public Works submitted an application to Ecology on June 23, 2009, for permit reissuance, and Ecology accepted it on July 16, 2009. Ecology has sufficiently reviewed the application, discharge monitoring reports, and other facility information in enough detail to ensure that:

- The Clark County Department of Public Works has complied with all of the terms, conditions, requirements and schedules of compliance of the expired permit.
- Ecology has up-to date information on the waste treatment practices and the nature, content, volume, and frequency of its discharge.
- The discharge meets applicable effluent standards and limits, water quality standards, and other legally applicable requirements.

III. PERMIT REAUTHORIZATION

When Ecology reauthorizes a discharge permit it essentially reissues the permit with the existing limits, terms and conditions. Alternatively, when Ecology renews a permit it re-evaluates the impact of the discharge on the receiving water which may lead to changes in the limits, terms and conditions of the permit.

This fact sheet addendum accompanies the permit, which Ecology proposes to reauthorize for the discharge of wastewater to the Columbia River. The previous fact sheet explains the basis for the discharge limitations and conditions of the reauthorized permit and remains as part of the administrative record. Note that the previous fact sheet refers to the Hazel Dell Sewer District. That entity is now the Clark Regional Wastewater District.

Ecology determined it does not need to change the existing permit requirements, including discharge limits and monitoring, to protect the receiving water receiving quality. The previous fact sheet addressed conditions and issues at the facility at the time when Ecology issued the previous permit in 2005. Since the issuance of the current permit, Ecology has not received any additional information which indicates that environmental impacts from the discharge warrant a complete renewal of the permit. The reauthorized permit is virtually identical to the previous permit issued on June 30, 2005, with minor exceptions. Those changes are to the design loading, loading-related effluent limits, and an industrial user survey, noted below.

The allowable loading allocation for Biochemical Oxygen Demand (BOD) shown in this permit is higher than the prior iteration of this permit. It is also greater than the initial design for this Publicly Owned Treatment Works (POTW). The upgrades to the aeration system to bring BOD loading capacity more in line with the Total Suspended Solids (TSS) capacity were within the standard design range, and therefore approved by Ecology based on an engineering analysis without the need for a capacity rerating study.

However, the new loading capacity for BOD should have triggered a check to ensure that the effluent loading authorized in S1.A was still reflective of 85 percent removal, and did not similarly increase. This was not done at the time, but when done, it was observed that the 85 percent removal requirement and 30 mg/L effluent quality requirements resulted in effluent loading allocations for BOD which are the same as were carried forward for TSS in this permit. So please find those effluent loading limits are now the same.

The Industrial User Survey from the city of Battle Ground which was proposed to be required in 2012 in the draft permit, was changed to be required in 2014 to allow time to properly complete this assessment, and based on a reassessment by Ecology that found this effort would be more timely and useful in 2014, and the delay is unlikely to adversely impact the sewerage collection or treatment works.

Ecology reviewed inspections and assessed compliance of the The Clark County Department of Public Works discharge with the terms and conditions in the previous permit and determined that it should not rank the facility as a high priority for permit renewal. Ecology assigns a high priority for permit renewals in situations where water quality would benefit from a more stringent permit during the next five-year cycle.

The permit reauthorization process, along with the renewal of high priority permits, allows Ecology to reissue permits in a timely manner and minimize the number of active permits that have passed their expiration dates. For permit reissuance planning purposes, Ecology follows a system of ranking that considers the benefit gained by renewing a permit rather than reauthorizing a permit during its annual permit planning process. Ecology assesses each permit that is expiring and due for reissuance and compares it with other permits due for reissuance. Ecology notifies the public and seeks input after it has tentatively established the initial draft ranking of the permits it plans to renew and those it plans to reauthorize. Ecology considers all relevant comments and suggestions before it makes a final decision.

Ecology carried over the discharge limits and conditions in effect at the time of expiration of the previous permit to this reauthorized permit. Ecology only changed the submittal dates for reports from those in the previous permit. Ecology removed the completed report requirements that do not require additional or continued assessment. It adjusted the dates for the other standard compliance and submittal requirements that it carried over from the past permit into this reauthorized permit. Ecology considered these reports necessary in the previous permit and no information has come forward to cause it to reconsider.

Ecology must public notice the availability of the draft reauthorized permit at least 30 days before it reissues the permit [Washington Administrative Code (WAC) 173-220-050]. Ecology invites you to review and comment on its decision to reauthorize the permit (see Appendix A-Public Involvement for more detail on the Public Notice procedures).

After the public comment period has closed, Ecology will prepare a response to comments document that it will attach to this fact sheet addendum. The response to comments will include the resultant changes to the permit and either address each comment individually or summarize the substantive comments and respond. Ecology sends a copy of the response to comments to all parties who submitted comments. Ecology will include the response to comments in this fact sheet addendum.

IV. RECOMMENDATION FOR PERMIT ISSUANCE

Ecology proposes to reissue this permit for five years.

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reissue a permit to The Clark County Department of Public Works. The permit includes wastewater discharge limits and other conditions. This fact sheet addendum describes the facility and Ecology's reasons for reauthorizing the permit conditions.

Ecology placed a Public Notice of Application on June 4, 2009; June 11, 2009; June 16, 2010, and June 23, 2010; in the *Columbian* to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology will place a Public Notice of Draft on November 23, 2011, in the *Columbian* to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet addendum.

The Notice –

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website.).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Urges people to submit their comments, in writing, before the end of the Comment Period
- Tells how to request a public hearing of comments about the proposed NPDES Permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled **Frequently Asked Questions about Effective Public Commenting** which is available on our website at http://www.ecy.wa.gov/biblio/0307023.html.

You may obtain further information from Ecology by telephone, 360-407-6279, or by writing to the permit writer at the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

The primary author of this permit and fact sheet is Carey Cholski.

APPENDIX B—RESPONSE TO COMMENTS

Ecology received comments from Clark Regional Wastewater District on December 21, 2011.

Comment 1:

Page 9, Section S2.B. - The Permittee shall submit the first quarterly monitoring report (for 2012) by _____ and the first report for pollutants monitored annually by **February 15, 2012** (for the year 2011).

Currently the dates associated with the first quarterly monitoring report are blank. Please complete.

Response 1:

Ecology was waiting until we knew what the Effective date was going to be before we entered dates into specific sections of the permit. The dates are now complete and/or updated.

Comment 2:

Page 24, Section S8.B. - A written report shall be submitted to Ecology with the first report due by _____.

Currently the date associated with the first acute toxicity report is blank. Please complete.

Response 2:

Please see Response 1.

Comment 3:

Page 26, Section S9.A. - Sampling is again required twice in the last year of the permit if no chronic limit is required and a summary report of the chronic toxicity characterization is due by **April15, 2013.**

The April 15, 2013, due date appears to be in conflict with the testing requirements. Please clarify if this date is intended to be after the initial sampling events in 2012/2013 or after the testing in the last year of the permit. In either case, the date will need to be adjusted.

Response 3:

Text was changed to: Sampling is again required twice in the last year of the permit if no chronic limit is required and a summary report of the chronic toxicity characterization is due in according with S9.E.

Comment 4:

Page 27, Section S9.C. - The report from the monitoring is due **April 15, and October 15,** each year with the first report due **October 15, 2011.**

The October 15, 2011 due date is in the past. Please update.

Response 4:

Date was updated to October 15, 2013.

Comment 5:

Page 29, Section S9.E. - The data report is **due June 15, 2015, prior to the permit renewal application.**

Please confirm the June 15, 2015, due date once permit renewal date is established. Currently the permit renewal date is blank in Section G7.

Response 5:

See Response 1.

Comment 6:

The Permittee shall apply for permit renewal by _____.

Currently the date associated with reapplication is blank. Please complete.

Response 6:

See Response 1.

WASTEWATER TREATMENT PLANT MONITORING REPORT

Permit No. WA0023639 | Month | Year

Facility Name Salmon Creek Wastewater Treatment Plant | County Clark

Receiving Water Columbia River | Plant Operator

Plant Type Activated Sludge with UV Disinfection | Population

	INFLUENT					EFFLUENT									
Frequency	CONT	5/WEEK	5/WEEK	5/WEEK	5/WEEK	5/WEEK		5/WEEK	5/WEEK		5/WEEK	CONT	CONT	DAILY	3/WEEK
Date	FLOW MGD	BOD 5-DAY MG/L	BOD 5-DAY LBS/DAY	TSS MG/L	TSS LBS/DAY	BOD 5-DAY MG/L	BOD 5-DAY % REMOVAL	BOD 5-DAY LBS/DAY	TSS MG/L	TSS % REMOVAL	TSS LBS/DAY	pH (DAILY MIN) STANDARD UNITS	pH (DAILY MAX) STANDARD UNITS	FECAL COLIFORM #/100 ML	TOTAL AMMONIA MG/L
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
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24															
25															
26															
27															
28															
29															
30															
31															
Total															
	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	MIN		GEM	AVG
Permit	**14.95**		**25400**		**28200**	**30**	**85**	**3741**	**30**	**85**	**3741**	**6.0**		**200**	**18.7**
	MAX	MAX	MAX	MAX	MAX	AVW		AVW	AVW		AVW		MAX	GM7	MXD
Limits						**45**		**5612**	**45**		**5612**		**9.0**	**400**	**37.5**

Please Circle ALL Permit Violations **Mail to P.O. Box 47775, Olympia WA 98504-7775**

AVG=Average **AVW** =Highest Weekly Average **GEM**=Geometric Mean **MAX**=Maximum **MIN**=Minimum
GM7=highest 7-day Geometric Mean

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Title

Signature

WASTEWATER TREATMENT PLANT MONITORING REPORT

Permit No. WA0023639 | Month | Year

Facility Name Salmon Creek Wastewater Treatment Plant | County Clark

Receiving Water Columbia River | Plant Operator

Plant Type Activated Sludge with UV Disinfection | Population

EFFLUENT CONT.

Frequency	CONT															
Date	TEMPERATURE DAILY MAX - DEGREE C															
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
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26																
27																
28																
29																
30																
31																
Total																
	AVG															
Permit																
	MXD															
Limits																

Please Circle ALL Permit Violations **Mail to P.O. Box 47775, Olympia WA 98504-7775**

AVG=Average **AVW** =Highest Weekly Average **GEM**=Geometric Mean **MAX**=Maximum **MIN**=Minimum
GM7=highest 7-day Geometric Mean

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Title

Signature

APPENDIX B – Rerating Study

APPENDIX C – Utilization Review

APPENDIX D – Dewatering Engineering Report

APPENDIX E – Not Used

APPENDIX F – SCTP Process Calculations

SCTP Design Flows & Loads

		Flows (mgd)			BOD (ppd)		TSS (ppd)	
		Average Annual	Maximum Month	Peak Hour	Average Annual	Maximum Month	Average Annual	Maximum Month
Phase 4	2013	11.33	14.95	28.32	21,355	25,400	21,500	28,100
Phase 5		13.6	18.0	34.1	25,130	30,899	25,851	33,078
Phase 6	2018	14.7	19.7	37.3	27,235	33,965	28,277	35,854
Phase 7		17.4	23.3	44.1	32,241	40,349	33,439	42,521
Phase 8		20.1	27.0	51.1	37,386	46,912	38,745	49,375
Phase 9	2028	22.7	30.7	56.9	42,553	53,501	44,072	56,256

Screens/Washers/Compactors

Assumptions

All new match existing, 6 mm openings
Manual bar screen (2.5" openings) provides back-up

Criteria

PHWW Capacity/screen **17** mgd

Year	Flows (mgd) PHWW	# of Units Existing	New	Total	Screening Capacity
Phase 4	28.3	2	0	2	34
Phase 5	34.1	2	0	2	34
Phase 6	37.3	2	1	3	51

Grit Removal

Assumptions

2 vortex units provided

Criteria

PHWW Capacity/grit unit **25** mgd (1/2 of Equipment Rating)

Year	Flows (mgd) PHWW	# of Units Existing	New	Total	Grit Removal Capacity
Phase 4	28.3	2	0	2	50
Phase 5	37.3	2	0	2	50
Phase 6	56.9	2	0	2	50

Primary Clarifiers

Assumptions

All new match existing

Because there are always a min of 3 units, redundancy requirements do not control

Criteria

AA SOR	**1200**	gpd/ft^2	per Ecology T2-2.1.1
PHWW SOR	**3000**	gpd/ft^2	per Ecology T2-2.1.1
AA Max Dt	**2.5**	hrs	per Ecology T2-2.1.3
Weir Loading Rates	**10,000 - 40,000**	gpd/lf	per Ecology T2-2.1.2
Length	160	ft	
Width	20	ft	
Depth	11	ft	
Weir Length	210	ft	

	Flows (mgd)		# of Units			Capacity (mgd) - All Units in Service		Detention Time (hrs)	Weir Loading Rate (gpd/lf)	
	AA	PHWW	Existing	New	Total	AA	PHWW	AA	AA	PHWW
Phase 4	11	28	3	1	4	15	38	2.2	13488	33714
Phase 5	14	34	3	1	4	15	38	1.9	16240	40592
Phase 6	15	37	3	1	4	15	38	1.7	17465	44413

Capacity = Length x Width x SOR x # of Units / 10^6
SOR = Surface overflow rate

Basin Volume = Length x Width x Depth
Detention Time = Basin Volume x # of Units / (Flow x 1.547 x 3600)

Weir Loading Rate = Flow x 10^6 / (Weir Length x # of Units)

Aeration Basins

Assumptions:

AB 1-4 Volume, Total (MG)	1.88	
AB 5 and Future Vol, ea (MG)	0.87	
% Aerated	75%	
Primary Clarifier BOD removal	30%	per 5/27/04 DOE letter
Net Secondary Yield (lb WAS/lb BOD)	0.85	6/10/10 - 12/25/10 data - stable, consistent nitrification, 90%
MLVSS/MLSS	80%	per 2003 data

Criteria:

SRT (days)	5.5	Per Design Criteria in Drawings
Max MLSS (mg/L)	3500	per Ecology T3-3.1.1
Volumetric Loading (lb BOD/1000 cf/d)	40	MOP 8
F/M (lb BOD/lb MLVSS/d)	0.4	MOP 8

Basin Capacity (ppd of BOD5)

	Based on SRT	Based on Volumetric Loading	Based on F/M	Est. Capacity
Aeration Basins 1-4:				
MMWW Capacity (total)	11,745	10,053	13,171	10,053
Aeration Basin 5 & Future Basins				
MMWW Capacity (each)	5,435	4,652	6,095	4,652

Flow & Loads				Existing Aeration Basins				Future Basins		Total	
				Aeration Basins 1-4		Aeration Basin 5		Aeration Basin 6		(All Units Online)	
	AA RS Flow (mgd)	MMWW RS BOD (ppd)	MMWW PE BOD (ppd)	No.	Capacity (ppd of BOD)	No.	Capacity (ppd of BOD)	No.	Capacity (ppd of BOD)	No.	Capacity (ppd of BOD)
Phase 4	11.33	25,400	17,780	1	10,053	1	4,652	1	4,652	3	19,358
Phase 5	13.64	30,899	21,629	1	10,053	1	4,652	2	9,305	3	24,011
Phase 6	14.67	33,965	23,775	1	10,053	1	4,652	2	9,305	5	24,011

Capacity Based on SRT = (8.345 x Volume x MLSS) / (Yield x SRT)

Capacity Based on Volumetric Loading = (Volume x 1000 / 7.48) x Volumetric Loading
Capacity Based on F/M = (% Aerated x Volume) x (Max MLSS x MLVSS/MLSS) x 8.345 x F/M
MMWW = Max Month Wet Weather
RS = Raw Sewage
PE = Primary Effluent

Aeration Capacity - Blowers

Assumptions:

Total capacity assumes largest blower out of service for each train

Cw	1.5	per 2007 data			
lb O2/lb BOD	1.25	per 5/27/04 DOE letter			
lb O2/lb TKN removed	4.6	Orange Book			
TKN/NH_3	1.2	per 2007 data			
alpha	0.5	M&E	Cs	10.53	M&E
beta	0.95	M&E	Cs_{20}	9.08	M&E
T	13		Psite	14.7	
theta	1.024	M&E	Psc	14.7	

Criteria:

Effluent BOD	15	mg/l
PE NH_3	35	mg/l per 2007 data
SE Ammonia	15	mg/L
Primary Clarifier BOD Removal	30%	per 5/27/04 DOE letter
Peaking Factor	1.70	

AB 1-4

Volume	1.88	MG
SOTE	25%	(based on Sanitaire literature and basin config.)
Blower Capacity	3,300	scfm

AB 5-6

Volume (total)	1.74	MG
SOTE	35%	(based on Sanitaire literature and basin config
Blower Capacity (Large	4,500	scfm
Blower Capacity (Small	2,500	scfm

	Flows and Loads				Oxygen Transfer Rates		
	AA Flow (mgd)	AA RS BOD (ppd)	AA PE BOD (ppd)	AA PE NH_3 (ppd)	AOR (ppd)	AOR/ SOR	SOR (ppd)
Phase 4	11.33	21,355	14,949	3,307	27,346	0.3966	117,209
Phase 5	13.64	25,130	17,591	3,982	32,416	0.3966	138,939
Phase 6	14.67	27,235	19,064	4,282	35,044	0.3966	150,205

	AB 1-4					AB 5 - 6						
	Flow Split	Air Req'd (scfm)	# of Blowers	# of New Blowers	Total Capacity (scfm)	Flow Split	Air Req'd (scfm)	# of Blowers Large	# of Blowers Small	# of New Blowers Large	# of New Blowers Small	Blower Capacity (scfm)
Phase 4	48%	9,000	3	1	9,900	52%	7,000	2	0	0	1	11,500
Phase 5	36%	8,000	3	1	9,900	64%	10,200	2	0	0	1	11,500
Phase 6	41%	9,900	3	1	9,900	59%	10,100	2	0	1	1	11,500

AOR = PE BOD x lb O^2/lb BOD + (PE NH_3 - SE NH_3)* lb O2/lb TKN*TKN/NH_3

AOR/SOR = theta^(T-20) x alpha x (beta x Cs - Cw) / Cs_{20}

SOR = Peaking Factor x AOR / AOR/SOR

Air Required = Flow Split x SOR x 0.04 / SOTE

0.04 = conversion of lb O_2/d to scfm

MMWW = Max Month Wet Weather

RS = Raw Sewage

PE = Primary Effluent

AOR = actual oxygen water transfer rate in process (ppd)

SOR = standard oxygen transfer rate (ppd)

alpha = Kla(wastewater) / Kla(cleanwater)

beta = field / standard condition saturation ratio

Cs = oxygen saturation concentration for tap water at field operating conditions, mg/L

Cw = operating oxygen concentration, mg/L

Cs_{20} = oxygen saturation concentration for tap water at 20 deg C, mg/L

T = temperature of wastewater in design conditions (deg C)

theta = temperature and pressure correction for Kla

Psite = operating ambient pressure (psia)

Psc = standard condition ambient pressure (psia)

SOTE = O_2 transfer efficiency

Secondary Clarifiers

Assumptions

SC 1&2 abandoned when AB 7 constructed,

MLSS **3500** mg/L

RAS Rate **70%**

Because there are always a min of 3 units, redundancy requirements do not control

Criteria

MMWW SOR	**650**	gpd/ft^2	
PHWW SOR	**1200**	gpd/ft^2	per Ecology T2-2.1.1
MMWW SLR	**35**	lbs/d/ft^2	
MMDW SLR	**25**	lbs/d/ft^2	

Basin Capacity

			Capacity per Clarifier (mgd)			
			SOR		SLR	
	Diam. (ft)	Area (ft^2)	MMWW	PHWW	MMWW	MMDW
Clarifier 1 & 2	90	6,362	4.1	7.6	4.5	3.2
Clarifier 3 & 4	105	8,659	5.6	10.4	6.1	4.4
Clarifier 5 & 6	120	11,310	7.4	13.6	8.0	5.7

	Flows (mgd)			# of Units					Capacity (mgd)- All Units in Service		
				Existing		New					
Year	MMWW	MMDW	PHWW	Clarifiers 1&2	Clarifier 3	105' Diam.	120' Diam.	Total	MMWW	MMDW	PHWW
Phase 4	15.0	11.3	28.3	2	1	1	0	4	20	15	36
Phase 5	18.0	13.6	34.1	2	1	1	0	4	20	15	36
Phase 6	19.7	14.7	37.3	1	1	1	1	4	23	18	42

Capacity = ***Minimum of (SOR x pi x d^2 / 4) / 1000000 OR (SLR x pi x d^2 / 4) / (8.345 x (1 + RAS rate) x MLSS)***

UV Disinfection

Assumptions

Per Trojan:

Average Intensity	124,080	mW/cm^2
Sleeve Length	25	cm
Sleeve Diam	7.65	cm
Lamps/Module	6	
Lamp Area	136.93	cm^2

Criteria

Dose	22,800	mW-sec/cm^2	per Trojan
PHWW Headloss	34	inches	per Trojan
Weekly average fecal coliform	400	MPN/100 ml	per Ecology
Monthly average fecal coliform	200	MPN/100 ml	per Ecology

Disinfection

	Flows (mgd) PHWW	# of Channels	# of Modules/ Channel	Capacity (mgd)
Phase 4	28.3	1	20	34
Phase 5	34.1	1	20	34
Phase 6	37.3	2	20	68

Hydraulic

	Flows (mgd) PHWW	k*	# of Channels	X-Sec. Area* (sf)	Capacity (mgd)
Phase 4	28.3	2	1	5.96	37
Phase 5	34.1	2	1	5.96	37
Phase 6	37.3	2	2	5.96	74

*k values and areas from Trojan

Disinfection Capacity = average intensity x (gross reactor volume-quartz sleeve volume) x # of channels / dose x 22.8

gross reactor volume = lamps per module x modules per channel x sleeve length x lamp area

quartz sleeve volume = (pi x sleeve diameter^2 / 4) x sleeve length x lamps per module x modules per channel

Hydraulic Capacity = area x # of channels x sqrt (2 x g x max headloss / k) x 0.646

g = gravitational constant = 32.2 fps^2

GBTs

Assumptions

7 day a week operation

BOD Removal in Primaries **30%** per 5/27/04 DOE letter

Net Yield (lb WAS/lb BOD) **0.85** 6/10/10 - 12/25/10 data - stable, consistent nitrification, 90%

WAS Solids **0.85%**

Criteria

AA Loading	**200**	gpm/m	Per MOP No. 8, typical performance for
MMWW Loading	**250**	gpm/m	GBTs thickening WAS is 100 - 250 gpm/meter

	RS BOD (ppd)		WAS Production (gpm)		# of Units		Belt Width (m)		Total Belt Width (m)	Capacity (gpm) - All Units in Service		Average Daily Hours of Operation w/All Units Service (hrs)	
	AA	MMWW	AA	MMWW	Exist.	New	Exist.	New		AA	MMWW	AA	MMWW
Phase 4	21,355	25,400	258	307	2	0	2	0	4	800	1000	7.7	7.4
Phase 5	25,130	30,899	304	373	2	0	2	0	4	800	1000	9.1	9.0
Phase 6	27,235	33,965	329	410	2	0	2	0	4	800	1000	9.9	9.8

WAS production = RS BOD x (1-BOD removal in primaries) x WAS/BOD yield / (8.345 x WAS Solids x 694.4)

Capacity = Total Belt Width x Loading Criteria

Daily Hours of Operation = WAS production / Capacity x 24

Digesters

Assumptions

Active Volume (each)	**0.825**	MG
Active Volume (each)	**110,294**	cf
TSS Removal in Primaries	**55%**	per 5/27/04 DOE letter
BOD Removal in Primaries	**30%**	per 5/27/04 DOE letter
Net Secondary Yield (lb WAS/lb BOD)	**0.85**	6/10/10 - 12/25/10 data - stable, consistent nitrification, 90%
PS Solids	**4.3%**	
Thickening Capture Rate	**90%**	
TWAS Solids	**5.5%**	
%VSS	**80%**	

Criteria

Mesophillic Anaerobic

MMWW HRT	**15**	days	10-20 days per Ecology
VSS MM Loading	**0.16**	lb/cf/day	0.03-0.30 per Ecology S

	MMWW RS Loads (ppd)		Digester Feed Production (ppd of		# of Units			Capacity All Units in Service (ppd of	
	TSS	BOD	VSS)	(gpd)	Existing	New	Total	VSS)	(gpd)
Phase 4	28,100	25,400	24,454	72,705	2	0	2	35,294	110,000
Phase 5	33,078	30,899	29,262	86,750	2	0	2	35,294	110,000
Phase 6	35,854	33,965	31,943	94,582	2	0	2	35,294	110,000

Digester Feed Production (ppd) = (TSS x TSS Removal in Primaries + BOD x (1-BOD Removal in Primaries) x WAS/BOD Yield) x %VSS

Digester Feed Production (gal/d) = (TSS x TSS Removal in Primaries)/(8.345 x PS Solids) +
(BOD x (1-BOD Removal in Primaries) x WAS/BOD Rate x Thickening Capture Rate)/(8.345 x TWAS Solids)

Capacity (ppd of VSS) = Active Volume (cf) x # of Units x VSS Loading Criteria

Capacity (gpd) = Active Volume (gal) x # of Units / MMWW HRT

Dewatering

Assumptions

7 day a week operation

TSS Removal in Primaries	55%	per 5/27/04 DOE letter
BOD Removal in Primaries	30%	per 5/27/04 DOE letter
Net Secondary Yield (lb WAS/lb BOD)	0.85	6/10/10 - 12/25/10 data - stable, consistent nitrification, 90%
PS Solids	4.3%	
Thickening Capture Rate	90%	
TWAS Solids	5.5%	
%VSS	80%	
VSS Destruction in Digesters	70%	6/10/10 - 12/25/10 data - stable, consistent nitrification, 90%

Criteria

Loading Rate 600 lbs/hr/m

Per MOP No. 8, typical performance for BFPs dewatering anaerobically digested sludge of combined primary and WAS is 400 to700 lbs/hr/meter

	MMWW RS Loads (ppd)		Digested Sludge Production	Digested Sludge Production	# of Units		Belt Width (m)		Total Belt Width (m)	Capacity All Units in Service - 24 hrs	Average Daily Operation w/All Units Service
	TSS	BOD	(ppd)	(DT)	Exist.	New	Exist.	New		(ppd)	(hrs)
Phase 4	28,100	25,400	13,450	2,455	2	0	2	0	4	57,600	5.6
Phase 5	33,078	30,899	16,094	2,937	2	0	2	0	4	57,600	6.7
Phase 6	35,854	33,965	17,569	3,206	2	0	2	0	4	57,600	7.3

Digester Feed Production (ppd) = (TSS x TSS Removal in Primaries + BOD x (1-BOD Removal in Primaries) x WAS/BOD Rate) x %VSS
Digested Sludge production = (1- VSS Destruction in Digesters) x Digester Feed Production

Capacity = Belt Width x Loading Rate x # of Units x 24

Daily Hours of Operation = Digested Sludge Production / Capacity x 24