WASTEWATER FACILITIES PLAN

FOR THE

CITY OF HUBBARD

December 2002

DRAFT

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TABLE OF CONTENTS

CHAPTER 1

EXECUTIVE SUMMARY AND RECOMMENDATIONS

This Facilities Plan was prepared in accordance with Oregon Department of Environmental Quality Guidelines. Review and approval of this Plan by the DEQ will complete step 1 of the three-step process leading to the construction of municipal wastewater improvements delineated in Chapter 7. Step 2 consists of the detailed design engineering and the preparation of contract documents for construction. Actual construction of the planned improvements as designed constitutes Step 3.

This Chapter provides an executive summary of findings and recommendations of this Facilities Plan. The purpose of the Hubbard Wastewater Facilities Plan is to provide a comprehensive wastewater planning document for the City which can be utilized to plan for wastewater needs in the community for the next 20 years.

1.0 Facilities Plan Components:

1.01 Population history was reviewed and analyzed in Chapter 3, and a projection of future population was developed as illustrated in Table 1-1.

FIGURE 1-1
PROJECTED POPULATION

Year	Population	Annual Rate for Period, Percent
2001	2510	
2004	2664	2.00
2007	2817	1.88
2010	2979	1.88
2013	3144	1.82
2016	3315	1.71
2019	3488	1.71
2022	3660	1.61

1.02 Wastewater Planning Considerations were evaluated and presented in Chapter 4 for the development of potential wastewater improvements. These planning

considerations included wastewater disposal criteria, regulatory authority, and design criteria. A presentation of historic cost data collected from the Engineering News Record was presented as illustrated in Table 1-2.

TABLE 1-2
ENR COST INDEX HISTORY

Year	20-City ENR (August)	% Change
1991	4892	
1992	5032	2.9
1993	5230	3.9
1994	5433	3.9
1995	5506	1.3
1996	5652	2.7
1997	5854	3.6
1998	5929	1.3
1999	6090	2.7
2000	6233	2.3
2001	6389	2.5
Average % Change		2.7

This data is useful for estimating the future construction costs for planned facilities.

1.03 The existing wastewater collection and treatment system was evaluated and presented in Chapter 5 together with a history of the system development and a description of existing components. A general history of the Hubbard Wastewater System is as follows:

Prior to 1965 the City of Hubbard depended upon private septic systems for wastewater disposal. The first wastewater system consisted of an ACP collection system which delivered influent by gravity to the trickling filter and final clarifier prior to discharge into Mill Creek.

In 1984 the City constructed a counter-current aeration system installed in concrete tankage concentric outside of a final clarifier. A headworks was constructed to remove heavy solids and to screen influent. In 2000 the City constructed a UV-

disinfection system to replace the chlorination disinfection system in lieu of providing dechlorination.

1.04 Five years of DMR's were digitized and analyzed in Chapter 6 to develop meaningful existing and projected wastewater characteristics. The results of this analysis illustrated that the City experiences high peak daily wet-weather flows per capita (431 gpcd), with a peaking factor of 7.7 times average daily dry-weather flows. Also, measured peak daily influent BOD_5 is considered high at 805 mg/L.

1.05 Overall treatment performance was evaluated in Chapter 7, and although the design hydraulic and biological loadings are not anticipated to be exceeded until near the end of the study period of 20 years, City treatment staff have experienced a significant problem with sludge "bulking" over the past few years.

A review of plant data and other testing which was conducted strongly suggests a lack of aeration, as evidenced by the pH data illustrated in Table 1-3, which was gathered at the treatment plant aeration basin.

TABLE 1-3

Year	Average pH for Year
1996	7.28
1997	7.31
1998	7.00
1999	6.80
2000	6.68

This data clearly shows a declining pH over the past 5 years.

1.06 Future discharge limitations were evaluated. The City of Hubbard will be required at some point in the future to eliminate it's dry-weather surface water discharge, and develop a practicable non-discharge option.

1.07 The City's wet-weather biosolids storage system was evaluated, and it is becoming problematic for the City to store the accumulated biosolids during the wet-weather months until the surface soils dry out enough to allow application of these stabilized biosolids at the approved location.

1.08 Systems Development Charges (SDC) methodology was developed in Chapter 8, and provides for a proposed maximum combined reimbursement and improvement charge of $2,862.

1.1 Recommended Improvements:

The following improvements were developed and recommended to be implemented.

1.11 Replacement of the aerators on the moving aeration bridge and the addition of one new 180 SCFM blower. This construction could increase available aeration O_2 by 50%. The aerators would be constructed so as to provide greater basin surface area coverage so as to reduce the length of the anoxic zone.

In addition to these improvements we recommend the installation of an automatic transfer switch to the plant's standby generator located adjacent to the control building.

The costs associated with these improvements are illustrated in Table 1-4.

TABLE 1-4

Item	Estimated Cost
Replace Aeration Basin Headers	$ 65,000.00
Install New Aeration Blower (Includes Foundation Slab, Underground Piping Modifications, and Electrical Conduit	$ 125,000.00
Modify Blower Control System to Accommodate Additional Blower. Add Automatic Transfer Switch for Standby Generator	$ 52,000.00
Contingency	$ 24,200.00
Engineering, Construction Management	$ 36,300.00
Total Estimated Cost	**$ 302,500.00**

1.12 Construct headworks expansion to provide preliminary screening of influent for removal of rags and other floatables which are currently clogging the aeration header on the moving bridge. The costs associated with these improvements are illustrated in Table 1-5.

TABLE 1-5
PRELIMINARY SCREENING FOR RAGS AND FLOATABLES

Item	Estimated Cost
Excavation, Sitework and Preparation	$ 35,000.00
Raw influent screening system, capable of delivering rags and floatables into a dumpster.	$ 145,000.00

Piping, electrical work, telemetry, misc.	$	45,000.00
Contingency	$	22,500.00
Engineering, Construction Management	$	33,750.00
Total Estimated Cost	**$**	**281,250.00**

1.13 Install a biolsolids filter press and construct a covered biosolids storage area near the final clarifier and UV disinfection unit. The costs associated with these improvements are illustrated in Table 1-6.

TABLE 1-6
BIOSOLIDS FILTER PRESS AND STORAGE AREA

Item		Estimated Cost
Excavation, site preparation, and AC pavement	$	75,000.00
Construction of pole-supported roof over filter press and storage area	$	55,000.00
Installation of biosolids filter press, with electrical and telemetry	$	185,000.00
Contingency	$	31,500.00
Engineering, Construction Management	$	47,250.00
Total Estimated Cost	**$**	**393,750.00**

1.14 An addition to the existing sewer use ordinance is recommended which will limit the biochemical strength of wastewater discharged into the collection system by food processing facilities. We recommend the addition of subsection (18) to Section 13.20.110 ofthe sewer use ordinance, essentially as follows:

"(18) Effluent discharges to the City's wastewater system from meat processing or packing facilities, or from any other food preparation facilities with a biochemical strength greater than 500 mg/L BOD_5 or 500 mg/L TSS. The owners and operators of such facilities shall be responsible, at no cost to the City of Hubbard, for pre-treating such discharges so as to provide a discharge which meet these maximum concentrations."

The exact language should be generated by the City Attorney prior to adoption of the ordinance change by the City Council.

1.15 These combined recommendations are hereby recommended as a Capital Improvement Plan.

CITY OF HUBBARD INFLOW REMOVAL GRID SYSTEM

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CITY OF HUBBARD
INFLOW REMOVAL GRIDS

FIGURE 1-1

CHAPTER 2

INTRODUCTION

2.1 PURPOSE

The purpose of this Report is to provide an evaluation of the City's wastewater collection and treatment systems, and to develop a system of capital improvements needed to resolve any deficiencies in accordance with the Oregon Department of Environmental Quality (DEQ) and the EPA. In addition to the development of a Capital Improvement Plan, the City has requested the establishment of systems development charges which provide the level of revenues necessary to continue providing its customers with a dependable level of wastewater collection, treatment and disposal over the visible long term.

2.2 BACKGROUND

The City of Hubbard was incorporated in 1891, and is located in north Marion County along Highway 99E approximately 25 miles south of Portland, 4 miles south of the City of Aurora, 4 miles north of Woodburn, and 20 miles north of Salem. It is situated between Mill Creek to the west, and the Pudding River, to the east. The City's wastewater system has been in operation since the early 1940's.

The City has experienced wastewater treatment problems associated with sludge bulking in the aeration tankage, and an associated high TSS concentration in the plant's effluent.

Previous studies upon which this Report relies, in part, are as follows:

City of Hubbard, Oregon, Water Master Plan
December 10, 1996
KPFF Consulting Engineers

Facilities Plan for Wastewater Treatment and Disposal at The City of Hubbard
April 1983
Boatwright Engineering, Inc.

Contract Documents for the Construction of The City of Hubbard Sewage Treatment Plant Upgrading
February 1984
Russ Fetrow Engineering

PRELIMINARY ENGINEERING REPORT FOR WASTEWATER DISINFECTION IMPROVEMENTS FOR THE CITY OF HUBBARD

August 1999

BST, Inc.

2.3 AUTHORIZATION

In spring, 2001, the City of Hubbard authorized BST, Inc. Engineers and Planners, to prepare a Wastewater Facilities Plan to evaluate the present and future needs of the wastewater system, and to develop development charges methodology to provide adequate funding of needed improvements.

2.4 PLANNING SCOPE

For the purposes of this document the service area will be restricted to the area within the Urban Growth Boundary (UGB).

The scope of planning within this service area includes a thorough evaluation of the wastewater collection, treatment and discharge systems for the areas served by these facilities.

2.5 ACKNOWLEDGEMENTS

The courtesy, assistance and cooperation of Jaime Estrada, Mike Krebs and Melinda Olinger have been sincerely appreciated. Without their assistance the development of this Wastewater Facilities Plan would have been significantly more difficult.

CHAPTER 3

STUDY AREA CHARACTERISTICS

3.1 STUDY AREA

In 2002 the City adopted its current Urban Growth Boundary and Comprehensive Plan, which was approved by the State Land Conservation and Development Commission. The Study Area, for the purposes of this Report, includes the area within the Urban Growth Boundary, as illustrated on Figure 3-1.

3.2 PHYSICAL ENVIRONMENT

Hubbard is located within the French Prairie area of the Willamette Valley between Mill Creek to the west, and the Pudding River to the east. The land within and surrounding the City is very flat, which is typical for this area of the Willamette Valley.

Elevations within the Urban Growth Boundary range between a low of about 140 feet in to a maximum of about 185 feet. But the majority of the City lies in an area of elevation between 175 feet to 182 feet.

Several small ravines run through the area. Little Bear Creek and its tributaries are located in the southwest area of the City and drains to the north and west into Mill Creek, which is located just west of the City. This drainage system provides the majority of drainage for the City. Steep slopes or abrupt ground surface changes only occur in the area of these streams.

Public Health Hazards

Development within the Study Area is connected to the city's wastewater system and water system. There are no identified public health hazards within the Study Area.

Water Resources

The City of Hubbard is located near both Mill Creek. The City's water supply is the Willamette aquifer groundwater source, which is pumped into the City's water system by 4 municipal wells. There are no significant watersheds or wetlands in the Study Area.

Climate

The average annual temperature in Hubbard is 52 degrees Fahrenheit, with an average

August temperature of 80 degrees Fahrenheit.

Precipitation

Nearly all precipitation in the Hubbard area occurs as rainfall, although the past few years there had been measurable but minor snowfall. The winter climate is moist due to the frequency of rainfall, and the summers tend to be dry and warm.

About 75 percent of the annual precipitation will fall during the months of November through March. Rain storms are usually of light to moderate intensity over extended periods of time, with an occasional storm of high intensity, but of short duration.

According to the Oregon Climate Service at Oregon State University, the average annual rainfall for the Hubbard area is 41 inches, which falls primarily in winter.

Environmentally Sensitive Areas

Visual Resources

From their location in the Willamette Valley, residents of and visitors to the study area enjoy views of the Cascade Range foothills to the east.

Habitat Areas

Although Mill Creek is considered a possible conduit for winter Steelhead migration, this section of the river is not considered critical spawning habitat. Worthwhile habitat consists of un-silted gravelly river bottom which is not generally found in rivers and creeks with low gradient such as Mill Creek.

Endangered Species Act

There are no identified endangered species within the study area. According to the Oregon Department of Fish and Wildlife portions of Mill Creek may provide areas suitable as habitat for the Oregon Chub, which is listed federally as threatened, but there is no known evidence of habitation in the Hubbard Study Area.

Wild and Scenic River System

There are no rivers designated as wild and scenic within the Study Area.

Air Quality

According to the Department of Environmental Quality (DEQ) there are currently no air quality problems or concerns for the Study Area. The DEQ is currently evaluating the possibility of extending the automobile inspection requirements to cover the Hubbard area so that

automobiles being used by motorists commuting from the area to the Portland Metro area are inspected for compliance with Metro air quality requirements.

Energy Production and Consumption

No energy resources have been identified in the study area. Energy consumption is expected to increase by the amount required for any improvements which pump, aerate and treat wastewater.

Geology and Soils

The Study Area is located in the Willamette River Basin. The Basin consists of three major physiographic provinces: the Coast Range, the Willamette Valley Trough and the Cascade Range. The facilities planning area lies in the Willamette Valley Trough. Creation of this Trough resulted from down folding of the regional bedrock formations. At the same time, the Coast Range was being formed by an uplifting action. The resulting elongated basin (the Willamette Syncline) has subsequently been filled with sediments derived from erosion of the Coast and Cascade Ranges.

Soils in and around Hubbard are predominately of the Woodburn-Amity-Willamette association saturated on alluvial terraces. Most of the soils in the region are Woodburn silt loam with some Willamette silt loam also present.

Woodburn soils are moderately well drained. They have a surface layer of very dark-brown silt loam and a subsoil that is dark yellowish-brown silty clay loam in the upper part and is dark-brown silty clay loam in the lower part. Their substratum is dark yellowish-brown silt loam.

The major soils of this association are used mainly for small grains, pasture, hay, orchards, and grass grown for seed. Use of these soils is gradually changing, however, and some berries, vegetables, and specialty crops are grown. Obtaining water for irrigation is probably the most limiting factor to use of the soils for growing vegetables and specialty crops. Nevertheless, water can generally be obtained from wells without lowering the water table. In some areas ponds and dams have been constructed to provide places for storing irrigation water. As a result, enough water is available for irrigation in those places so that the damaging effects of dry weather in summer are overcome.

Unique Historical and Cultural Areas

There are no listings for the Study Area in the National Register of Historic Places. If the chosen improvements are to be developed using federal funds, a search for historic places will need to be undertaken at the State Historic Preservation Office in Salem.

3.3 SOCIOECONOMIC ENVIRONMENT

Demands and the design capacity of the Hubbard wastewater system are dependent upon population, land use patterns, and economic growth. Population projections based on historic data for the City are developed in this section. Land use and economic considerations are developed later.

Historic Population

Figure 3.2 illustrates the measured historic population of the City of Hubbard from 1965 through 2001.

FIGURE 3-2
POPULATION HISTORY

Year	Population	Annual Rate for Period, Percent
1965	720	
1970	975	6.25
1975	1470	8.56
1980	1640	2.21
1985	1760	1.42
1990	1881	1.34
1991	1895	0.74
1992	1925	1.58
1993	1965	2.08
1994	2015	2.54
1995	2045	1.49
1996	2185	6.85
1997	2205	0.92
1998	2210	0.23
1999	2255	2.04
2000	2483	10.11
2001	2510	1.09
2002	2560	1.99

The pattern of population growth illustrated in Figure 3-2 is very typical for communities along Highway 99E in the Willamette Valley of Oregon up until about 1994 when we would normally

expect to see a rapid increase in annual rate of growth. The average growth rate from about 1980 through 1993 is under 2 percent. The 1994-1995 growth rate may have been artificially low, due to a shortage of water supply for new construction. The average rate of population growth for the City of Hubbard from 1990 to 2002 is 2.60 percent.

Population Projection

In communities where population growth is held artificially low due to infrastructure or other planning constraints, there tends to be an initial surge of building permit applications once this artificial barrier to growth is eliminated. This surge may or may not be significant, depending on the pressure for adding residential or commercial development to the area.

The shortage of useful and very recent, uninhibited, population growth data makes it more difficult to estimate future growth trends than would otherwise be the case. The initial estimate should also include a reasonable amount of additional growth to include the effect of the previously described anticipated initial surge.

Figure 3-3 illustrates population forecast data contained in the City of Hubbard Comprehensive Plan, which reflects Marion County's forecast population and employment growth projections for the period between 2000 and 2025.

FIGURE 3-3
PROJECTED POPULATION

Year	County Population	Annual Rate for Period, Percent
2000	285975	
2005	308364	1.52
2010	331025	1.43
2015	354561	1.38
2020	378208	1.30
2025	401787	1.22

Some of the factors which have influenced our development of a recommended growth rate are as follows:

- The 1996 KPFF Water Master Plan estimated an annual growth rate of 3.0 percent, which is higher than the 2.60 percent average historic population of Hubbard for the period from 1990 and 2002, and twice the County's estimate.

- The Portland State University Population Research Center's recent estimate of the

City's population for year 2002 resulted in a growth rate of 1.99 percent, which is 30 percent higher than the County's projection for the period.

- The current economy in Oregon is not conducive to as high a population growth rate as was the case during the period from 1990 to 2002.

- Hubbard's location along Highway 99E will continue to provide a greater attraction for businesses and residences, based on access and relative real estate prices, than many other of the areas of Marion County which have contributed to the County's growth rate projections.

We recommend a population rate of 2.00 percent for the study period to year 2005, and a proportional adjustment upward of the County's growth rate projections for the remainder of the study period. In addition, our Projected Wastewater Characteristics, which are set forth at the end of Chapter 6 in this Plan, have been presented on both a date-relative and population-relative basis. So if a minor adjustment in population figures are required at the time the City decides to implement this plan, the appropriate population figures can be used to size chosen facilities.

Figure 3-4 illustrates the projected population through year 2022.

FIGURE 3-2
PROJECTED POPULATION

Year	Population	Annual Rate for Period, Percent
2001	2510	
2004	2664	2.00
2007	2817	1.88
2010	2979	1.88
2013	3144	1.82
2016	3315	1.71
2019	3488	1.71
2022	3660	1.61

CITY OF HUBBARD STUDY AREA BOUNDARY

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CITY OF HUBBARD
STUDY AREA BOUNDARY

FIGURE 3-1

CHAPTER 4

WASTEWATER FACILITIES PLANNING CONSIDERATIONS

4.1 WASTEWATER DISPOSAL CRITERIA

Effluent from wastewater treatment facilities must be disposed in a manner which minimizes the chances of contamination and which protects public health and the beneficial use of the waters of the State.

The State of Oregon Environmental Quality Commission (EQC) meets periodically to establish policies for maintaining or improving water quality in Oregon. The Oregon Department of Environmental Quality (DEQ) is responsible for administering the policies set by the EQC on behalf of the United States Environmental Protection Agency (EPA). It is the general policy of DEQ to require that increased treatment requirements caused by growth and development in the community be handled with increased efficiency and effectiveness of wastewater treatment. This is to insure that future wastewater discharges do not exceed currently allowed discharge load limitations. In addition, the DEQ may require a reduction in the current permitted wastewater discharge if it is determined that the receiving stream or body of water is "water quality limited" and a reduction is necessary to restore and maintain the water quality of the receiving stream, at a level to protect public health and the beneficial uses of the receiving stream.

The DEQ also maintains a policy of encouraging the use of appropriately-treated wastewater effluent for beneficial purposes above all other uses, using treatment and disinfection methods which insure that the public health and the environment are protected. The use of appropriately-treated wastewater effluent for beneficial purposes enhances water quality by reducing discharges of treated effluent to the surface waters and potentially conserving stream flows and aquifers through reduced demand.

The water quality management program in Oregon has undergone considerable change in the past decade, with the major change being DEQ's shift from technology-based permit decisions to water quality-based permit decisions. The key influence on this change has been the need to establish Waste Load Allocations (WLA's) and Total Maximum Daily Loads (TMDL's) for "water quality limited" surface waters.

4.2 REGULATORY AUTHORITY

Wastewater discharges in the State of Oregon must meet the requirements of the DEQ and EPA. The DEQ is responsible for administering the application of Federal standards

in Oregon, and for implementing the policies established by the EQC. More stringent treatment requirements can also be established by DEQ when appropriate, to protect the public and beneficial uses of the waters of the state. DEQ's requirements regarding wastewater treatment and disposal are set forth in Oregon Administrative Rules Chapter 340.

4.3 DESIGN CRITERIA

The design philosophies for facilities to be developed through evaluation of the existing Hubbard wastewater system are discussed below. Specific design flows and loadings, and criteria will be discussed with the alternatives.

Design Period

DEQ requires that facility planning for wastewater facilities be based on a 20-year planning period. It is felt that this period is adequate to allow for adaption to future needs, while being short enough to insure that the facilities will be cost-effectively sized. Trunk and interceptor sewers are typically sized for a 40-year planning period.

Wastewater Treatment Plants

Major considerations in the design of a wastewater treatment plant are the required capacity and level of treatment. The level of treatment is based on meeting discharge requirements. All plant design must include enough capacity to handle peak hydraulic and peak organic loads. Other important considerations are as follows:

Flexibility of Design

Flexibility in process design provides for the capability to modify treatment processes or to bypass or isolate individual treatment units. It allows for removal of duplicate units from the treatment process chain during low flow periods, scheduled maintenance, or a means to provide an effluent quality within allowable standards during periods of mechanical failure. Flexibility is also a key factor in some instances to allow construction and connection of new process units while the plant remains in operation. Every attempt will be made in each of the recommended alternatives for the maximum possible flexibility of installing new process units.

Reliability

Reliability in wastewater treatment plant design is largely dependent on proper selection of unit design criteria, with sufficient allowances for peak flow conditions and conservative selection of quality equipment to provide for long life and minimum maintenance. Reliability should provide for continued operation of the developed treatment facility with process-redundant units removed from the flow stream, and to allow for an effluent quality

within established permit conditions. Duplicate facilities are an important facet of reliability since provisions must necessarily be made for periodic maintenance and unplanned equipment failures. The degree of duplicity is a function of the degree of risk and the potential adverse impacts from a permit violation. EPA has designated three classes to identify the degree of reliability. Class I reliability is the most restrictive and includes multiple units or backup features for all treatment components.

Provisions should be made for standby power capabilities to maintain essential process functions during power outages, and for location of electrical equipment, control centers and switchgear in areas not subject to flooding.

Automation

Automated process controls can reduce labor costs. However, they must be reliable and understandable to the operator, and are more suitable for complex processes. While automated controls can reduce the amount of labor required to operate a treatment plant, they must be inspected and maintained on a routine basis to insure that they are properly calibrated and that the processes perform as intended.

Human Factors

Wastewater facilities should be designed to allow for ease of operation and maintenance to ensure the continued usefulness of the facility. Facilities should be properly ventilated and lighted, and should be free from excessive noise. Convenient access should be provided to equipment, valves and other operating devices. Operator health and safety must be of paramount importance in the design of wastewater facilities.

Odor Control

While by their nature wastewater treatment facilities will produce some odor, it is possible to minimize objectionable odor through good design and facility siting.

Construction Cost Estimates

Cost estimates developed during the facility planning stage can be the least accurate since certain specific aspects of the construction phase are unknown this early in the process. In addition, during design it is possible that conflicts with existing facilities, geotechnical hazards and other unknown circumstances may evolve. It is also possible during design that a more cost-effective construction approach may evolve.

Cost estimates presented in this Plan include four components, each discussed separately below. It must be recognized that these estimates are preliminary and based on the level and detail of planning presented in this Plan.

Construction Cost

Estimates of probable construction cost will be based on the construction costs for similar facilities when possible, and from other readily available, supportable sources. It is important to note that the cost estimates are budget level estimates, not engineering estimates, and are intended to be within the range of plus 35% to minus 20 % of the actual project cost.

Future changes in the costs of labor, equipment, and materials may justify comparable changes in the cost estimates presented. For this reason it is common engineering practice to relate costs to long term changes in the national economy. The Engineering News Record (ENR) construction cost index is most commonly used, and is based on a value of 100 for the year 1913, and its value for the past 11 years is presented in Table 4-1.

TABLE 4-1
ENR COST INDEX HISTORY

Year	20-City ENR (August)	% Change
1991	4892	
1992	5032	2.9
1993	5230	3.9
1994	5433	3.9
1995	5506	1.3
1996	5652	2.7
1997	5854	3.6
1998	5929	1.3
1999	6090	2.7
2000	6233	2.3
2001	6389	2.5
Average % Change		2.7

Construction of Hubbard's wastewater improvements is expected to begin in June 2003. The applicable ENR can be estimated based on the average annual increase of 2.7 percent over the past 11 years. The calculation is as follows:

6389 [1+.027 (2003-2001)] = 6734

The costs presented in this Facilities Plan are based on an ENR index of 6734.

Engineering and Inspection

Engineering, inspection and construction management costs have been assumed to be 15 percent of the construction cost. This includes costs for the engineering company to conduct preliminary surveys, perform detailed design analysis, develop pre-design report, prepare construction drawings, prepare construction specifications, advertise for construction bids, conduct construction stakeout surveys, provide partial inspection during construction, administer construction-related activities such as change orders, prepare final drawings showing the project as-built, and provide certification of conformance to plans and specifications.

Contingencies

A contingency factor equal to 10 percent of the estimated construction cost has been added. In recognizing that the cost estimates are based on preliminary design, allowances must be made for variations in final quantities, bidding market conditions, adverse construction conditions, unanticipated specialized investigations and studies, and other difficulties that cannot be foreseen at this time, but which may tend to increase final costs.

Legal and Administrative

An allowance of 5 percent of construction cost has been added for legal and administration costs. This allowance is intended to include internal project planning and budgeting, grant administration, liaison, interest on interim financing, legal services, review fees, legal advertising, and other related expenses associated with the chosen project.

Construction Cost Summary

Cost estimates presented in this Facilities Plan include a combined allowance of 30 percent for contingencies, engineering, legal and administrative costs.

4.4 DISCHARGE EFFLUENT LIMITATIONS AND CONDITIONS

A critical part of the facilities planning process is an evaluation of the existing and future permit limitations and conditions that will likely apply during the planning period. While all future requirements cannot be anticipated, it is important to include a discussion of the most likely limitations so that the development of improvements to the treatment system will provide maximum effectiveness in providing properly treated wastewater for disposal.

Existing Discharge Limitations

The most recent discharge permit for this facility was issued in January 1999 as an NPDES

Waste Discharge Permit & Mutual Agreement and Order, DEQ File No. 40494 and MAO No. WQ/M-WR-98-205, and expires on November 30, 2003. A copy of this permit is attached at the end of this Plan.

Table 4-2 illustrates the various parameters and limitations for year-round discharge of treated wastewater by the City of Hubbard into Mill Creek at River Mile 5.3, based upon an average dry weather design influent flow of 0.34 MGD.

TABLE 4-2
EXISTING WASTE DISCHARGE PERMIT LIMITATIONS

May 1 through October 31					
Parameter	**Average Effluent Concentrations**		**Monthly Average lb/day**	**Weekly Average lb/day**	**Daily Maximum lb/day**
	Monthly	**Weekly**			
BOD-5	10 mg/l	15 mg/l	28	43	57
TSS	10 mg/l	15 mg/l	28	43	57
November 1 through April 30					
Parameter	**Average Effluent Concentrations**		**Monthly Average lb/day**	**Weekly Average lb/day**	**Daily Maximum lb/day**
	Monthly	**Weekly**			
BOD-5	30 mg/l	45 mg/l	85	130	170
TSS	30 mg/l	45 mg/l	85	130	170

Receiving Stream Physical Characteristics

The City of Hubbard wastewater treatment plant discharges into Mill Creek, a small tributary to the Pudding River which subsequently discharges into the Willamette River. Mill Creek is currently listed as water quality limited for temperature.

Although there are no 7-Q-10 flow data currently available for Mill Creek, we measured the existing flow at the end of September, 2002, following a very dry summer, at 2.12 CFS. We estimated the stream velocity at 0.08 FPS. Using the recorded average daily effluent flow of .128 MGD for the month, we calculated a dilution ratio of 10.6 at the time of measurement.

Anticipated Future Discharge Limitations

Based upon discussions with representatives from DEQ[1], it is very unlikely that a dry-weather mass discharge increase will be granted for subsequent NPDES permit renewals. Additionally, at some point in time the DEQ may restrict summer discharge to Mill Creek due to low stream flows and temperature impacts.

Applying the existing dilution limitations contained in OAR 340-041 to the City of Hubbard wastewater discharge suggests that, given a required maximum dry weather effluent BOD-5 concentration of 10 mg/L, dry weather flows may not exceed 10% of Mill Creek flow from May 1 through October 31 of each year without approval of the Environmental Quality Commission. Since effluent of better quality than 10 mg/l could raise this percentage significantly, it is in the best interest of the City of Hubbard to maintain a high quality influent while monitoring both effluent flow and receiving stream flow.

Because dry-weather flows in Mill Creek are so low, and because of it's listing as water quality limited for temperature, we will be recommending that the City continue recording effluent BOD-5 concentration and effluent flow, and begin measuring and recording effluent ammonia concentration, receiving stream flow at the outfall. A log of these data, including the resulting calculation of dilution, should be maintained to monitor dilution impacts as outlined in the above-referenced OAR statute. We also will be recommending that the City develop a temperature management plan in accordance with appropriate DEQ regulations.

[1]Meeting with Tim McFetridge and Julie Berndt, August 2002, City of Hubbard City Hall

CHAPTER 5

EXISTING WASTEWATER SYSTEM

5.1 GENERAL

The City of Hubbard operates and maintains a wastewater collection system, three wastewater pump stations and a wastewater treatment plant (WWTP). A primary objective of this Facilities Plan is to evaluate the City's wastewater treatment to resolve sludge settling problems.

This chapter contains a description of the existing collection, treatment and effluent disposal system currently in operation. Information for developing these descriptions was obtained from City Staff, on-site field inspections, plant operating records, operation and maintenance manuals, previous engineering reports, and from original construction engineering documents.

5.2 COLLECTION SYSTEM

A map of the existing City of Hubbard wastewater collection system is shown on Figure 5-1, located at the end of this Chapter. Table 5-1 contains an inventory of the existing pipe sizes with the collection system.

Size (in)	Length (lf)
8	49,139
10	2,091
12	486

History

The original Hubbard wastewater collection system was constructed after 1965, the preponderance of it at the time the original treatment plant was constructed. Prior to that time wastewater was handled by private septic tanks and drainfields. The initial municipal collection system consisted of approximately 30,000 feet of 6-inch, 8-inch, 10-inch and 12-inch ACP sewer main. Subsequent collection piping was constructed with PVC sewer main.

Since the construction of the initial collection system, approximately 21,000 lineal feet of collection system piping has been constructed. Most of this new construction is composed

of 8" PVC.

Capacity

The general capacity of the existing collection system is based primarily on the sizing and slope of collection piping. Figure 5-1 illustrates the existing wastewater collection system and pipe sizing.

We estimated the general hydraulic capacity of the existing collection system by estimating the capacity of the primary piping near the influent pump station. The following table illustrates

We estimate that the existing collection system piping is capable of handling a total wastewater flow of approximately 430 gpm (.619 mgd) based upon a Mannings pipe roughness coefficient of 0.017 for a 10" ACP pipe at maximum flow with a record slope of 0.28% (for the interceptor along "D" Street between 5th Street and 6th Street). This pipe conveys approximately 78 percent of the City's wastewater influent, based upon total collection piping length. The Table 5-2 illustrates the various flow events which correspond to this condition.

TABLE 5-2

Flow Event	Estimated Flow for 10" Interceptor
ADWWF	.135 MGD
MMWWF	.353 MGD
PWWWF	.638 MGD
PDWWF	.848 MGD
PHWWF	1.34 MGD

It is apparent that during existing average daily and maximum monthly wet-weather flows this section of interceptor is capable of conveying design flow events, and that during peak weekly, peak daily and peak hourly flows some influent flow equalization is provided by the collection system piping and manholes.

Since the hydraulic design of wastewater systems is based upon maximum monthly flows, and the estimated proportion of maximum monthly flows to this section of interceptor will not reach it's estimated capacity until year 2019 (.656 MGD to this pipe, see Table 6-17), no collection system piping improvements appear to be necessary for the design period, if drainage improvements which have been constructed to reduce inflow and infiltration are proven effective.

Condition

Approximately 58 percent of the existing collection system piping is composed of ACP sewer main. ACP sewer main is about as durable as concrete pipe in that it is susceptible to hydrogen sulfide decay and abrasive erosion. Its ability to remain impervious to infiltration depends upon its installation and the type of seals used between sections. Many wastewater systems throughout Oregon which incorporated the use of ACP sewer main have functioned adequately for 30 years or more.

The portion of the existing Hubbard wastewater collection system consisting of ACP sewer main is generally in good condition.

We are not aware of any significant problems associated with the sections of sewer main recently constructed using PVC pipe.

Inflow/Infiltration

The City's Wastewater Disinfection Preliminary Report dated August 1999 by BST, Inc., evaluated various flow and storm events and the interactions between these storms and plant records, and concluded that inflow was primarily responsible for pre-storm wastewater flows over about .125 MGD and post-storm wastewater flows over about .32 MGD.

Previous studies have developed recommendations for reducing inflow and infiltration within the City of Hubbard based upon a grid system, and many of the recommended improvements have been implemented. Since the construction of these improvements there has not been sufficient storm and flow data to evaluate it's effectiveness.

5.3 EMERGENCY OVERFLOWS

One main emergency overflow exists at the manhole where the 12" collection piping interceptor turns on "D" street toward the influent pump station. From this manhole a 12" ACP pipe continues down "D" street, where it is then connected to the treatment plant's final clarifier prior to disinfection by the UV disinfection system. This clarifier provides nominal treatment of overflowed wastewater before discharge into Mill Creek.

Each of the two pump stations contains an overflow to prevent the back-up of untreated raw wastewater into connected structures and dwellings.

5.4 PUMP STATIONS

The Hubbard wastewater system includes 2 pump stations. The small collection system pump station located near the southern City Limits between Third Street and the railroad tracks, and the Influent Pump Station located on the east end of the wastewater treatment plant site.

The small collection system pump station is a package-type unit, consisting of a Gorman-Rupp duplex pump system. Pumps installed in the wetwell are two Gorman-Rupp Model T4A3-B pumps capable of delivering 125 gpm at 35' TDH per pump. The serial number for the combined system is R-1798-AM.

The Influent Pump Station consists of a Gorman-Rupp duplex pump system. The pumps conform to the parameters illustrated in Table 5-3.

TABLE 5-3

Gorman-Rupp Serial Number	T-2013-AM
Pump Model Number	T4A3-B
Max. Q	500 GPM
TDH	43 ft.
Impeller Dia.	9-3/4 in.
Impeller Speed	1372 RPM
Motor Speed	1770 RPM
Suction Pipe Size	6 in.
Pump Discharge Pipe Size	4 in.
Common Discharge Pipe Size	6 in.
Priming Lift	15.63 ft.
Total Dynamic Suction Lift	20.77 ft.
Motor Horsepower	15
Phase/Hertz/Volts	3/60/460

This pump station is constructed as a above-ground motor and v-belt driven pump installed in a static-lift application (not a flooded suction).

5.5 TREATMENT PLANT FACILITY

The existing wastewater treatment plant consists of a Schreiber counter-current aeration basin with moving bridge/aeration and secondary clarification. The secondary clarifier is central to and concentric with the circular aeration basin.

Treatment parameters are illustrated in Table 5-4.

TABLE 5-4

Design Flow (ADDWF)	0.51 MGD
Design Maximum Flow (ADWWF)	1.02 MGD
Clarifier Inside Diameter	46 ft.
Aeration Inside Diameter	93 ft.
Aeration Inside Width	22.6 ft.
Aeration Unit Loading BOD_5	12.2 lb/1000cu ft/day
Blowers (number)	3
Design Operating Discharge Pressure	6.5 PSIG
Design Operating Speed	3500 RPM
Blower Capacity, Each	180 SCFM
Blower Motor HP/volts/phase/hertz	10/460/3/60

Sludge return is handled with a tube-mounted screw pump. Table 5-5 illustrates the sludge pump operational parameters.

TABLE 5-5

Number of Pumps	1
Capacity	175-500 GPM
Spiral Diameter, min.	18 in.
Angle of Inclination	30-40 degrees
Fill-to-threshold	4'-7" at 40 degrees

Preliminary treatment consists of a bar screen, screw pump and sludge waste system for sludge control.

The existing Hubbard Wastewater Treatment Plant was originally designed to provide an effluent discharge quality of 10 mg/L BOD_5 and 10 mg/L TSS. Design influent biological loading capacities were 1702 lb/day for both BOD_5 and TSS.

Anticipated biological loadings for the study period are well within the design loadings.

Secondary Clarification

Secondary clarification consists of two circular clarifiers, in series, between the aeration basin and UV disinfection. The first clarifier is located at the center of, and concentric with,

the aeration basin. This clarifier's sidewall depth is 12 feet, and the diameter of the weir is 46 feet. The second clarifier consists of circular concrete tankage located just south of the UV disinfection system, with a circular weir. This second clarifier's sidewall depth is 8 feet, and the diameter of the weir is 26 feet. Tables 5-6 and 5-7 illustrate the secondary clarifiers' physical parameters and overflow rates for various flow events, and compares them to recommended values for each.

TABLE 5-6
Concentric Clarifier

Parameter	Actual	Recommended
Weir Diameter	46 feet	NA
Sidewall Depth	12 feet	12
Study Period Overflow Rates (year 2022)		
ADWF	190 gpd/sf	300 - 1000
MMWWF	395 gpd/sf	< 1400
PWWWF	713 gpd/sf	< 1600

TABLE 5-7
Second Clarifier

Parameter	Actual	Recommended
Weir Diameter	26 feet	NA
Sidewall Depth	8 feet	NA
Study Period Overflow Rates (year 2022)		
ADWF	594 gpd/sf	NA
MMWWF	1238 gpd/sf	NA
PWWWF	2236 gpd/sf	NA

The second clarifier was the original secondary clarifier for the previous treatment system. After construction of the Schreiber aeration treatment system, this clarifier was used as a chlorine contact chamber. Since the construction of the UV disinfection system this second clarifier currently serves as a polishing basin and clarifier prior to UV disinfection.

Solids Handling

At the time the aeration basin was constructed, the previous primary clarifier tankage was converted into an aerobic sludge digester, with a capacity of 80,000 gallons. This structure is located northwest of the new aeration basin and east of the old control building. The old filter was converted into digester #2, with a capacity of 40,000 gallons, for a total digester capacity of 120,000 gallons.

Disinfection

In 2000 the City constructed a new UV disinfection system consisting of a concrete channel with single bank of UV lights with room and control system for a total of two banks. UV equipment consists of a Trojan UV3000B capable of disinfecting 1.42 MGD of wastewater treated to a maximum effluent TSS of 30 mg/L.

The original chlorination and control building is located just north of the UV disinfection system, and is now used for storage.

Since construction of the UV system, the City has only had to replace one UV bulb, and has not failed an effluent bacteria level.

Control Building

The main control building consists of offices and a small laboratory near the parking area for the plant, adjacent to the headworks. The original chlorination and control building is located just north of the UV disinfection system.

Flow Metering

The influent and effluent flow meters are US Systems, ultrasonic flow meters, which are calibrated annually. Flow is metered through a parshall flume. No model number for the flow meters could be found, but the metering equipment has functioned accurately since it was originally installed with the Schreiber aeration basin.

5.6 AUXILIARY POWER

Auxiliary (standby) power consists of a 100 kw Onan generator mounted on a 2-wheel trailer for mobility. Connection to the treatment facility is by manual plug and switch.

This standby generator is manually operable and capable of operating the entire treatment facility and office. But transfer from utility power to the standby generator is a manual operation.

CITY OF HUBBARD EXISTING COLLECTION SYSTEM

BST, Inc.
51287 hatfield road
myrtle point, oregon 97458
(503) 650-4919

CITY OF HUBBARD
EXISTING COLLECTION SYSTEM

FIGURE 5-1

CHAPTER 6

WASTEWATER CHARACTERISTICS

6.1 WASTEWATER VOLUME

The design of wastewater collection, pumping, treatment and disposal facilities is primarily dependent on estimates of hydraulic and organic loading. Maximum Month Wet Weather Flow (MMWWF) usually determines the sizing and capacity of the major process units necessary to provide the desired degree of treatment, and Maximum Month Dry Weather Flows (MMDWF) typically determines the maximum organic loadings of these units. These flows and loads vary from community to community and therefore should be based upon historic wastewater records for the particular community.

6.2 DESIGN EVENT

Wastewater treatment plants used to be rated, permitted and designed based upon average flow data. Inherent in this philosophy was a 50 percent chance every year for an exceedence of the design flow. The current philosophy is that this is an unacceptable level of risk. DEQ now recommends that wastewater treatment plants in Oregon be designed for flows that are expected to have no more than one flow exceedence in 5 years. This 5-year recurrence interval has been used in this Facilities Plan.

6.3 METHODOLOGY FOR COMPUTING FLOW EVENTS

Simply selecting the maximum wastewater flow measured at the plant during the previous 5-year period as the 5-year hydraulic flow event is not accurate. The chance that a 5-year event will be exceeded in 5 years is 67 percent. In other words, there is a 67 percent chance that the assigned design flows will be over-estimated (conservative), and a 33 percent chance that they will be under-estimated (risky).

Longitudinal statistics are required to make a good estimate of a 5-year event. However, good longitudinal statistics are not usually available for wastewater plant flows in a given community, since other factors (such as population, replacement of leaky manholes, etc) do not remain constant for a long period of time. Long-term statistics for rainfall are generally available in the vicinity of most communities, and when used in conjunction with a thorough engineering knowledge of the collection system, serve as the basis for estimating 5-year wastewater flow events.

A common method for utilizing rainfall data is to analyze rainfall records, and determine whether a 5-year storm occurred during the time interval in which treatment records are available. If a 5-year storm has occurred, the maximum wastewater flow may be used for design. If not, the maximum wastewater flow is increased by a ratio of the 5-year rainfall event divided by the

maximum rainfall measured during the period of interest. But this method overlooks the non-linear impacts of problems in the system ranging from high groundwater and leaky collection piping, bypasses, or an inaccurate flow meter.

A more accurate method, and the one used to develop wet-weather wastewater flow characteristics for the Hubbard wastewater system, is to develop relationships between flow and rainfall, by plotting plant flows versus rainfall.

A reasonable relationship between flow and rainfall can only be developed for months when there is high groundwater. The high groundwater season in Hubbard includes the months of January through May. Long-term rainfall statistics are typically only available for daily and monthly rainfall. Plotting the estimated 5-year daily wet-weather flow and 5-year maximum monthly flow versus their recurrence interval on probability paper or a log-log graph, and extrapolating or interpolating provides a method for computing other wastewater events.

Wastewater records of the Hubbard wastewater treatment plant for the period of January 1996 through May 2001 have been obtained from Jaime Estrada, and have been used to develop the 5-year flows developed in this chapter.

Wastewater Flow Parameters and Recurrence Probabilities

Table 6-1 illustrates the relationship between each significant flow parameter and its recurrence probability.

TABLE 6-1

Flow Parameter	Rate of Exceedence	Probability of Exceedence (%)
Dry-Weather Flows		
Average Daily	3 months per 6 months = 3/6	50.00
Maximum Monthly	1 month per 6 months = 1/6	16.667
Peek Weekly	1 week per 6 months = 1/26	3.846
Maximum Daily	1 day per 6 month = 1/184	0.544
Peak Hourly	1 hour per 6 months = 1/4416	0.0226
Wet-Weather Flows		
Average Daily	3 months per year = 3/12	25.00
Maximum Monthly	1 month per 12 months = 1/12	8.333
Peak Weekly	1 week per 52 weeks = 1/52	1.923
Maximum Daily	1 day per year 1/365.25	0.274
Peak Hourly	1 hour per year 1/8766	0.011

Rainfall Information

Daily rainfall is recorded at the Salem Airport. Rainfall data for this rainfall station was obtained from Oregon State University.

These rainfall records were used to evaluate peak influent flow events at Hubbard's wastewater treatment plant.

Treatment Plant Flow Meter

Plant influent is measured utilizing a flow meter and recorder. Examination of the flow records does not indicate any problem with the flow meter, and flows thus measured are believed to be accurate. Because rainfall can vary widely in this area, and large storms can bring large changes in precipitation and the potential for inflow and infiltration, rainfall tends to have a substantial impact on wastewater flow.

Population

During the 5 years for which the City's DMR's were evaluated, the population increased by 13.6 percent, which is fairly stable for the Willamette Valley during this period.

Inflow and Infiltration Removal

The City of Hubbard has identified sources of inflow and infiltration, and is implementing the construction of drainage improvements to drain areas where rainfall will pond and back into sewer system manholes and cleanouts. The result of this work thus far has been a substantial reduction in inflow to the wastewater treatment plant.

There will continue to be inflow and infiltration of rainwater into the Hubbard wastewater collection system, just as there is in other similar communities. Wastewater collection systems tend to develop minor leaks over time and infiltration will occur, and some inflow will occur where the collection system components reach the ground surface.

Inflow and infiltration quantities can be estimated by subtracting the base wastewater flow which occurs during the dry months of the year from the wet-weather flows.

6.4 DRY-WEATHER FLOW

The Dry-Weather period for the City of Hubbard is defined as the period of low stream flows that occur from May 1 through October 31 of each year.

Average Daily Dry-Weather Flow (ADDWF)

The ADDWF is defined as the mean wastewater flow measured during the dry-weather period. It

is typically determined by calculating the arithmetic mean of flows over the 6-month dry-weather period. Wastewater flows during this time are composed primarily of sanitary sewage and industrial or commercial wastes. Base infiltration may be present.

The ADDWF for the record period of January 1996 through May 2001 is calculated to be .129 MGD.

Maximum Monthly Dry-Weather Flow (MMDWF)

The maximum monthly dry-weather flow is defined as the maximum monthly flow which is expected to occur during the months of May through October. The 5-year MMDWF should not be exceeded more than once every 5 years.

DEQ recommends the MMDWF be calculated using a graph of monthly cumulative rainfall versus monthly treatment plant influent flow, with data from the high ground water season (May is the only month that is both dry-weather and high ground-water). Table 6-2 illustrates monthly flows and cumulative rainfall measured in May during the period of January 1996 through May 2001

TABLE 6-2

Year	Total May Rainfall (inches)	May Plant Flow (MGD)	Measured Maximum Monthly Flow (MGD)
1996	3.24	.186	.186 (May)
1997	2.71	.137	.137 (May)
1998	5.56	.139	.139 (May)
1999	1.90	.144	.144 (May)
2000	1.56	.124	.131 (Aug)
2001	1.36	.120	.120 (May)[1]

In reviewing the data contained in Table 6-2 it appears that when the total May rainfall drops off to less than 2 inches the monthly plant flow approaches the ADDWF (.129 MGD). A quick look at rainfall records for the month preceding May 2000 could give us a picture of the affects of groundwater, if any. Table 6-3 illustrates the monthly rainfall totals for January 2000 through May 2000 together with corresponding plant flows.

[1] May is the only dry-weather month data available for year 2001.

TABLE 6-3

Month	Rainfall Total (inches)	Plant Flow (MGD)
Jan 2000	11.01	.136
Feb 2000	6.92	.160
Mar 2000	2.98	.178
Apr 2000	1.29	.137
May 2000	1.56	.124

The data in Table 6-3 suggests that low spring rainfall contributed to an early lowering of treatment plant influent flow. Plant flows may have been higher during the summer when residents took time off to be at home or in the community and when students who attend school elsewhere (high school is in Woodburn) were home for the summer, and flow records for June (.123 MGD), July (.127 MGD), and August (.131 MGD) suggest that may be the case. September 2000 flows dropped to .120 MGD, which could correspond to these residents going back to work and school.

FIGURE 6-4

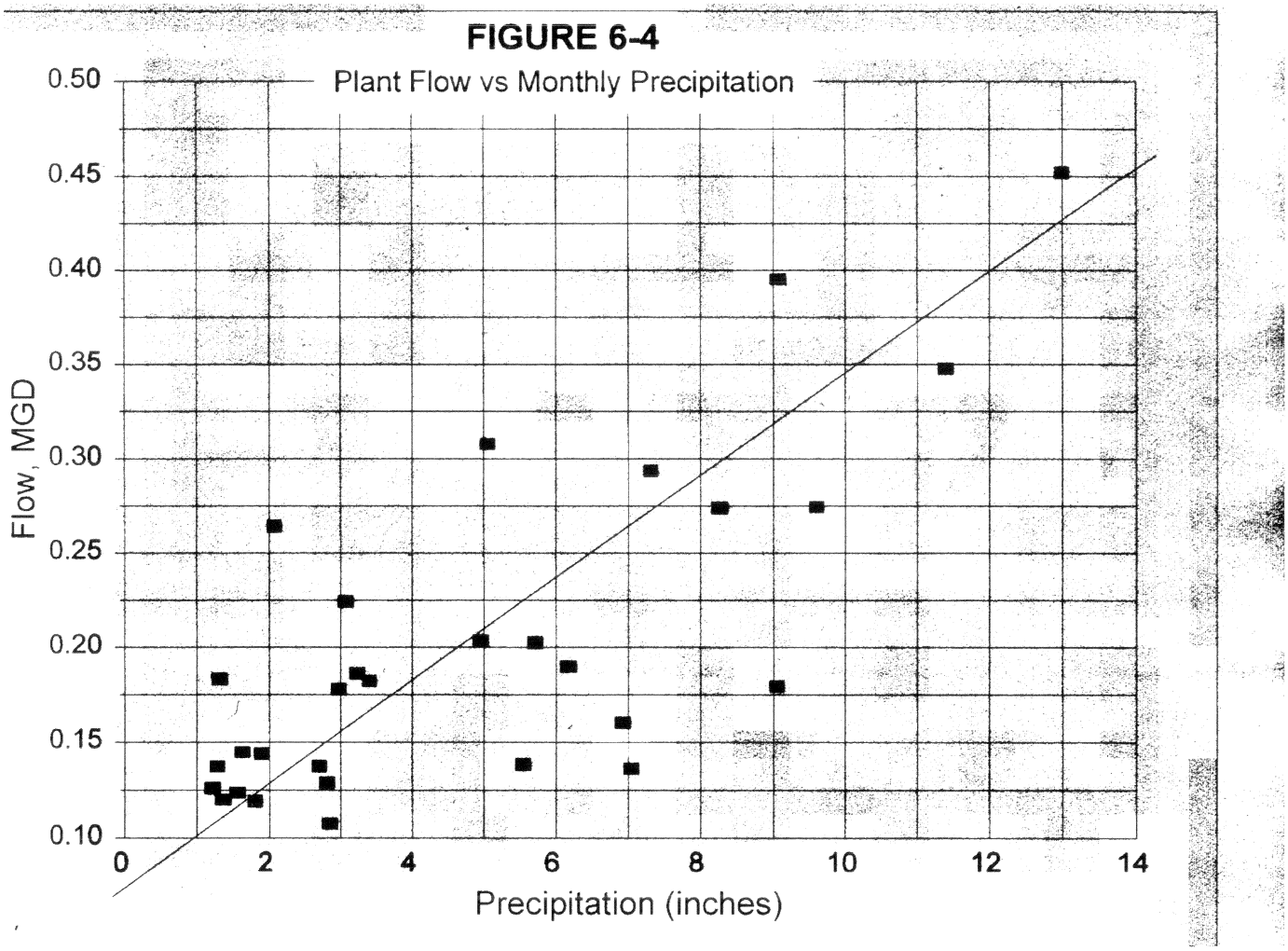


Table 6-3 strongly suggests a relationship between monthly cumulative rainfall and monthly plant flow. A graph was made of the monthly cumulative rainfall versus monthly plant flow, using data from the high ground-water season (January through May), and is presented in this Facility Plan as Figure 6-4.

Although there is substantial scatter, there is a reasonable correlation between precipitation and plant influent flow. The two most spurious data points include January 1998 (9.06 inches of rain and .179 MGD average flow) which followed an unusually dry December (3.16 inches), and February 1997 (2.08 inches and .264 MGD) which followed a heavy month of rain in January (9.07 inches and .395 MGD).

The observed maximum monthly dry weather flow of .186 MGD will be used for design purposes.

Peak Weekly Dry-Weather Flow (PWDWF)

Peak weekly flows for each year are listed in Table 6-5.

TABLE 6-5

Measured Peak Weekly Dry-Weather Flows

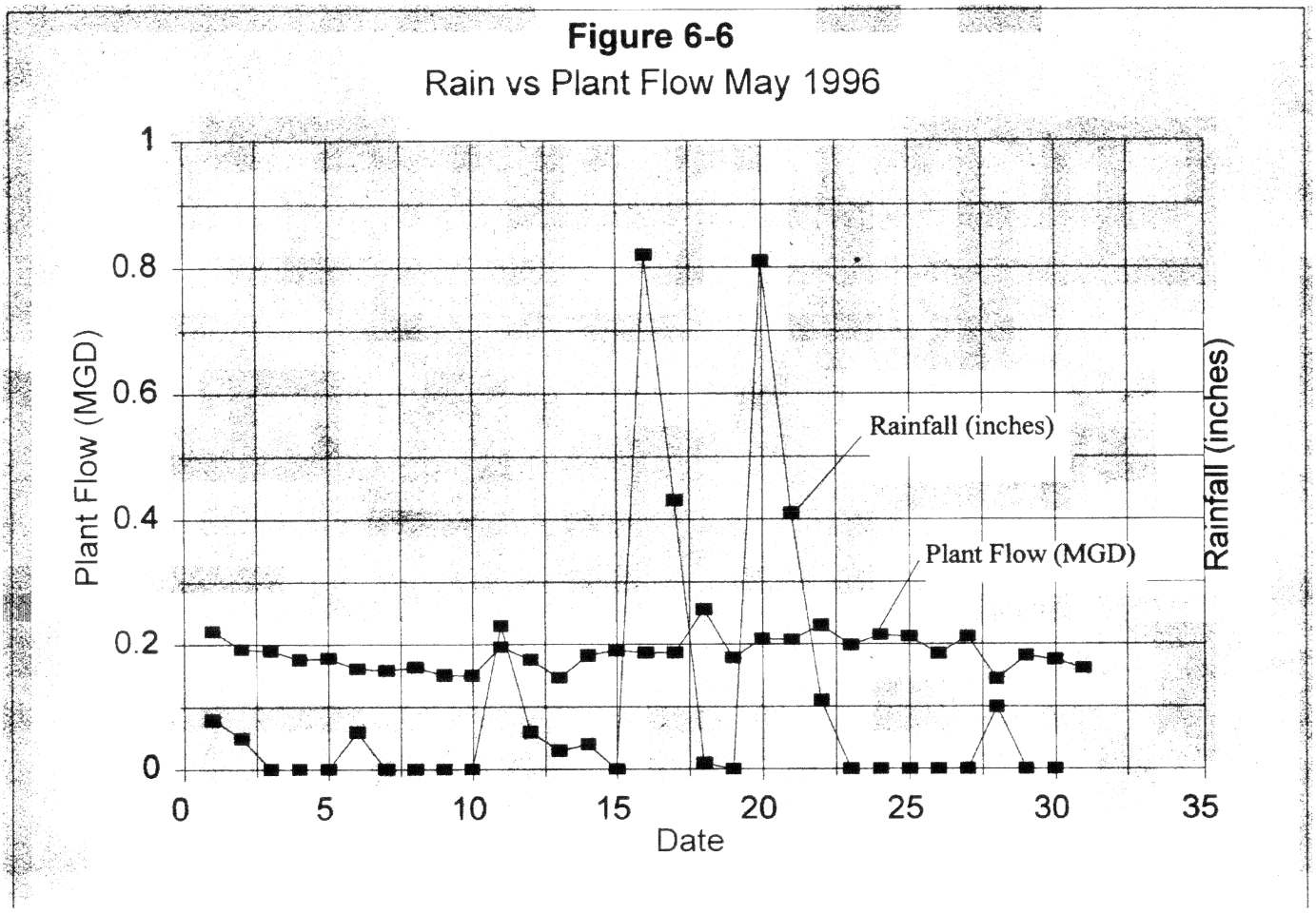
Year	Flow (MGD)	Month
1996	.208	May
1997	.162	May
1998	.157	May
1999	.151	May
2000	.141	Aug
2001	.126	May

Normally the maximum flow value represented in Table 6-5 would represent the design PWDWF, but it is also a good idea to see what was going on in May 1996 which was different from the other years.

Figure 6-6 is a plot of rainfall vs plant flow for the month of May 1996. It is clear that for many days in the month the flow was over .2 MGD, and that it is reasonable to expect that a flow over .2 MGD could be exceeded once in 5 years.

The measured PWDWF of .208 MGD was therefore selected for design as the flow not likely to be exceeded more than once in 5 years during the dry weather period.

Figure 6-6



Peak Daily Dry-Weather Flow (PDDWF)

Peak daily flows for each year are listed in Table 6-7.

TABLE 6-7

Measured Peak Daily Dry-Weather Flows

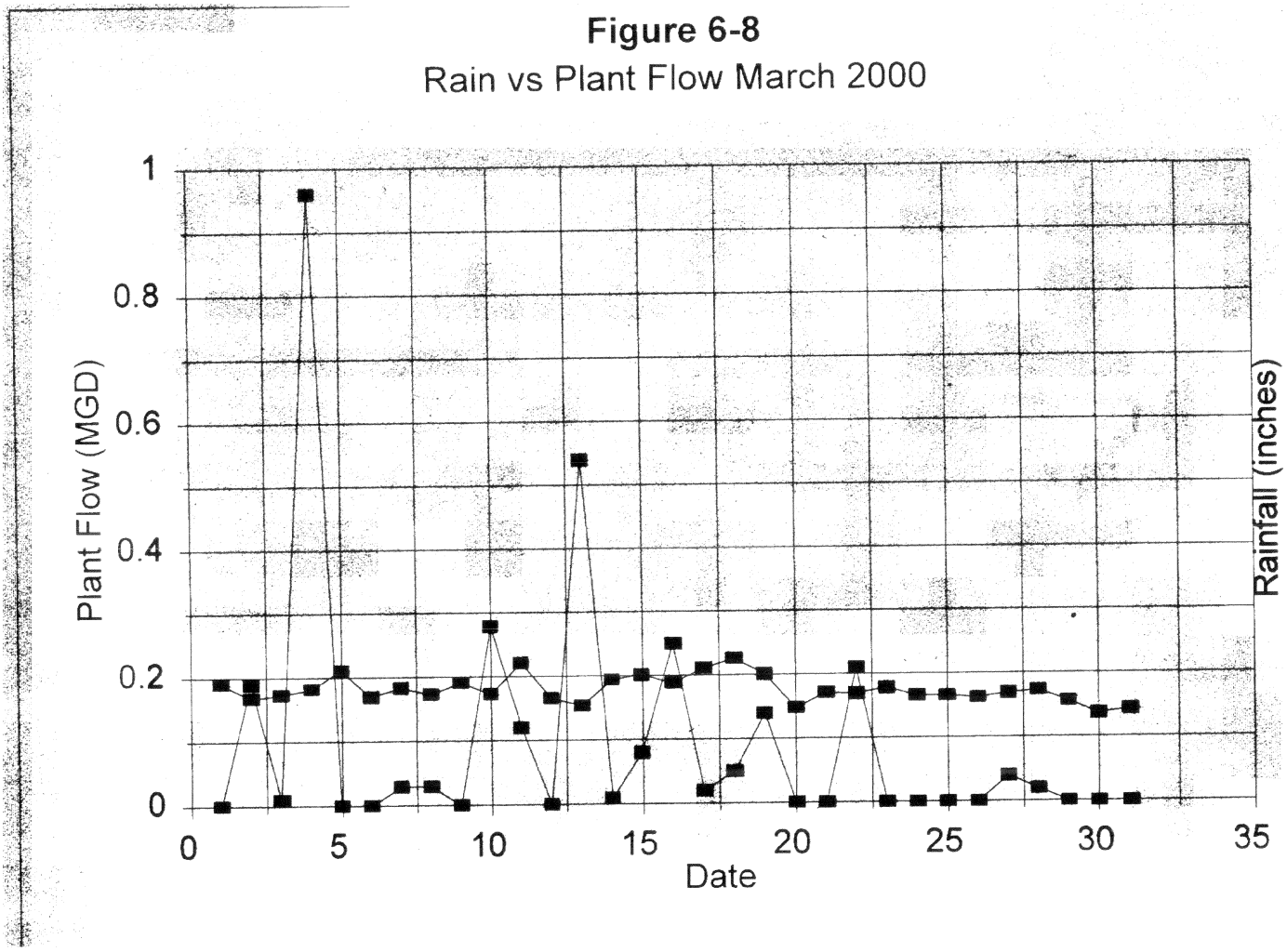
Year	Flow (MGD)	Month
1996	.256	May
1997	.185	June
1998	.169	May
1999	.186	May
2000	.189	Aug
2001	.157	May

Figure 6-6 shows that after a storm of .8 inches and with preceding flows on the order of .18 MGD the daily flow could reach .256 MGD under the physical conditions which existed in May 1996 in the City of Hubbard. But since that date the City has installed drainage improvements to reduce the significant amount of inflow which it was experiencing previously. There were areas of the City which would pond excessively and this water would get into manholes, cleanouts and private connections regularly.

To see if a lower value would more reasonably represent the PDDWF for the City, we have plotted plant flow vs rainfall for the month of March 2000 as Figure 6-8. This particular month followed a month of normal high rainfall, and experienced storms on the magnitude of those of May 1996. The one catch would be that the groundwater level in May would be higher than that for March.

Figure 6-8

Rain vs Plant Flow March 2000



It appears that a PDDWF of .256 would be conservative. A design PDDWF of .230 MGD was selected as the flow not likely to be exceeded more than once in 5 years during the dry weather period.

Peak Hourly Dry Weather Flow (PHDWF)

The PHDWF is estimated by extrapolating along a best fit line drawn through the ADDWF, MMDWF, PWDWF and the PDDWF to the probability of exceedence for the PHDWF. Figure 6-9 illustrates this procedure, and results in an estimated PHDWF of .260 MGD. This value will be used for design.

6.5 WET-WEATHER FLOWS

The wet weather period occurs from November 1 through April 30.

Average Daily Wet-Weather Flow (ADWWF)

The ADWWF is simply the arithmetic mean of the measured daily flows during the wet-weather period for the years for which we have data (January 1996 through April 2001). The ADWWF is measured as .198 MGD.

Maximum Monthly Wet-Weather Flow (MMWWF)

The MMWWF is the maximum monthly wet-weather flow which is expected to occur during the months of November through April. The 5-year MMWWF statistically should never be exceeded more than once every 5 years.

DEQ recommends that the design of wet-weather treatment capacity be based on a maximum monthly wet-weather flow with a 5-year recurrence interval. West of the Cascade mountain ranges, January is the maximum wet-weather month of high groundwater, and the MMWWF typically occurs in January. Maximum monthly flows measured at the Hubbard wastewater treatment plant, and the months in which they occurred during the period of January 1996 through April 2001 are illustrated in Table 6-9.

TABLE 6-9
Measured Maximum Monthly Wet-Weather Flows

Year	Maximum Monthly Flow (MGD)	Month
1996	.452	February
1997	.395	January
1998	.204	March
1999	.348	February
2000	.178	March
2001	.129	March

The storms that occurred on February 5 through February 8 dropped a total of 8.2 inches of rain

in four days. This storm was almost a 50-year storm and flooded large areas of Canby and Oregon City. It is unreasonably conservative to include the flow data for this storm in the data from Table 6-9 because it is not expected to recur for almost 50 years. A more reasonable figure for the maximum monthly wet-weather flow would be 0.395 MGD which occurred just after a month with 15 inches of rainfall. This figure will be used as the design MMWWF.

Peak Weekly Wet-Weather Flow (PWWWF)

Table 6-10 illustrates the measured peak weekly flows for the data years.

TABLE 6-10
Measured Peak Weekly Wet-Weather Flows

Year	Peak Weekly Flow (MGD)	Month
1996	.905	February
1997	.714	January
1998	.246	March
1999	.544	March
2000	.191	March
2001	.139	March

As mentioned above, the peak flows measured for February 1996 correspond with almost a 50-year recurrence. Using the data from the January 1997 event is much more realistic, yet falls in line with 5-year storm recurrence. The value of .714 MGD will be used for design.

Peak Daily Wet-Weather Flow

Table 6-11 illustrates the measured peak daily flows for the data period, and the months in which they occurred.

TABLE 6-11
Measured Peak Daily Wet-Weather Flows

Year	Peak Daily Flow (MGD)	Month
1996	1.33	February
1997	1.43	January
1998	.448	December
1999	.768	February
2000	.226	March
2001	.188	February

It is interesting to note that the storm which occurred immediately before the 1.33 MGD in February 1996 was heavier and dropped three times as much rain as the storm which immediately preceded the 1.43 MGD flow. According to Jaime Estrada, when the streets and yards would flood in Hubbard the residents would pry open the manholes and open the lateral cleanouts to drain the ponded water. It is likely that during both storms the manholes and/or cleanout lids had been open, but during the second storm it may have taken the public works department longer to notice them.

In addition, between 1997 and 2000 the City of Hubbard constructed several major storm drainage improvements to eliminate the temptation of citizens to take the storm problem into their own hands and overwhelm the wastewater treatment system.

In order to do whatever possible to adjust these two peak flows to represent a more realistic picture, we can look at the profile of these and similar storms and compare the flows.

As an example, the storm which occurred in February 1999 and which produced the maximum monthly flow of .768 MGD was preceded by a very wet month (11.4 inches total for February and 9.61 inches for January), and a series of storms which lasted for 7 days and over that time produced 5.23 inches of rainfall. Yet the maximum influent flow of .768 was preceded the day before by .473 MGD and followed by .533 MGD.

The storm which occurred on January 1, 1997 for which an influent flow of 1.43 MGD was preceded by a very wet month (15.0 inches total for December and 10.0 inches total for November), and a series of storms which lasted for 10 days and over that time produced 8.83 inches of rainfall.

The data for the week preceding each of these two storms is shown in Table 6-12.

Table 6-12
Storm Data Comparison

	February 1999 Storm Data		January 1997 Storm Data	
	Flow (MGD)	Rainfall (inches)	Flow (MGD)	Rainfall (inches)
6th Day Before	.257	1.24	.409	1.05
5th Day Before	.275	.87	.864	.37
4th Day Before	.371	.61	.506	.76
3rd Day Before	.350	.14	.637	.78
2nd Day Before	.375	.35	.881	.9
Day Before	.473	1.41	.978	1.45
Day of Peak Flow	.768	.61	1.432	1.44
Totals	2.869	5.23	5.707	6.75

In the January 1997 storm a total of 6.75 inches of rain over a 7-day period created an increase of 1.02 MGD, and in the 1999 storm a total of 5.23 inches of rain over a 7-day period created an

increase of .511 MGD. Another point is that the greater rate of rainfall in the 1997 storm would have created much more run-off, and probably no more infiltration, than the 1999 storm, suggesting that the difference in influent flows may be due to inflow.

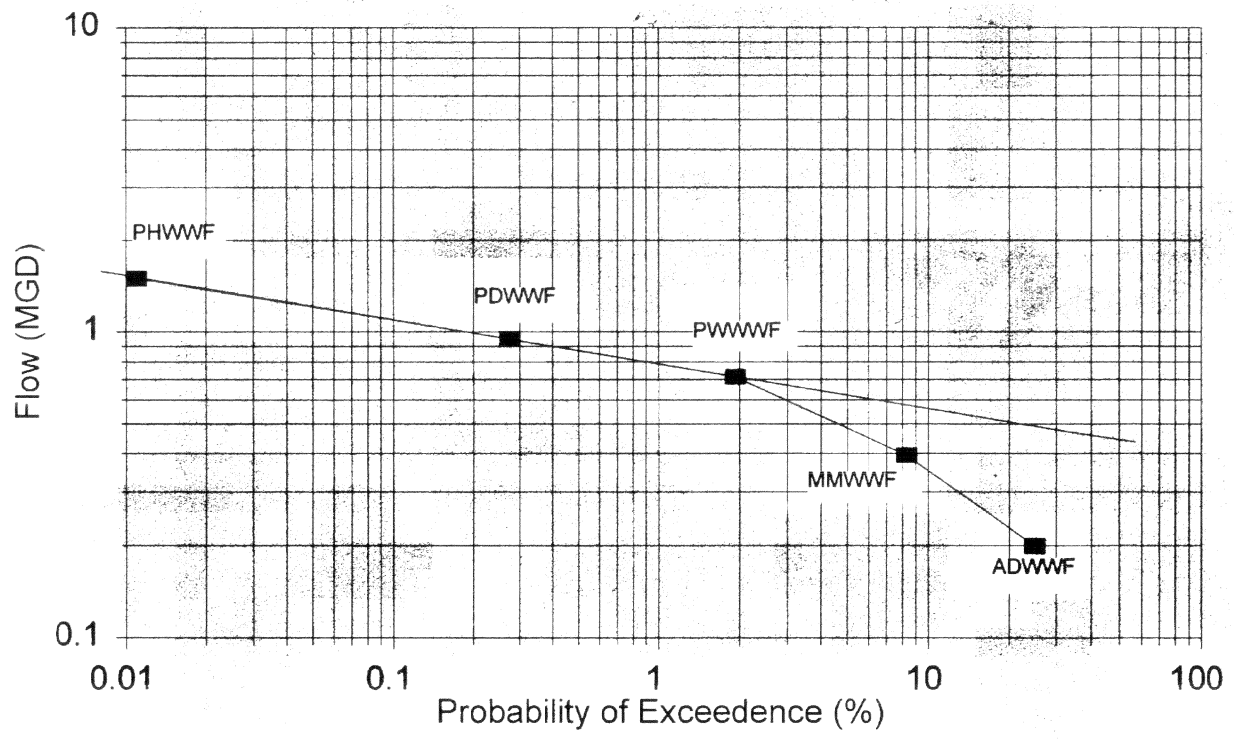
There are always a lot of factors involved in storm dynamics that cannot be properly represented within the scope of a wastewater facilities plan, and the representations and interpretations made in this section may be subject to debate. But it seems reasonable that since drainage improvements were made to eliminate known sources of inflow, and the above data suggest a significant reduction, then the post-drainage improvement wastewater data should reflect some improvement.

Obviously the PDWWF will be expected to be greater than the PDWWF. We will use a figure of ..950 MGD as the design PDWWF.

Peak Hourly Wet Weather Flow (PHWWF)

As a means of calculating a peak instantaneous hydraulic flow for the design of unit processes, we are using the peak hourly flow event, estimated by extrapolating the other wet-weather flow event data plotted on a log-log scale. Figure 6-13 illustrates this data and the line used for the extrapolation.

Figure 6-13
Wet Weather Flow Events



The extrapolated value for the PHWWF to be used for design is 1.50 MGD.

6.6 UNIT FLOWS

The flow events for both wet-weather and dry-weather discussed above have been adjusted for population, and are represented in Table 6-14. Each flow event was divided by the population present at the time the event occurred. The unit flows will be used to develop flow projections for the wastewater characteristics. The population used to develop unit flows for the peak hourly event is the population extant during the storm event that had the most influence on its estimation.

TABLE 6-14

Flow Event	Flow (MGD)	Date	Population	Unit Flow (gpcd)
ADDWF	.129	Jan 1996 - May 2001	2308	55.9
MMDWF	.186	May 1996	2185	85.1
PWDWF	.208	May 1996	2185	95.2
PDDWF	.230	May 1996	2185	105.3
PHDWF	.260	May 1996	2185	119.0
ADWWF	.199	Jan 1996 - May 2001	2308	86.2
MMWWF	.395	Jan 1997	2205	179.1
PWWWF	.714	Jan 1997	2205	323.8
PDWWF	.950	Feb 1996	2205	430.8
PHWWF	1.500	Jan 1997	2205	680.3

6.7 SANITARY SEWAGE

Water consumption during the wet-weather months of the data period is typically used to develop an estimate of sanitary sewage flow. But in the case of Hubbard this number exceeds the average daily dry-weather flows, and this may be due in part to a couple of fairly dry years.

Another method for estimating sanitary sewage flows is to look at the wastewater flow data for a month when light rain may still be keeping the garden plants green. The month of April 2001 occurred near the end of an unusually dry wet-weather season where every one of the preceding wet-weather months of the season had seen monthly averages less than the average daily wet-weather flow for the data period. The average monthly flow for April 2001 was .108 MGD, which calculates to low 43 gpcd. Since the soils which underlie the study area are permeable to percolation of surface waters and there is no evidence of a high groundwater table, this average

monthly flow can reasonably be used as a measure of sanitary sewage. Any minor I/I component contained in this number is not likely to be removed by collection system improvements anyway.

6.8 INFILTRATION AND INFLOW

Existing Population

Infiltration and inflow for different design conditions can be determined by subtracting the wastewater flow of .108 MGD from the various design values. Table 6-15 illustrates the various design flow parameters and the estimated I/I component of each.

TABLE 6-15

Flow Event	Total Flow	Sanitary Sewage	I/I Component
ADDWF	.129	.108	0.021
MMDWF	.186	.108	0.078
PWDWF	.208	.108	0.1
PDDWF	.230	.108	0.122
PHDWF	.260	.108	0.152
ADWWF	.199	.108	0.091
MMWWF	.395	.108	0.287
PWWWF	.714	.108	0.606
PDWWF	.950	.108	0.842
PHDWF	1.500	.108	1.392

Future Population

Most of the property within the City limits that could be developed can either be served with the existing collection system directly, or by the construction of new collection system piping using cutting-edge manhole and piping materials which minimize I/I. Although some I/I will be generated with new development over time, future development will result in less per capita I/I than associated with the existing population.

6.9 WASTEWATER LOADS

Wastewater samples are collected weekly by the treatment plant operators and analyzed for various parameters, including BOD_5 and TSS. Table 6-16 illustrates these two parameters for the Hubbard wastewater system.

TABLE 6-16

Event/Date	Concentration (Meas.) (mg/L)	Population	Unit Load (ppcd)	Measured Peaking Factor	Recommended Peaking Factor
BOD_5					
Average Day/NA	396	2308	0.1846	NA	NA
Maximum Month/Aug 1999	603	2255	0.2654	1.44	1.44
Maximum Week/March 2001	805	2510	0.3210	1.74	1.74
Maximum Day/March 2001	805	2510	0.3210	1.74	2
TSS					
Average Day/NA	265	2308	0.1235	NA	NA
Maximum Month/May 2000	665	2483	0.2770	2.24	2.24
Maximum Week/May 2000	801	2483	0.3498	2.83	2.83
Maximum Day/May 2000	801	2483	0.3498	2.83	3

Since samples for testing are taken weekly, the maximum week and the maximum day are the same number. The Unit Load was calculated using the flow event which corresponds to the load event for the actual date period that it represents. In other words, the Maximum Month Unit Load for BOD_5 was calculated using the average flow for the month of August 1999, etc.

Since the weekly test samples are also actually day samples as well and not true weekly averages, it is highly probable that during the testing period the measured weekly sample results are very close to the maximum daily results. We increased the measured peaking factors slightly to be used as the recommended peaking factors for the maximum daily. The City of Hubbard has a meat packing plant as a wastewater customer and this is the primary cause of these high biological loads. It makes no sense to apply these high loads to new residential customers, and if another meat packing plant moves into town the City can grant provisional approval of its operation subject to verification that it's wastewater does not drive the treatment plant's biological loadings beyond those estimated in the following section of this chapter.

6.10 PROJECTED WASTEWATER CHARACTERISTICS

Unit design flows developed by dividing each of the flow events were developed, and these flows were multiplied by the projected population for the study period as presented in Chapter 3. The results of these are illustrated in Table 6-17.

TABLE 6-17
PROJECTED INFLUENT WASTEWATER CHARACTERISTICS

Planning Year		**2001**	**2004**	**2007**	**2010**	**2013**	**2016**	**2019**	**2022**
Population		**2510**	**2664**	**2817**	**2979**	**3144**	**3315**	**3488**	**3660**
Wet-Weather Flows	**gpcd**	**MGD**							
ADWWF	86.2	0.172	0.173	0.243	0.173	0.174	0.286	0.301	0.315
MMWWF	179.1	0.450	0.477	0.505	0.534	0.563	0.594	0.625	0.656
PWWF	323.8	0.813	0.863	0.912	0.965	1.018	1.073	1.129	1.185
PDWWF	430.8	1.081	1.148	1.214	1.283	1.354	1.428	1.503	1.577
PHWWF	680.3	1.708	1.812	1.916	2.027	2.139	2.255	2.373	2.490
Dry-Weather Flows	**gpcd**	**MGD**							
ADDWF	55.9	0.140	0.149	0.157	0.167	0.176	0.185	0.195	0.205
MMDWF	85.1	0.214	0.227	0.240	0.254	0.268	0.282	0.297	0.311
PWDWF	95.2	0.239	0.254	0.268	0.284	0.299	0.316	0.332	0.348
PDDWF	105.3	0.264	0.281	0.297	0.314	0.331	0.349	0.367	0.385
PHDWF	119.0	0.299	0.317	0.335	0.355	0.374	0.394	0.415	0.436
BOD_5	**ppcd**	**PPD**							
Average Daily	.1846	463	492	520	550	580	612	644	676
Maximum Monthly	.2654	666	707	748	791	834	880	926	971
Maximum Weekly	.3210	806	855	904	956	1009	1064	1120	1175
Maximum Daily	.3692	927	984	1040	1100	1161	1224	1288	1351
TSS	**ppcd**	**PPD**							
Average Daily	.1235	310	329	348	368	388	409	431	452
Maximum Monthly	.2770	695	738	780	825	871	918	966	1014
Maximum Weekly	.3498	878	932	985	1042	1100	1160	1220	1280
Maximum Daily	.3705	930	987	1044	1104	1165	1228	1292	1356

6.11 RECEIVING STREAM MASS LOAD LIMITATIONS

In Chapter 4 we discussed the probability that DEQ will be reluctant to grant an increase in dry-weather effluent mass loadings to the City of Hubbard for discharge to Mill Creek. This section is included to estimate the maximum effluent concentrations required to meet the existing dry-weather mass load limitations of the permit as the population increases, using the projections illustrated in

Table 6-17. DEQ has also indicated[2] that at some point in the near future the City will not be allowed to use the current surface discharge during the dry-weather season.

This section does not include a discussion of other water quality parameters such as ammonia, nutrients, or dissolved oxygen. These issues would be best addressed in a mixing zone study, which would be needed only if the City intended to pursue a long-term dry-weather discharge to Mill Creek.

Table 6-18 is a copy of Table 4-2, and illustrates the dry-weather mass loading limitations as outlined in the current NPDES permit.

TABLE 6-18
EXISTING WASTE DISCHARGE PERMIT LIMITATIONS

May 1 through October 31					
Parameter	**Average Effluent Concentrations Monthly**	**Weekly**	**Monthly Average lb/day**	**Weekly Average lb/day**	**Daily Maximum lb/day**
BOD-5	10 mg/l	15 mg/l	28	43	57
TSS	10 mg/l	15 mg/l	28	43	57

The methodology which we used to estimate how long the City could expect to continue to discharge into Mill Creek without violating the dry-weather limits was to estimate the percentage removal required to meet these load limitations given the parameters outlined in Table 6-17.

Table 6-19 illustrates the maximum effluent concentrations for BOD-5 and TSS to achieve compliance with the current dry-weather mass loadings, based upon the projected population over the study period.

TABLE 6-19
MAXIMUM EFFLUENT CONCENTRATIONS REQUIRED
TO MEET PERMIT MASS LOADING DISCHARGE LIMITATIONS

Planning Year		2001	2004	2007	2010	2013	2016	2019	2022
Population		2510	2664	2817	2979	3144	3315	3488	3660
BOD_5 & TSS	gpcd	Maximum Effluent Concentration, mg/l							
Monthly Average	85.1	15.7	14.8	14.0	13.2	12.5	11.9	11.3	10.8
Weekly Average	95.2	21.6	20.3	19.2	18.2	17.2	16.3	15.5	14.8
Daily Maximum	105.3	25.9	24.4	23.0	21.8	20.6	19.6	18.6	17.7

[2] Personal conversation with Julie Berndt, January 7, 2003.

The current NPDES permit contains a 10 mg/l effluent concentration limit for BOD_5 and TSS Monthly Average, and 15 mg/l Weekly Average. It does not appear that these limits will become a problem for the City until near the end of the planning period.

CHAPTER 7

DEVELOPMENT AND SCREENING OF ALTERNATIVES, AND CAPITAL IMPROVEMENT PLAN

7.1 GENERAL

This Chapter includes a general hydraulic and biological loading capacity evaluation of each of the major wastewater system components including collection system, pump stations, liquid stream treatment, solids handling, disinfection and disposal. Through this evaluation, system improvement alternatives will be developed later in this chapter.

7.2 COLLECTION SYSTEM ANALYSIS

The wastewater collection system was analyzed by distributing peak daily and peak hourly flows developed in Chapter 6 among the major collection system drainage basins. The major collection lines were then analyzed for capacity and compared with the peak flows throughout the study period. From this analysis improvements were recommended which would provide a collection system capable of handling anticipated flows throughout the study period.

As mentioned in Section 5.2 of this Plan, no improvements to the collection system piping are currently needed to improve hydraulic capacity.

The City is committed to continuing the remedial I/I work identified previously and as required by the DEQ.

7.3 TREATMENT SYSTEM ANALYSIS

The design capacities of the treatment system are sufficient to enable the City of Hubbard to maintain the current treatment system for the entire study period. But over the past few years the City has had a difficult time controlling sludge bulking.

Experience would suggest that this situation is probably created by a combination of influent dissolved oxygen and the physical/biochemical environment within the aeration basin. Measurement of dissolved oxygen in the aeration basin indicates a dissolved oxygen content of from 0 to 1.5 mg/L, depending on the location of the moving aerator system at the time the DO is measured. Although this is not atypical for a well-functioning activated sludge system it may not be sufficient if the amount of time the basin is in an anoxic mode is too long.

Tests conducted on the constituents of the mixed liquor indicate the presence of organic acid, which also suggests low aeration. On top of this is the fact that the influent BOD is quite high even if total influent loading is lower than the biological loading capacity of the plant.

When the treatment plant was first constructed, bulking was not a problem. But as mentioned above, it has been for the past few years, which indicates that something has changed. Perhaps the plant's ability to aerate/mix has been reduced through wear, influent parameters have changed, or some combination of both has occurred. It is also possible that when newer the plant operated just within a workable DO and some influent event, perhaps a toxic slug load, put the plant outside of its workable operating range and the plant is still struggling to recover.

Although filamentous growth can occur under high mixing conditions if the biochemistry is just so, it is more likely to occur during quiescent settling phases of operation when the opportunity for growth of long bacterial chains is best. In the Hubbard wastewater plant such quiescent opportunities do occur with each bridge rotation, and this could contribute to bulking.

Under normal circumstances two of the three 180 SCFM blowers operate at a time. The third is available for redundancy. We initially suggested that the City operate all three blowers for a period of time (a week or so) to see if there is any improvement, but City staff are concerned that the construction of the aeration system on the moving bridge may not be capable of sustaining long periods of higher aeration.

Jaime Estrada has indicated that the MLSS within the aeration basin is on the order of 4,000 mg/L. Although this is quite high for an activated sludge treatment plant, it actually provides a very efficient treatment mix when operated in a high aeration mode. But it will also deplete DO quickly once the aerators have moved, maximizing the time the basin will operate in an anoxic mode.

Another contributing factor could be illustrated by the average annual influent pH, which has dropped since 1997 as illustrated in Table 7-1.

TABLE 7-1

Year	Average pH for Year
1996	7.28
1997	7.31
1998	7.00
1999	6.80
2000	6.68

Such a large aeration basin pH drop is not only unusual, but may indicate a significant increase in organic acid concentration, and may even contribute to a proliferation of acidophilic fungi.

In addition to the sludge settling problems, the City is having an increasing problem with the storage of biosolids during the wet winter months. Land application of stabilized biosolids, in accordance with the City's Biosolids Management Plan is impossible when the land on which it is to be applied is too wet to drive on. During those wet months the City has been storing biosolids in its two digesters, which are sometimes almost full to capacity.

Recommendations

We recommend replacement of the aeration headers on the moving bridge of the aeration treatment basin, the construction of a fourth blower system with a capacity twice that of each of the existing three blowers, and reconfiguration of the blower control system to provide for operation of any one, two or three blowers at once to provide increased DO to the aeration basin. These new aeration headers should be constructed to provide more coverage of the basin surface area so as to also reduce the anoxic zone length. This will increase the oxygen load by 50 percent and provide adequate redundancy for blower repair or replacement.

In addition, and as mentioned in Section 5 of this Plan, the wastewater treatment plant standby generator is not connected to the facility for automatic transfer. We recommend that this electrical work be completed concurrently.

Table 7-2 presents the estimated costs associated with these recommended improvements.

TABLE 7-2
ADDITION OF AERATION AND REPLACEMENT OF HEADER

Item	Estimated Cost
Replace Aeration Basin Headers	$ 65,000.00
Install New Aeration Blower (Includes Foundation Slab, Underground Piping Modifications, and Electrical Conduit	$ 125,000.00
Modify Blower Control System to Accommodate Additional Blower. Add Automatic Transfer Switch for Standby Generator	$ 52,000.00
Contingency	$ 24,200.00
Engineering, Construction Management	$ 36,300.00
Total Estimated Cost	**$ 302,500.00**

An accumulation of rags and floatables on the existing aeration header as the bridge moves through the mixed liquor is probably contributing to the reduction in aeration efficiency. We recommend the construction of a headworks screening system capable of significantly reducing the rags and floatables in the aeration basin mixed liquor. Table 7-3 illustrates the estimated costs associated with these recommended improvements.

TABLE 7-3
PRELIMINARY SCREENING FOR RAGS AND FLOATABLES

Item	Estimated Cost
Excavation, Sitework and Preparation	$ 35,000.00
Raw influent screening system, capable of delivering rags and floatables into a dumpster.	$ 145,000.00
Piping, electrical work, telemetry, misc.	$ 45,000.00
Contingency	$ 22,500.00
Engineering, Construction Management	$ 33,750.00
Total Estimated Cost	**$ 281,250.00**

In order to provide adequate storage of stabilized biosolids during the wet months when land application is not practicable, we recommend the installation of a biosolids filter press and the construction of a covered biosolids storage area near the final clarifier and UV disinfection unit. The covered storage area would be large enough to house the filter press. The entire area would be asphalt-paved with a concrete K-rail barrier to contain the biosolids. Table 7-4 illustrates the estimated costs associated with these recommended improvements.

TABLE 7-4
BIOSOLIDS FILTER PRESS AND STORAGE AREA

Item	Estimated Cost
Excavation, site preparation, and AC pavement	$ 75,000.00
Construction of pole-supported roof over filter press and storage area	$ 55,000.00
Installation of biosolids filter press, with electrical and telemetry	$ 185,000.00
Contingency	$ 31,500.00
Engineering, Construction Management	$ 47,250.00
Total Estimated Cost	**$ 393,750.00**

Recommendations For Future Dry-weather Discharge

We recommend that the City begin immediately identifying options for beneficial re-use of treated and disinfected effluent during the dry-weather months. We anticipate that by 2012 the City will no longer be able to discharge its treated dry-weather flows into Mill Creek or any other surface water, and will either need to store the effluent produced during these months, or use this treated effluent for some beneficial use. We do not recommend that the City pursue developing a municipal drainfield.

There are a number of opportunities in the immediate area of the City of Hubbard to provide certain crop irrigation, whether the crops irrigated are through a contractual relationship with a farmer or the City chooses to purchase property for the irrigation of cash crops such as poplar.

Review of Sewer Use Ordinance and Recommendations

The current City of Hubbard sewer ordinance was reviewed relative to requirements pertaining to influent quality, as well as cross-connection restrictions.

Section 13.20.110 contains prohibitions on the discharge of certain substances into the City's sewer collection system, and the list of prohibited substances appears to be complete with the single exception of establishing reasonable restrictions on the quality of industrial wastes, including discharges from meat processing facilities.

We recommend the addition of subsection (18), as follows:

"(18) Effluent discharges to the City's wastewater system from meat processing or packing facilities, or from any other food preparation facilities with a biochemical strength greater than 500 mg/L BOD_5 or 500 mg/L TSS. The owners and operators of such facilities shall be responsible, at no cost to the City of Hubbard, for pre-treating such discharges so as to provide a discharge which meets these maximum concentrations."

The exact language should be generated by the City Attorney prior to adoption of the ordinance change by the City Council.

CHAPTER 8

SYSTEMS DEVELOPMENT CHARGES

8.1 BACKGROUND INFORMATION

Systems Development Charges (SDC's) are charges assessed against new development in an attempt to recover some of the costs incurred by local government in providing the capital facilities required to serve the new development. SDC's are applied to new development to generate revenue for expansion or construction of municipal facilities located outside the boundaries of new development. This is different from localized improvement districts (LID's) which are often used to assess the cost of constructing or expanding City services on-site, within the development.

Although up-front fees have commonly been charged throughout Oregon in past years to new home buyers and new businesses for expanding City services, the methodology for assessing charges have not always been fair.

During the 1989 Legislature session, lobbyists for local government, the League of Oregon Cities, and the home building industry reached agreement on a bill regulating the use of Systems Development Charges. HG 3224, the Oregon Systems Development Charges Act passed by the 1989 Legislature, governs the requirements for Systems Development Charges as of July 1, 1991.

The purpose of this Chapter is to develop a Systems Development Charge Report for the Wastewater System of the City of Hubbard which will meet with the 1989 System Development Charge Act (HB 3224).

8.2 SUMMARY OF SDC LAW

The League of Oregon Cities prepared the following summary of major features of the SDC law.

1. *Authorized Government Objectives.*

The charge must be for capital improvements that are facilities or assets used for:

a. Water supply, treatment and distribution.
b. Wastewater collection, treatment and disposal.
c. Drainage and flood control.

d. Transportation.
e. Parks and recreation.

Administration office facilities are authorized only if they are an incidental part of the listed capital improvements. Routine maintenance may not be funded from system charges. Charges collected for future improvements must be spent on capacity increasing capital improvements in proportion to the capacity requirements of current projected development.

2. *Methodology.*

An ordinance or resolution must establish the Systems Development Charges. Two general types of fees could be combined into a single charge for each infrastructure system, depending on whether infrastructure improvement capacity was pre-financed or whether the monies are collected toward a future improvement. Several factors, such as the cost of the facilities, value of unused capacity and others must be considered in the methodology.

3. *Infrastructure Plan Relationship.*

A capital improvement plan, public facilities plan, master plan or comparable plan should list the improvements that would be eligible for Systems Development Charges. Modification of the lists in the plans is allowed at any time in order to keep current with development trends. Amendment procedures may exist in other statutes or rules or may, for some types of plans, need to be developed locally. This provision allows the City to measure and analyze facility standards and services that may be related to current or projected development.

4. *Segregated Funds and Fund Accountability.*

The charges collected must be segregated from the general fund and reserved for use only on the specific infrastructure systems for which they were collected. An annual accounting is needed to report total revenues collected for each system and the projects funded.

5. *Credit for Other Exactions.*

There must be a credit available if a builder/developer pays an SDC and also contributes toward the same infrastructure improvement through a development exaction. The credit need not exceed the amount of the systems charge paid. Cities will rely on the plan and methodology to identify instances where the two forms of contribution for one improvement occur. This provision only affects off-site development exactions. It should be noted that the City's existing policy regarding development exactions may not be in conformance with this requirement.

6. *Existing Deficiencies.*

In general, cities will not be authorized to use charges to correct system deficiencies. However, the governing language in the bill is in concept of "capacity increasing" improvements. No short definitions were used to sort out the elusive meaning of rehabilitation or repair.

7. *Judicial Review.*

A statute of limitations outlines a time period to contest methodology. The City would adopt administrative review procedures to enable a challenge of an expenditure. The decision of the City is appealed only by a writ of review. The legal challenge procedures are clear, well-defined and efficient. The remedy for misspent expenditures is replenishment of the fund by a time certain.

8.3 REIMBURSEMENT FEE AND IMPROVEMENT CHARGE

The Oregon Systems Development Act permits two types of Charges: a reimbursement fee and an improvement charge.

A **reimbursement fee** is a charge for unused capacity in capital improvements already constructed or under construction. This is a "buy-in" charge for new development to utilize excess capacity in an existing facility that was paid for by others.

Care must be taken to make sure that new development is not charged twice for capital improvements. For example, if an existing improvement was financed with property taxes, then all property, including undeveloped property, paid for the improvement and it may not be equitable to charge a reimbursement fee. Reimbursement fees must be established by City ordinance or resolution setting forth a methodology that considers the cost of the existing facility or facilities, prior contributors by existing users, the value of unused capacity, financing and other relevant factors. The new law requires that the methodology used be available for public inspection.

An **improvement charge** is a fee associated with capital improvements to be constructed. Revenues from improvement charges can only be spent on "capacity increasing" capital improvements. The portion of improvements funded by improvement charges must be related to new development. The Oregon SDC Act requires improvement charges be established by ordinance or resolution setting forth a methodology that considers the cost of projected capital improvements needed to increase the capacity of the systems to which the fee is related. The methodology for establishing fees shall be available for public inspection.

8.4 ACCUMULATION OF SYSTEMS DEVELOPMENT CHARGES

This Report identifies certain capital improvements for the City of Hubbard wastewater system. Although preliminary Phasing plans have been developed, it is difficult to accurately predict when the facilities will actually be constructed. Therefore, the City needs to periodically review growth patterns (at least once every 5 years) and update the Phasing plan. SDC's historically have been accumulated for time periods of 10 years or less before the money is spent. Developers in some states have filed suits against cities which pooled the money for longer periods of time. We recommend that the City plan to construct high priority items as funding becomes available and the SDC's not be accumulated for any longer than 10 years.

8.5 SYSTEMS DEVELOPMENT CHARGE METHODOLOGY

The following methodology has been used to develop the recommended Systems Development Charges.

General

Development of an equitable SDC for the wastewater system in the City of Hubbard is needed to help fund future capital improvements. A significant amount of improvement is needed to complete the wastewater system as outlined in this Report.

Existing Planning Documents

The planning documents used to developed a Capital Improvement Plan and to determine equitable wastewater system SDC's, in addition to this Report, is:

PRELIMINARY ENGINEERING REPORT
FOR
WASTEWATER DISINFECTION IMPROVEMENTS
FOR THE
THE CITY OF HUBBARD
BST, Inc. August 1999

Proportionate Share of Costs

Oregon's new SDC Act requires equity among types of development - equal development should pay equal amounts. Charges need to be proportioned based on the burden created by the user. An equitable method is to proportion charges based on the number of equivalent dwelling units (EDY's) created by the development. However, establishing a fair methodology for determining the value of an EDU is one of the most difficult tasks when developing SDC's.

We believe that the fairest method for proportioning the costs of wastewater improvements is based upon proportionate base wastewater flow, which is a function of water use. The flow associated with a typical single family dwelling in Hubbard is equivalent to 1 EDU and can be calculated as follows:

128 gallons per day per person X 2.54 people/dwelling = 325 gpd/EDU

The flow associated with a new development can be calculated using the typical unit flows shown in Table 8-1 and the facilities to be provided. The number of equivalent dwelling units can then be calculated by dividing the flow for the development by 290 gpd/EDU.

TABLE -1
TYPICAL WATER FLOWS
BASED UPON TYPE OF FACILITY

Type of Facility - Wastewater Source	**Average Flow, gpd**
Assembly Hall	2 per seat
Churches w/Kitchen	5 per seat
Dwellings	
- Apartments	128 per person
- Single Family Dwelling	128 per person
Hospitals	200 per bed
Large Commercial	*
Laundromat	450 per machine
Motels	100 per bedroom
Restaurants & Lounges	40 per seat
Resorts	*
Schools	20 per student
Service Station	10 per vehicle served
Small Commercial Business	190
Travel Trailer Parks	
- w/Individual Water and Sewer Hook-up	125 per space
- w/o Hook-ups, w/Central Bath House	45 per space

Notes: * To be calculated by City Engineer on a case by case basis based upon the facilities to be provided.

Unit flows for units not listed shall be as determined by the City Engineer.

8.6 EXISTING WASTEWATER SYSTEM COMPONENTS

The value of the existing wastewater system components will need to be estimated to determine a reasonable value for the reimbursement charge component of the Systems Development Charge.

Present Worth Analysis

The value of existing wastewater facilities will be estimated on a present worth basis, based upon the following assumptions:

Planning Period	20 years
Service Life	
Treatment Plant Components and Pump Stations	20 years
Pipelines	50 years
Interest Rate	4.75%
ENR Construction Cost Index	6389

Based on current construction costs, the existing wastewater collection system is worth at least $2,185,000. The existing wastewater treatment system is worth at least $1,855,000.

8.7 WASTEWATER SYSTEM CAPITAL IMPROVEMENT PLAN

The Capital Improvement Plan outlined in Chapter 7 for the wastewater system has been developed as improvements which were identified Chapters 5 and 7, including cost estimates.

8.8 REIMBURSEMENT CHARGE

The improvements listed under Priority I in the Capital Improvement Plan within this Report can be divided into those needed to meet existing demand (associated with existing users) and those which will allow future growth (for extra capacity, associated with future users). The latter category of improvements should be paid for through Improvement Charge SDC's.

Existing users will utilize no more than 57 percent of the capacity of the existing collection system and no more than 44 percent of the existing treatment system. New users would then be responsible for paying a total of $939,550 of the existing collection system, and $1,038,800 of the existing treatment system.

The number of new EDU which can be connected to the existing collection system before additional improvements must be made is estimated to be 1904 persons or 750 EDU. Dividing this into the $939,550 results in a maximum reimbursement charge of $1,253 per

EDU for the existing collection system improvements. The number of new EDU which can be connected to the existing treatment system before additional improvements must be made is estimated to be estimated to be 3183 persons or 1,253 EDU. Dividing this into the $1,038,800 results in a maximum reimbursement charge of $829 per EDU for the existing treatment system improvements.

The total maximum reimbursement charge for the Hubbard Wastewater System is the sum of these two components, or $2,082 per EDU.

8.9 IMPROVEMENT CHARGE

Improvements identified in Chapter 7 are improvements which enhance the existing treatment system. Without these improvements it is possible that a limitation on treatment capacity may be imposed if effluent quality degrades. These improvements constitute an improvement charge since these improvements assure that this additional capacity will be available, and are not needed by the existing users. The maximum improvement charge is calculated by dividing the cost of these future improvements, $977,500 by 1,253 EDU. The maximum improvement charge is $780.

8.10 MAXIMUM SYSTEMS DEVELOPMENT CHARGE

The maximum Systems Development Charge which can be collected form developers wishing to connect to the Hubbard Wastewater system is the sum of the above charges, or $2,862. The actual "hook-up fee" that the City can charge for a new service is the sum of the SDC, the actual cost of the labor and materials for the new service, and the administration costs associated with the new service.

8.11 UPDATING WASTEWATER SDC'S

Cost estimated presented in this report should be updated periodically to account for actual inflation. The SDC's should also be updated accordingly. The costs presented above are based on an estimated ENR Construction Cost Index for 2001 as shown in Chapter 5.

APPENDIX A

Oregon
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January 27, 1999

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CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: NPDES Waste Discharge Permit & Mutual Agreement and Order (MAO)
File No. 40494
MAO No.: WQ/M-WR-98-205
Facility: Hubbard STP
Marion County

Dear Ms. Nogle:

The Mutual Agreement and Order (MAO) that was negotiated between the Department of Environmental Quality (Department) and the City of Hubbard (City) is enclosed for your records. The regional Division Administrator has signed the MAO on behalf of the Department and the Environmental Quality Commission and is now a fully executed document.

The Department fully expects the City to meet all compliance deadlines in the MAO. If for unforeseen circumstances, the City anticipates any problems meeting the compliance deadlines, the Department requests that the City submit in writing a reasonable justification for not meeting the deadline in the MAO at least thirty (30) days prior to the deadline. The letter shall also include a new proposed compliance schedule for submittal of all remaining deadlines.

The Department has also completed its review of your permit application and the comments received regarding the preliminary draft permit. Your National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit has been issued and is enclosed. This permit will be considered the final action on permit application number 993741.

If you are dissatisfied with the conditions or limitations of this permit, you have 20 days to request a hearing before the Environmental Quality Commission or its authorized representative. Any such request shall be made in writing to the Director and shall clearly state the grounds for the request.

You are urged to carefully read the permit and MAO and take all possible steps to comply with the conditions established. If you have questions, please contact Bob Dicksa, Western Region - Salem Office at 503-378-8240 extension 246.

Sincerely,

Barbara A. Burton

Barbara A. Burton
Water Quality Manager
Western Region

BAB:sms
Enclosure
cc: Environmental Protection Agency, OOO
Bob Dicksa, Western Region - Salem Office, DEQ

Expiration Date: 11/30/03
Permit Number: 101640
File Number: 40494
Page 1 of 14 Pages

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM WASTE DISCHARGE PERMIT

Department of Environmental Quality
Western Region - Salem Office
750 Front Street NE, Suite 120, Salem, OR 97310
Telephone: (503) 686-7838

Issued pursuant to ORS 468.050 and The Federal Clean Water Act

ISSUED TO:

City of Hubbard
P. O. Box 380
Hubbard, OR 97032

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Domestic Wastewater	001	R.M. 5.3 Mill Creek

FACILITY TYPE AND LOCATION:

Rotating Aerated Basin
3607 Sunset Drive
Hubbard, OR 97032

Treatment System Class: II
Collection System Class: II

RECEIVING SYSTEM INFORMATION:

Basin: Willamette River
Sub-Basin: Pudding
Stream: Mill Creek
Hydro Code: 22K - Mill 5.3 D
County: Marion

EPA REFERENCE NO: OR-002059-1

Issued in response to Application No. 993741 received June 18, 1996.

This permit is issued based on the land use findings in the permit record.

Barbara A. Burton
Barbara A. Burton, Water Quality Manager
Western Region

Januray 27, 1999
Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to construct, install, modify, or operate a wastewater collection, treatment, control and disposal system and discharge to public waters adequately treated wastewaters only from the authorized discharge point or points established in Schedule A and only in conformance with all the requirements, limitations, and conditions set forth in the attached schedules as follows:

Unless authorized by another NPDES permit, each other direct and indirect discharge to public waters is prohibited.

SCHEDULE A

1. **Waste Discharge Limitations not to be Exceeded After Permit Issuance.**

a. Outfall Number 001 (Wastewater Treatment Plant Discharge)

(1) May 1 - October 31:

Parameter	Average Effluent Concentrations Monthly	Weekly	Monthly Average lb/day	Weekly Average lb/day	Daily Maximum lbs
BOD-5	10 mg/l	15 mg/l	28	43	57
TSS	10 mg/l	15 mg/l	28	43	57

(2) November 1 - April 30:

Parameter	Average Effluent Concentrations Monthly	Weekly	Monthly Average lb/day	Weekly Average lb/day	Daily Maximum lbs
BOD-5	30 mg/l	45 mg/l	85	130	170
TSS	30 mg/l	45 mg/l	85	130	170

• Based on the average dry weather design flow to the facility of 0.34 MGD.

Average Dry Weather Design Flow to the facility is 0.34 MGD. Schedule C, Condition 4 requires the permittee to select the basis for calculating winter time (November 1 through April 30 each year) mass load limits. Upon review and approval of the engineering study to determine the design average wet weather flow, pursuant to OAR 340-41-120 (9), upon request of the permittee, the Department intends to modify this permit and include revised mass load limits.

(3)

Other parameters	Limitations
Fecal Coliform bacteria*	Shall not exceed a 30 day log mean of 200 organisms per 100 mls and a weekly log mean of 400 organisms per 100 mls.
E. coli bacteria	Shall not exceed a 30 day log mean of 126 organisms per 100 mls. No single samples shall exceed 406 organisms per 100 mls. (See Note 1)
pH	Shall be within the range of 6.0 - 9.0
Total Residual Chlorine	Shall not exceed 0.02 mg/l daily average
BOD_5 and TSS Removal	Shall not be less than 85% monthly average

* The permittee shall monitor for Fecal Coliform bacteria until November 30, 1999. By no later than December 1, 1999, the permittee shall monitor for *E. coli* bacteria for the remainder of this permit cycle in accordance with Schedule C, Condition 6., of this permit.

(4) Not withstanding the effluent limitations established by this permit, except as provided for in OAR 340-45-080, no wastes shall be discharged and no activities shall be conducted which will violate water quality Standards as adopted in OAR 340-41-442 except in the following defined mixing zone:

That portion of Mill Creek 10 feet upstream and 200 feet downstream from the point of discharge.

(5) Raw sewage discharges are prohibited to waters of the State from November 1 through May 21, except during a storm event greater than the one-in-five-year, 24-hour duration storm, and from May 22 through October 31, except during a storm event greater than the one-in-ten-year, 24-hour duration storm.

If an overflow occurs between May 21 and June 1, and if the permittee demonstrates to the Department's satisfaction that no increase in risk to beneficial uses occurred because of the overflow, no violation shall be triggered if the storm associated with the overflow was greater than the one-in-five-year, 24-hour duration storm.

NOTES:

1) If a single sample exceeds 406 organisms per 100 mls, then five consecutive re-samples may be taken at four hour intervals beginning within 48 hours after the original sample was taken. If the log mean of the five re-samples is less than or equal to 126, a violation shall not be triggered.

SCHEDULE B

1. Minimum Monitoring and Reporting Requirements. (unless otherwise approved in writing by the Department).

The permittee shall monitor the parameters as specified below at the locations indicated. The laboratory used by the permittee to analyze samples shall have a quality assurance/quality control (QA/QC) program to verify the accuracy of sample analysis. If QA/QC requirements are not met for any analysis, the results shall be included in the report, but not used in calculations required by this permit. When possible, the permittee shall re-sample in a timely manner for parameters failing the QA/QC requirements, analyze the samples, and report the results.

a. Influent

Item or Parameter	Minimum Frequency	Type of Sample
Total Flow (MGD)	Daily	Measurement
Flow Meter Calibration	Annually (November)	Verification
BOD_5	1/Week	Composite
TSS	1/Week	Composite
pH	2/Week	Grab

b. Outfall Number 001 (Sewage Treatment Plant Discharge)

Item or Parameter	Minimum Frequency	Type of Sample
Total Flow (MGD)	Daily	Measurement
Flow Meter Calibration	Annually (November)	Verification
BOD_5	1/Week	Composite
TSS	1/Week	Composite
pH	2/Week	Grab
Fecal Coliform bacteria*	1 per 2 Weeks	Grab
E. coli bacteria	1per 2 Weeks	Grab (See Note 1)
Quantity Chlorine Used	Daily	Measurement
Chlorine Residual	Daily	Grab
Pounds Discharged (BOD_5 and TSS)	1/Week	Calculation
Average Percent Removed (BOD_5 and TSS)	Monthly	Calculation

* See Schedule C, Condition 6., of this permit.

c. Biosolids Management

Item or Parameter	Minimum Frequency	Type of Sample
Biosolids analysis including: Total solids (% dry wt.) Volatile solids (% dry wt.) pH (standard units) Biosolids nitrogen for: NH_4-N; NO_3-N; & TKN (& dry wt.) Total Phosphorus (% dry wt.) Potassium (% dry wt.) Biosolids trace pollutants for: As, Cd, Cu, Hg, Mo, Ni, Pb, Se, & Zn (mg/kg)	Annually	Composite sample to be representative of the product to be land applied from the biosolids storage tank. (See Note 2)
Quantity and type of alkaline product used to stabilize biosolids (when required to meet federal pathogen and vector attraction reduction requirements in 40 CFR 503.32(b)(3) and 40 CFR 503.33(b)(6))	Each occurrence	Measurement
Initial time when solids that received alkaline agent ascended to pH 12	Each batch	Date, time, and actual pH measurement
2 hours after initial alkaline addition and sustained at pH 12	Each batch	Date, time, and actual pH measurement
24 hours after initial alkaline addition and pH 11.5 was sustained	Each batch	Date, time, and actual pH measurement

2. **Reporting Procedures**

a. Monitoring results shall be reported on approved forms. The reporting period is the calendar month. Reports must be submitted to the Department's Western Region - Salem office by the 15th day of the following month.

b. State monitoring reports shall identify the name, certificate classification and grade level of each principal operator designated by the permittee as responsible for supervising the wastewater collection and treatment systems during the reporting period. Monitoring reports shall also identify each system classification as found on page one of this permit.

c. Monitoring reports shall also include a record of the quantity and method of use of all biosolids removed from the treatment facility and a record of all applicable equipment breakdowns and bypassing.

3. **Report Submittal**

a. The permittee shall have in place a program to identify and reduce inflow and infiltration into the sewage collection system. An annual report shall be submitted to the Department by July 15 each year which details sewer collection activities that have been done in the previous year and outlines those activities planned for the following year.

b. An annual solids report shall be submitted to the Department by February 19 of each year that describes solids handling activities for the previous year and includes, but is not limited to, the required information outlined in OAR 340-50-035(6)(a)-(e).

NOTES:

1. *E. coli* bacteria monitoring must be conducted according to any of the following test procedures asspecified in Standard Methods for the Examination of Water and Wastewater, 19th Edition, or according to any test procedure that has been authorized and approved in writing by the Director or his authorized representative:

Method	Reference	Page	Method Number
mTEC agar, MF	Standard Methods, 19th Edition	9-28	9213 D
NA-MUG, MF	Standard Methods, 19th Edition	9-63	9222 G
Chromogenic Substrate, MPN	Standard Methods, 19th Edition	6-65	9223 B
Colilert QT	Idexx Laboratories, Inc.		

2. Composite samples from the storage tank withdrawal line shall consist of at lest four aliquots of equal volume collected over an 8 hour period and combined.

Inorganic pollutant monitoring must be conducted according to **Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,** Second Edition (1982) with Updates I and II and third Edition (1986) with Rvision I.

SCHEDULE C

Compliance Schedules and Conditions

1. By no later than ninety (90) days after issuance of this permit, the permittee shall submit to the Department a revised biosolids management plan in accordance with Oregon Administrative Rules, Chapter 340, Division 50, "Land Application of Domestic Wastewater Treatment Facility Biosolids, Biosolids Derived Products, and Domestic Septage". Upon approval of the plan by the Department, the plan shall be implemented by the permittee.

2. Within 90 days of permit issuance, the permittee shall submit to the Department for review and approval a report that describes procedures for handling, transporting, and disposal of rags, grit, scum and screenings generated at the treatment facility. Upon written approval from the Department, the permittee shall conform with the approved procedures. Modified procedures may be followed upon prior approval in writing by the Department.

3. By no later than six (6) months after issuance of this permit, the permittee shall submit to the Department for review and approval an adequate spill contingency plan as required in Schedule D, Condition 1 of this permit. Upon written approval by the Department, the permittee shall conform with the approved procedures.

4. By no later than 12 months after permit issuance, the permittee shall submit either an engineering evaluation which demonstrates the design average wet weather flow, or a request to retain the existing mass load limits. The design average wet weather flow is defined as the average flow between November 1 and April 30 when the sewage treatment facility is projected to be at design capacity for that portion of the year. Upon acceptance by the Department of the design average wet weather flow determination, the permittee may request a permit modification to include higher winter mass loads on based on the design average wet weather flow.

5. Within 180 days of permit modification to include higher winter mass load limits as specified in Condition 4 of this Schedule, the permittee shall submit to the Department for review and approval a proposed program and time schedule for identifying and reducing inflow. Within 60 days of receiving written Department comments, the permittee shall submit a final approvable program and time schedule. The program shall consist of the following:

   a. Identification of all overflow points and verification that sewer system overflows are not occurring up to a 24-hour, 5-year storm event or equivalent;

   b. Monitoring of all pump station overflow points;

   c. A program for identifying and removing all inflow sources into the permittees sewer system over which the permittee has legal control; and,

   d. If the permittee does not have the necessary legal authority for all portions of the sewer system or treatment facility, a program and schedule for gaining legal authority to require inflow reduction and a program and schedule for removing inflow sources.

6. The permittee shall monitor for Fecal Coliform bacteria until November 30, 1999. By no later than December 1, 1999, the permittee shall begin monitoring for *E. coli* bacteria for the remainder of this permit cycle.

7. The permittee is expected to meet the compliance dates which have been established in this schedule. Either prior to or no later than 14 days following any lapsed compliance date, the permittee shall submit to the Department a notice of compliance or noncompliance with the established schedule. The Director may revise a schedule of compliance if he determines good and valid cause resulting from events over which the permittee has little or no control.

SCHEDULE D

Special Conditions

1. An adequate contingency plan for prevention and handling of spills and unplanned discharges shall be in force at all times. A continuing program of employee orientation and education shall be maintained to ensure awareness of the necessity of good in-plant control and quick and proper action in the event of a spill or accident.

2. All biosolids shall be managed in accordance with a biosolids management plan approved by the Department of Environmental Quality. No substantial changes shall be made in biosolids management Activities which significantly differ from operations specified under the approved plan without the prior written approval of the Department. This permit may be modified to incorporate any applicable standard for sewage biosolids use or disposal promulgated under section 405(d) of the Clean Water Act, if the standard for sewage biosolids use or disposal is more stringent than any requirements for biosolids use or disposal in the permit, or controls a pollutant or practice not limited in this permit.

3. The permittee shall comply with Oregon Administrative Rules (OAR), Chapter 340, Division 49, "Regulations Pertaining To Certification of Wastewater System Operator Personnel" and accordingly:

   a. The permittee shall have its wastewater system supervised by one or more operators who are certified in a classification and grade level (equal to or greater) that corresponds with the classification (collection and/or treatment) of the system to be supervised as specified on page one of this permit.

   Note: A "supervisor" is defined as the person exercising authority for establishing and executing the specific practice and procedures of operating the system in accordance with the policies of the permittee and requirements of the waste discharge permit. "Supervise" means responsible for the technical operation of a system, which may affect its performance or the quality of the effluent produced. Supervisors are not required to be on-site at all times.

   b. The permittee's wastewater system may not be without supervision (as required by Special Condition 3.a. above) for more than thirty (30) days. During this period, and at any time that the supervisor is not available to respond on-site (i.e. vacation, sick leave or off-call), the permittee must make available another person who is certified in the proper classification and at grade level I or higher.

   c. The permittee is responsible for ensuring the wastewater system has a properly certified supervisor available at all times to respond on-site at the request of the permittee and to any other operator.

   d. The permittee shall notify the Department of Environmental Quality in writing within thirty (30) days of replacement or redesignation of certified operators responsible for supervising wastewater system operation. The notice shall be filed with the Water Quality Division, Operator Certification Program, 811 SW 6th Ave, Portland, OR 97204. This requirement is in addition to the reporting requirements contained under Schedule B of this permit.

   e. Upon written request, the Department may grant the permittee reasonable time, not to exceed 120 days, to obtain the services of a qualified person to supervise the wastewater system. The written request must include justification for the time needed, a schedule for recruiting and hiring, the date the system supervisor availability ceased and the name of the alternate system supervisor(s) as required by 3.b. above.

4. The permittee shall notify the DEQ Western Region - Salem Office (phone: 503-378-8240) in accordance with the response times noted in the General Conditions of this permit, of any malfunction so that corrective action can be coordinated between the permittee and the Department.

NPDES GENERAL CONDITIONS
(SCHEDULE F)

SECTION A. STANDARD CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Oregon Revised Statutes (ORS) 468B.025 and is grounds for enforcement action; for permit termination, suspension, or modification; or for denial of a permit renewal application.

2. Penalties for Water Pollution and Permit Condition Violations

Oregon Law (ORS 468.140) allows the Director to impose civil penalties up to $10,000 per day for violation of a term, condition, or requirement of a permit.

In addition, a person who unlawfully pollutes water as specified in ORS 468.943 or ORS 468.946 is subject to criminal prosecution.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. In addition, upon request of the Department, the permittee shall correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application shall be submitted at least 180 days before the expiration date of this permit.

The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

5. Permit Actions

This permit may be modified, suspended, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any term, condition, or requirement of this permit, a rule, or a statute;

b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the permittee for a permit modification or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

6. Toxic Pollutants

The permittee shall comply with any applicable 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 the permit has not yet been modified to incorporate the requirement.

7. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.

8. Permit References

Except for effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper 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 or used by the permittee to achieve compliance with the 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 the permit.

2. Duty to Halt or Reduce Activity

For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The term "bypass" does not include nonuse of singular or multiple units or processes of a treatment works when the nonuse is insignificant to the quality and/or quantity of the effluent produced by the treatment works. The term "bypass" does not apply if the diversion does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities or treatment processes which causes 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. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of bypass.

(1) Bypass is prohibited unless:

(a) Bypass was necessary to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The permittee submitted notices and requests as required under General Condition B.3.c.

(2) The Director may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, when the Director determines that it will meet the three conditions listed above in General Condition B.3.b.(1).

c. Notice and request for bypass.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior written notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in General Condition D.5.

4. Upset

a. 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 operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of General Condition B.4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. 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 causes(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The permittee submitted notice of the upset as required in General Condition D.5, hereof (24-hour notice); and

(4) The permittee complied with any remedial measures required under General Condition A.3 hereof.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

5. Treatment of Single Operational Event

For purposes of this permit, A Single Operational Event which leads to simultaneous violations of more than one pollutant parameter shall be treated as a single violation. A single operational event is an exceptional incident which causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one Clean Water Act effluent discharge pollutant parameter. A single operational event does not include Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational event is a violation.

6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

a. Definitions

(1) "Overflow" means the diversion and discharge of waste streams from any portion of the wastewater conveyance system including pump stations, through a designed overflow device or structure, other than discharges to the wastewater treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the conveyance system or pump station which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of an overflow.

(3) "Uncontrolled overflow" means the diversion of waste streams other than through a designed overflow device or structure, for example to overflowing manholes or overflowing into residences, commercial establishments, or industries that may be connected to a conveyance system.

b. Prohibition of overflows. Overflows are prohibited unless:

(1) Overflows were unavoidable to prevent an uncontrolled overflow, loss of life, personal injury, or severe property damage;

(2) There were no feasible alternatives to the overflows, such as the use of auxiliary pumping or conveyance systems, or maximization of conveyance system storage; and

(3) The overflows are the result of an upset as defined in General Condition B.4. and meeting all requirements of this condition.

c. Uncontrolled overflows are prohibited where wastewater is likely to escape or be carried into the waters of the State by any means.

d. Reporting required. Unless otherwise specified in writing by the Department, all overflows and uncontrolled overflows must be reported orally to the Department within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D.5.

7. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs, upon request by the Department, the permittee shall take such steps as are necessary to alert the public about the extent and nature of the discharge. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

8. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in such a manner as to prevent any pollutant from such materials from entering public waters, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Sampling and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and shall be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

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 volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than $\pm$ 10 percent from true discharge rates throughout the range of expected discharge volumes.

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties of 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, or by both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than $20,000 per day of violation, or by imprisonment of not more than four years or both.

5. Reporting of Monitoring Results

Monitoring results shall be summarized each month on a Discharge Monitoring Report form approved by the Department. The reports shall be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report. Such increased frequency shall also be indicated. For a pollutant parameter that may be sampled more than once per day (e.g., Total Chlorine Residual), only the average daily value shall be recorded unless otherwise specified in this permit.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean, except for bacteria which shall be averaged as specified in this permit.

8. Retention of Records

Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records of all original strip chart 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, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

9. Records Contents

Records of monitoring information shall include:

a. The date, exact place, time and methods of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative upon the presentation of credentials to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and

d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall comply with Oregon Administrative Rules (OAR) 340, Division 52, "Review of Plans and Specifications". Except where exempted under OAR 340-52, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers shall be commenced until the plans and specifications are submitted to and approved by the Department. The permittee shall give notice to the Department as soon as possible of any planned physical alternations or additions to the permitted facility.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and the rules of the Commission. No permit shall be transferred to a third party without prior written approval from the Director. The permittee shall notify the Department when a transfer of property interest takes place.

4. Compliance Schedule

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. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

5. Twenty-Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally (by telephone) within 24 hours, unless otherwise specified in this permit, from the time the permittee becomes aware of the circumstances. During normal business hours, the Department's Regional office shall be called. Outside of normal business hours, the Department shall be contacted at 1-800-452-0311 (Oregon Emergency Response System).

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. If the permittee is establishing an affirmative defense of upset or bypass to any offense under ORS 468.922 to 468.946, and in which case if the original reporting notice was oral, delivered written notice must be made to the Department or other agency with regulatory jurisdiction within 4 (four) calendar days. The written submission shall 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 reoccurrence of the noncompliance; and

e. Public notification steps taken, pursuant to General Condition B.7.

The following shall be included as information which must be reported within 24 hours under this paragraph:

a. Any unanticipated bypass which exceeds any effluent limitation in this permit.

b. Any upset which exceeds any effluent limitation in this permit.

c. Violation of maximum daily discharge limitation for any of the pollutants listed by the Director in this permit.

The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

6. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under General Condition D.4 or D.5, at the time monitoring reports are submitted. The reports shall 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; and

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

7. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Other Information: When 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 any report to the Department, it shall promptly submit such facts or information.

8. Signatory Requirements

All applications, reports or information submitted to the Department shall be signed and certified in accordance with 40 CFR 122.22.

9. Falsification of Information

A person who supplies the Department with false information, or omits material or required information, as specified in ORS 468.953 is subject to criminal prosecution.

10. Changes to Indirect Dischargers - **[Applicable to Publicly Owned Treatment Works (POTW) only]**

The permittee must provide adequate notice to the Department of the following:

a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants and;

b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

c. For the purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

11. Changes to Discharges of Toxic Pollutant - **[Applicable to existing manufacturing, commercial, mining, and silvicultural dischargers only]**

The permittee must notify the Department as soon as they know or have reason to believe of the following:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:

(1) One hundred micrograms per liter (100 g/l);

(2) Two hundred micrograms per liter (200 g/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 g/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

(4) The level established by the Department in accordance with 40 CFR 122.44(f).

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) Five hundred micrograms per liter (500 g/l);

(2) One milligram per liter (1 mg/l) for antimony;

(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

(4) The level established by the Department in accordance with 40 CFR 122.44(f).

SECTION E. DEFINITIONS

1. BOD means five-day biochemical oxygen demand.
2. TSS means total suspended solids.
3. mg/l means milligrams per liter.
4. kg means kilograms.
5. m^3/d means cubic meters per day.
6. MGD means million gallons per day.
7. Composite sample means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.
8. FC means fecal coliform bacteria.
9. Technology based permit effluent limitations means technology-based treatment requirements as defined in 40 CFR 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-41.
10. CBOD means five day carbonaceous biochemical oxygen demand.
11. Grab sample means an individual discrete sample collected over a period of time not to exceed 15 minutes.
12. Quarter means January through March, April through June, July through September, or October through December.
13. Month means calendar month.
14. Week means a calendar week of Sunday through Saturday.
15. Total residual chlorine means combined chlorine forms plus free residual chlorine.
16. The term "bacteria" includes but is not limited to fecal coliform bacteria, total coliform bacteria, and E. coli bacteria.
17. POTW means a publicly owned treatment works.

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

OF THE STATE OF OREGON

IN THE MATTER OF:	)	MUTUAL AGREEMENT
	)	AND ORDER
THE CITY OF HUBBARD,	)	NO. WQ/M-WR-98-205
Permittee	)	MARION COUNTY
	)	

WHEREAS:

1. On January 27, 1999, the Department of Environmental Quality (Department or DEQ) issued National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit Number 101640 (Permit) to the City of Hubbard (Permittee). The Permit authorizes the Permittee to construct, install, modify or operate wastewater treatment control and disposal facilities (facilities) and discharge adequately treated wastewaters into the Mill Creek, waters of the state, in conformance with the requirements, limitations and conditions set forth in the Permit. The Permit expires on November 30, 2003. The Permit is in effect on this date as Permittee has made timely application for renewal.

2. The Permittee operates a wastewater treatment facility that uses chlorine as a disinfecting agent for the treated effluent prior to discharging to public waters.

3. Chlorine is a toxic substance that can be harmful to aquatic organisms. Discharges of any substances, including chlorine, that cause water quality stream standards violations outside of a designated mixing zone are prohibited by Oregon Administrative Rules (OAR) 340-41-445(2).

4. The Department has included a final chlorine effluent limit in the permit.

5. The Department and the Permittee recognize that the Permittee may not be able to achieve compliance with the final chlorine effluent limit established in the Permittee's Permit, without making necessary improvements in the Permittee's sewage treatment facility.

6. The Department and Permittee recognize that the Environmental Quality Commission has the power to impose a civil penalty and to issue an abatement order for

violations of conditions of the Permit. Therefore, pursuant to ORS 183.415(5), the Department and Permittee wish to limit and resolve the future violations referred to in Paragraph 5 in advance by this Mutual Agreement and Order (MAO).

7. This MAO is not intended to settle any violation of any interim effluent limitations set forth in Paragraph 5 above. Furthermore, this MAO is not intended to limit, in any way, the Department's right to proceed against Permittee in any forum for any past or future violations not expressly settled herein.

NOW THEREFORE, it is stipulated and agreed that:

8. The Environmental Quality Commission shall issue a final order:

A. Requiring Permittee to comply with the following schedule:

(1) By no later than December 1, 1999, the Permittee shall submit draft engineering plans and specifications for providing wastewater control facilities as needed to assure that Permittee can continuously comply with the final chlorine effluent limitation included in Permittee's Permit.

(2) Within 60 days of receiving Department comments, the Permittee shall submit final approvable engineering plans and specifications for providing wastewater control facilities as needed to assure that respondent can continuously comply with the final chlorine effluent limitation included in the Pemittee's Permit.

(3) By no later than eighteen (18) months after Department approval of final engineering plans and specifications, Permittee shall have wastewater control facilities in operation to comply with the final chlorine effluent limitation in Permittee's Permit.

B. Requiring Permittee to meet the following interim chlorine effluent limitation which shall be effective until completion of corrective actions as required by the schedule specified in Paragraph 8.A:

(1) The total residual chlorine concentration shall not exceed 1.5 mg/l on a daily average basis.

C. Requiring Permittee, upon receipt of a written Penalty Demand Notice from the Department, to pay the following civil penalties:

(1) $250 for each day of each violation of the compliance schedule set forth in Paragraph 8A.

(2) $100 for each violation of the total residual chlorine concentration limitation set forth in Paragraph 8B(1).

9. If any event occurs that is beyond Permittee's reasonable control and that causes or may cause a delay or deviation in performance of the requirements of this MAO, Permittee shall immediately notify the Department verbally of the cause of delay or deviation and its anticipated duration, the measures that have been or will be taken to prevent or minimize the delay or deviation, and the timetable by which Permittee proposes to carry out such measures. Permittee shall confirm in writing this information within five (5) working days of the onset of the event. It is Permittee's responsibility in the written notification to demonstrate to the Department's satisfaction that the delay or deviation has been or will be caused by circumstances beyond the control and despite due diligence of Permittee. If Permittee so demonstrates, the Department shall extend times of performance of related activities under this MAO as appropriate. Circumstances or events beyond Permittee's control include, but are not limited to, acts of nature, unforeseen strikes, work stoppages, fires, explosion, riot, sabotage, or war. Increased cost of performance or consultant's failure to provide timely reports may not be considered circumstances beyond Permittee's control.

10. Regarding the violations set forth in Paragraph 5 above, which are expressly settled herein without penalty, Permittee and the Department hereby waive any and all of their rights to any and all notices, hearing, judicial review, and to service of a copy of the final order herein. The Department reserves the right to enforce this order through appropriate administrative and judicial proceedings.

11. Regarding the schedule set forth in Paragraph 8A. above, Permittee acknowledges that Permittee is responsible for complying with that schedule regardless of the availability of any federal or state grant monies.

12. The terms of this MAO may be amended by the mutual agreement of the Department and Permittee.

13. The Department may amend the compliance schedule and conditions in this MAO upon finding that such modification is necessary because of changed circumstances or to protect public health and the environment. The Department shall provide Permittee a minimum of thirty (30) days written notice prior to issuing an Amended Order modifying any compliance schedules or conditions. If Permittee contests the Amended Order, the applicable procedures for conduct of contested cases in such matters shall apply.

14. This MAO shall be binding on the parties and their respective successors, agents, and assigns. The undersigned representative of each party certifies that he or she is fully authorized to execute and bind such party to this MAO. No change in ownership or corporate or partnership status relating to the facility shall in any way alter Permittee's obligations under this MAO, unless otherwise approved in writing by DEQ.

15. All reports, notices and other communications required under or relating to this MAO should be directed to Robert Dicksa, DEQ Salem Regional Office, 750 Front St. N.E., Suite 120, Salem, Oregon 97310, phone number 503-378-8240, extension 246. The contact person for Permittee shall be The City Administrator, City of Hubbard, PO Box 380, Hubbard, OR 97032, phone number 503-981-9633.

16. Permittee acknowledges that it has actual notice of the contents and requirements of the MAO and that failure to fulfill any of the requirements hereof would constitute a violation of this MAO and subject Permittee to payment of civil penalties pursuant to Paragraph 8C above.

17. Any stipulated civil penalty imposed pursuant to Paragraph 8C shall be due upon written demand. Stipulated civil penalties shall be paid by check or money order made payable to the "Oregon State Treasurer" and sent to: Business Office, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, Oregon 97204. Within 21 days of receipt of a "Demand for Payment of Stipulated Civil Penalty" Notice from the Department, Permittee may request a hearing to contest the Demand Notice. At any such hearing, the issue shall be limited to Permittee's compliance or non-compliance with this MAO. The amount of each stipulated civil penalty for each violation and/or day of violation is established in advance by this MAO and shall not be a contestable issue.

18. Providing Permittee has paid in full all stipulated civil penalties pursuant to Paragraph 17 above, this MAO shall terminate 60 days after Permittee demonstrates full compliance with the requirements of the schedule set forth in Paragraph 8A above.

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PERMITTEE

1/22/99
Date

Vickie L Nogle
Vickie Nogle
City Recorder

DEPARTMENT OF ENVIRONMENTAL QUALITY

1/26/99
Date

Gary Pressen for Steve Greenwood
Steve Greenwood, Western Region Administrator

FINAL ORDER

IT IS SO ORDERED:

ENVIRONMENTAL QUALITY COMMISSION

1/26/99
Date

Gary Pressen for Steve Greenwood
Steve Greenwood, Western Region Administrator
Department of Environmental Quality
Pursuant to OAR 340-11-136(1)

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
Western Region
Salem Office
750 Front St. NE
Suite 120
Salem, OR 97310
(503) 378-8240
(503) 378-3684 TTY

February 25, 1998

Paulette David
City Recorder
City of Hubbard
Post Office Box 380
Hubbard, OR 97032

Re: NOTICE OF NONCOMPLIANCE
ENF-WQ/M -WRS-98-045
NPDES Permit No. 100877
File No. 40494
Marion County
Permit Limit Violations

Dear Ms. David:

The Department has reviewed the Discharge Monitoring Reports (DMRs) submitted for the City of Hubbard Wastewater Treatment Facility located at 3607 Sunset Drive, Hubbard, Oregon, for December, 1996, through December, 1997. During our review, the following violations of Schedule A, Condition 1., of your National Pollutant Discharge Elimination System (NPDES) Permit were noted:

Date	Parameter	Permit Limit	Reported Value	Class Violation
7/28/97	Fecal Coliform Bacteria Weekly Maximum	400 colonies/100 ml	832 colonies/ 100 ml	Class II
12/15/97	Fecal Coliform Bacteria Weekly Maximum	400 colonies/100 ml	1254 colonies/ 100 ml	Class II
12/22/97	Fecal Coliform Bacteria Weekly Maximum	400 colonies/100 ml	24600 colonies/ 100 ml	Class II
December 1997	Fecal Coliform Bacteria Monthly Mean	200 colonies/100 ml	423 colonies/ 100 ml	Class II

"The above are Class II violations. The Department requests that you immediately address this violation with a corrective action plan which you should submit to the Department by May 1, 1998, in order to insure that the violations do not recur. You should be aware that within the last 36 months the Department has issued a Notice of Permit Violation (Case No. WQMW-WR-95-171). If the Department does not receive a plan to correct these violations or documents continuing violations of the permit, the violation(s) will be referred to the Enforcement Section with a recommendation to proceed with a formal enforcement action which may result in a civil penalty assessment. Civil penalties can be assessed for each day of violation."

Continuous or recurring permit violations can occur for a number of reasons. To help trouble shoot the potential cause of these fecal coliform violations, the Department recommends that the City of Hubbard public works staff do the following:

1. Check the condition of the chlorine contact chamber, cleaning or repairing if necessary;

2. If possible, increase the chlorine contact time with the wastewater effluent within the chlorine contact chamber;

3. Implement more thorough mixing within the chlorine contact chamber; and,

4. Review sample handling procedures and protocols. Contaminated sampling equipment can result in higher than normal water sample concentrations.

If you have any questions, please call me at (503) 378-8240, extension 246.

Sincerely,

Robert A. Dicksa

Robert A. Dicksa
Natural Resource Specialist
Western Region-Salem Office

RAD:
X:\rdicksa\non\hubbard.non

cc: Water Quality File - Salem
Enforcement Section, DEQ
Barbara Burton, DEQ - Salem
Jaime Estrada, City of Hubbard Public Works
Post Office Box 380
Hubbard, OR 97032

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
Western Region
Salem Office
750 Front St. NE
Suite 120
Salem, OR 97310
(503) 378-8240
(503) 378-3684 TTY

October 15, 1998

Mr. Jaime Estrada
Public Works Director
City of Hubbard
Post Office Box 380
Hubbard, OR 97032

RE: NOTICE OF NON COMPLIANCE
ENF-WQ/M -WRS-98-325
NPDES Permit No. 100877
File No. 40494
Marion County
Permit Limit Violations

Dear Mr. Estrada:

The Department of Environmental Quality (Department) has reviewed the Discharge Monitoring Reports (DMRs) submitted for the City of Hubbard Wastewater Treatment Facility located at 3607 Sunset Drive, Hubbard, Oregon, for May, 1998, through August, 1998. During our review, the following violations of Schedule A, Condition 1, of your National Pollutant Discharge Elimination System (NPDES) Permit were noted:

Date	Parameter	Permit Limit	Reported Value	Class Violation
5-3-98 through 5-9-98	Fecal Coliform Bacteria Weekly Average	400/100 ml	To Numerous To Count (TNTC)	Class II

This is the City's second Class II violation within a thirty-six month period. A NON was issued on February 25, 1998 for similar violations that occurred in July and December, 1997. However, the City received a Notice of Permit Violation (NPV) less than thirty-six months previously on July 11, 1995 for similar violations.

As a result, the Department's February 25, 1998, NON asked the City to respond to the violations by submitting a corrective action plan by May 1, 1998. The NON stated that if the City did not meet the May 1, deadline or if continuing similar violations of the permit occurred, the violations would be referred to the Enforcement Section with a recommendation to proceed with a formal enforcement action that may result in a civil penalty assessment.

The City met that deadline and stated that they would clean the chlorine contact tank of solids that

may be inhibiting disinfection by chlorinating. The City also stated that staff would pump the contact tank at least once a week or as needed for 20 to 30 minutes during winter months. Apparently, as indicated by the above recent violation, the City is still experiencing recurring violations.

Therefore, Pursuant to Oregon Administrative Rule 340-12-041(2)(c), your file is being referred to the Department's Enforcement Section for issuance of a Notice of Permit Violation (NPV). The NPV is a formal enforcement action which, will require that you submit one of the following to the Department within five working days of its receipt:

1. A written response certifying that the permitted facility is complying with all terms and conditions of the permit. This certification shall include a sufficient description of the information on which you are certifying compliance; or,

2. If the permitted facility is not operating in compliance with the permit, you will be required to submit a written proposal to bring the facility into compliance with the permit and all applicable regulations which shall include at least the following:

    a. A detailed plan and time schedule for achieving compliance in the shortest practicable time;

    b. A description of the interim steps that will be taken to reduce the impact of the permit violation(s) until the permitted facility is in compliance with the permit; and,

    c. A statement that you have reviewed all other conditions and limitations of the permit and no other violations of the permit were discovered.

The purpose of the NPV is to ensure that the permitted facility is operating in compliance with all conditions and limitations of the permit, or to bring the permitted facility into compliance. We recommend that you begin preparations now to respond to the NPV. If you fail to respond to the NPV in the five-day time frame, you will be assessed a civil penalty for the one or more violation(s) cited in the NPV.

The Department has recently drafted the City's NPDES permit renewal that is currently out for your applicant review. In conjunction with the NPDES permit renewal, the City and the Department are negotiating a Mutual Agreement and Order (MAO) which contains a compliance schedule for dechlorination facilities and an interim chlorine limit. However, in the interim the City must still operate the facility using Best Management Practices (BMPs) and comply with all permit limits.

Finally, we ask that the City discontinue the practice of reporting results that are lower or higher than detection limits (such as TNTC) for analytical results. Instead, such results should be

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
Western Region
Salem Office
750 Front St. NE
Suite 120
Salem, OR 97310
(503) 378-8240
(503) 378-3684 TTY

December 11, 1998

Mr. Jaime Estrada
Public Works Director
City of Hubbard
Post Office Box 380
Hubbard, OR 97032

RECEIVED
DEC 14 1998
CITY OF HUBBARD

RE: NOTICE OF NON COMPLIANCE
ENF-WQ/M -WRS-98-325 - AMENDMENT
NPDES Permit No. 100877
File No. 40494
Marion County
Permit Limit Violations

Dear Mr. Estrada:

This Notice of Noncompliance (NON) amends the previous NON sent to the City from the Department of Environmental Quality (Department) on October 15, 1998. The Department has reviewed the Discharge Monitoring Reports (DMRs) submitted for the City of Hubbard Wastewater Treatment Facility located at 3607 Sunset Drive, Hubbard, Oregon, for May, 1998, through August, 1998. During our review, the following violations of Schedule A, Condition 1, of your National Pollutant Discharge Elimination System (NPDES) Permit were noted:

Date	Parameter	Permit Limit	Reported Value	Class Violation
5-3-98 through 5-9-98	Fecal Coliform Bacteria Weekly Average	400/100 ml	To Numerous To Count (TNTC)	Class II

This is the City's second Class II violation within a thirty-six month period. A NON was issued on February 25, 1998 for similar violations that occurred in July and December, 1997. However, the City received a Notice of Permit Violation (NPV) less than thirty-six months previously on July 11, 1995 for similar violations.

As a result, the Department's February 25, 1998, NON asked the City to respond to the violations by submitting a corrective action plan by May 1, 1998. The NON stated that if the City did not meet the May 1st deadline or if continuing similar violations of the permit occurred, the violations would be referred to the Enforcement Section with a recommendation to proceed with a formal enforcement action that may result in a civil penalty assessment.

The City met that deadline and stated that they would clean the chlorine contact tank of solids that may be inhibiting disinfection by chlorinating. The City also stated that staff would pump the contact tank at least once a week or as needed for 20 to 30 minutes during winter months. Apparently, as

indicated by the above recent violation, the City is still experiencing recurring violations. The previous NON recommended that because of recurring violations that the City be given a Notice of Permit Violation (NPV). However, upon further review with the Department's Enforcement Section, and because of the recurring violations, these violations are being referred for a civil penalty assessment.

This is a Class II violation of your permit. Because you received a Notice of Permit Violation, Case No. WQMW-WR-95-171 within the last 36 months, and this violation is considered to be a significant violation of Oregon environmental law, we are referring this violation to the Department's Enforcement Section with a recommendation to proceed with a formal enforcement action which will result in a civil penalty assessment. Civil penalties can be assessed for each day of violation.

The Department has recently drafted the City's NPDES permit renewal that is currently out for public comment. In conjunction with the NPDES permit renewal, the City and the Department are negotiating a Mutual Agreement and Order (MAO) which contains a compliance schedule for dechlorination facilities and an interim chlorine limit. However, in the interim the City must still operate the facility using Best Management Practices (BMPs) and comply with all permit limits.

Finally, we ask that the City discontinue the practice of reporting results that are lower or higher than detection limits (such as TNTC) for analytical results. Instead, such results should be reported as the detection limit with a "<"(less than) or ">"(greater than) symbol as appropriate. For bacteria counts, we recommend performing the test such that results up to approximately 1600 colonies per 100 mls can be reported.

If you have any questions, please call me at (503) 378-8240, extension 246.

Sincerely,

Robert A. Dicksa

Robert A. Dicksa
Natural Resource Specialist
Western Region-Salem Office

RAD:clh
X:\rdicksa\non\Hubbard2amended.non

cc: Water Quality File, DEQ - Salem
Enforcement Section, DEQ
Jeff Bachman, DEQ - Enforcement Section
Barbara Burton, DEQ - Salem
Vicki Seavay, City Recorder
City of Hubbard
Michael Krebbs, STP Operator
City of Hubbard

Economics Element - Table 2
Employment by Selected Industry
Marion, Polk, and Yamhill Counties, 1979-1998

Industry	1979	1982	1992	1994	1996	1998	Percent Change 1979-1998
Manufacturing, Total	15,400	12,500	15,500	17,300	17,900	17,800	15.6%
Wood Products, Mfg	4,200	2,700	3,600	4,100	4,000	3,900	-7.1%
Food Products, Mfg	5,100	5,000	4,900	5,300	5,200	5,000	-2.0%
Construction	5,200	2,500	4,800	5,800	6,900	7,900	51.9%
Trade	19,100	18,100	24,700	26,400	27,600	24,100	26.2%
Services	15,400	14,800	25,400	27,700	30,100	32,000	107.8%
Government	27,300	25,900	32,400	33,200	35,700	37,600	37.7%

Source: Oregon Employment Department, *2000 Regional Economic Profile - Region 3, 1999.*

ECONOMIC OUTLOOK FOR OREGON

Oregon is expected to grow modestly over the next 40 years. The Oregon Office of Economic Analysis projects that between 2000 and 2040, Oregon's population will grow from 3.4 million to about 5.2 million persons.[5] This represents an average annual growth rate of about 1.1 percent. About 1.3 million of the new residents, or about 70 percent, will result from net migration to Oregon. The Willamette Valley is projected to grow at a slightly faster rate during this period.

The Office of Economic Analysis forecasts that total employment in Oregon will grow from about 1.8 million persons in 2000 to about 2.5 million persons in 2040. About 73 percent of this employment growth is forecast to occur in the Willamette Valley.

REGIONAL POPULATION AND EMPLOYMENT GROWTH

Table 3 shows the Oregon Office of Economic Analysis population and employment forecasts for Marion County through 2040. For the period through 2005, employment is expected to grow at a faster rate than population. From 2005 through 2040, the Marion County population is forecast to grow faster than local employment. This forecast may be indicative of the general aging of the population as "baby-boomers" reach retirement age and leave the work force.

[5] Oregon Office of Economic Analysis, *Long-Term Population and Employment Forecast for Oregon*, 1997.

– IMPORTANT NOTICE –

PRELIMINARY 2002 POPULATION ESTIMATE

November 18, 2002

To: **Hubbard** City

Listed below is the preliminary population estimate for July 1, 2002, as well as the certified 2001 estimate and 2000 Census figure. The July 1, 2002 estimate will be certified by December 15, 2002.

POPULATION ESTIMATE:

JULY 1, 2002: **2,560**

CERTIFIED POPULATION ESTIMATE:

JULY 1, 2001: **2,510**

CERTIFIED CENSUS FIGURE:

APRIL 1, 2000: **2,483**

If you have any questions, please contact:

Dr. Qian Cai
Population Estimates Manager
Population Research Center
Portland State University
PO Box 751
Portland, OR 97207-0751

Telephone: (503) 725-5157
Fax: (503) 725-5162
E-mail: caiq@pdx.edu

CC: City Council
Dept Heads
V. Gillock
G. Sherwood
M. Fancey
M. Olinger

Economics Element - Table 3
Forecast Population and Employment Growth
Marion County, 2000-2040

	Population			Employment		
Year	Total	Change	Percent Change	Total	Change	Percent Change
2000	285,975			131,622		
2005	308,364	22,389	7.83%	143,159	11,537	8.77%
2010	331,025	22,661	7.35%	153,015	9,856	6.88%
2015	354,561	23,536	7.11%	160,593	7,578	4.95%
2020	378,208	23,647	6.67%	167,821	7,228	4.50%
2025	401,787	23,579	6.23%	175,278	7,457	4.44%
2030	424,594	22,807	5.68%	183,919	8,641	4.93%
2035	446,737	22,143	5.22%	193,070	9,151	4.98%
2040	468,210	21,473	4.81%	201,172	8,102	4.20%

Source: State of Oregon Office of Economic Analysis, 1997.

Table 4 is similar to Table 3. It shows employment forecasts by industry for 1998 to 2008 for the region consisting of Marion, Polk, and Yamhill counties. The forecasts were developed by the State of Oregon Employment Department. As with the statewide economy, the most significant increases in employment growth within Region 3 will occur in the services sector. Employment in this sector is forecast to increase by nearly 30 percent between 1998 and 2008, with the largest gains in the professional services industry.

Manufacturing employment is forecast to increase by about 10 percent. About 2,300 new jobs will be added in this sector. Approximately 74 percent of these jobs will be in industries that manufacture durable goods other than wood products.

Att
D. Monas
650 4935
503

Chapter 13.20
SEWERAGE SYSTEM

Sections:

Attn: Dave
$ (760)944-0792

13.20.010 Declaration.

Pursuant to the general laws of the state of Oregon and the powers granted in the Charter of the city of Hubbard, Oregon, the common council hereby declares its intention to own, equip, operate, and maintain a sewage disposal plant or plants, sewers, equipment, and appurtenances necessary, useful or convenient for the complete sewerage system and disposal plant. (Ord. 160-91 § 1, 1991)

13.20.020 Definitions.

(1) "Dwelling unit," as used in this chapter, shall mean any building or part of any building to which sewer and/or water service is provided, which is intended for use as a separate residence, either temporary or permanent, for one or more persons.

(2) "Nonresidential use," as used in this chapter, shall mean any building or part of building to which sewer and/or water service is provided which is intended for any nonresidential use. (Ord. 160-91 § 2, 1991)

13.20.030 Rates and fees.

There is hereby levied and imposed upon all users of either the city sewer system or the city water system, or both, whether such use occurs inside or outside of the Hubbard city limits, charges for the service, maintenance, operation, extension, expansion, and reconstruction of the sewerage system. The rates and charges are hereafter fixed at such amounts as will assure the financial self-sufficiency of the sewerage system and will, thereafter, be reviewed annually and amended by resolution as necessary by the city council. (Ord. 246-2001 §§ 1, 2; Ord. 160-91 § 3, 1991)

13.20.040 Collection and disposition of fees.

The city shall collect the fees and charges established by the council and specified in HMC 13.20.030 from the owner and/or occupant of each residential dwelling unit, commercial or industrial unit at regular intervals, either monthly or bi-monthly, at the discretion of the city recorder's office, and from each person, firm or corporation requesting connection to the sewerage system at the time of such request. Revenues, when collected by the city, shall be paid over to the city recorder. Revenues from service charges and other incidental fees shall be paid into a fund designated as the "sewer fund," and revenues paid as construction connection fees shall be paid into a fund designated as the "sewer system construction fund." The city shall maintain these funds for the separate and exclusive benefit of the city sewerage system, but in no case, other than reimbursement of direct costs associated with the connection of a service or user to the sewerage system, shall revenues from the sewer system construction fund be used to offset or reduce operating costs normally paid from the sewer revenue fund. (Ord. 160-91 § 4, 1991)

13.20.050 Delinquencies – Collection enforcement.

The city recorder or the public works superintendent of the city may enforce the collection of fees and charges for use of sewerage facilities by withholding delivery of water to any premises served by city water for which said charges are delinquent and may use such other and further means of collection thereof as may be provided by the laws of the state of Oregon or permitted by the Charter and ordinances of the city of Hubbard, Oregon. Charges for sewerage facilities not paid within 20 days from the date of billing said charges shall be deemed to be delinquent and shall become a lien on the real property. Any delinquent charge may be recovered in an action at law by the city of Hubbard, Oregon. Refer to HMC 13.15.150, Billing. (Ord. 243-2001; Ord. 160-91 § 5, 1991)

13.20.060 Private vaults and cesspools.

No privy vault or cesspool shall be permitted within the city of Hubbard and the owner, owners, renters or occupants of real property upon which is located a privy vault or cesspool shall cease to deposit or cause to be deposited or permit to be deposited therein sewage, waste or other drainage matter. (Ord. 160-91 § 6, 1991)

13.20.070 Public connection required.

(1) The owner or owners of real property within the corporate limits of the city of Hubbard, which is used by human beings for residential, educational, religious, commercial, industrial or other purposes, will cause the property to be connected to said sewer at the expense of the owner or owners of said property and all raw sewage, wastes, and drainage matter shall be deposited directly into the city sewer, except as otherwise provided herein.

(2) When a connection permit has been granted and the appropriate fees and charges paid, the city, as a part of such charge, will supply and install all materials to complete up to 10 feet of service from the sewer main toward or to the private property line. The cost of installation and materials to provide a service in excess of 10 feet from the main to the private property line, the cost of the extension of mains, and the cost of crossing and repairing of streets, curbs or sidewalks will be in addition to the normal connection charge. Said cost may, at the election of the city, be assessed to the property benefited and become a lien upon such real property.

(3) Upon completion of the connection and the installation of materials necessary to bring sewer service from the main to the property line or to a point 10 feet from the main, whichever is less, and upon

application for and issuance of a city permit authorizing the use of the city sewer facilities, as otherwise provided herein, the owner or occupant of the property may proceed to connect the sewer service to the improvement located upon the property. Such connection shall be accomplished in accordance with standards and specifications approved by the city. Such connection, from the main to the improvement, shall be maintained at the expense of the owner or occupant in accordance with standards and specifications approved by the city. (Ord. 160-91 § 7, 1991)

13.20.080 Supplemental ordinances.

The city council shall, as it deems necessary, establish and adopt, by ordinance, rules and regulations regarding connection to city sewers, permits affecting such connection, and the general provision of sewerage services. (Ord. 160-91 § 8, 1991)

13.20.090 Ownership of lateral line.

Each user of the sewerage system shall own and maintain the lateral or service sewer pipeline, regardless of who installed it, as it exists on the user's premises. The portion of the lateral service line not on the user's premises shall be owned by the city, but maintained at the expense of the owner or occupant in accordance with standards and specifications approved by the city. (Ord. 160-91 § 9, 1991)

13.20.100 Permits required.

No person, firm, or corporation shall connect to or extend any pipeline of the sewerage system or cause any such work to be done without first applying for and obtaining a permit from the city building official which identifies the property or structures(s) to be connected to the sewerage system, the party or parties responsible for making the connection and any other information as may be required by the building official. The permit may be granted when the procedures for connection or installation have been reviewed and approved by the building official as conforming with applicable city regulations and when the applicant has agreed to the inspection of the new line from the main pipeline to the applicant's premises. No person, firm or corporation shall cover a lateral or service sewer pipeline or cause such work to be done without first obtaining the approval of the city building official after the official has inspected the line from the main line to the premises, including all new connections. (Ord. 160-91 § 10, 1991)

13.20.110 Discharge of certain substances prohibited.

The city may reject any waste which it deems to be deleterious to the operation of the sewerage system. In any event, no person, firm or corporation shall cause or permit any of the following to flow into or to be disposed of in the sanitary sewer system of the city of Hubbard:

(1) Temporary or permanent drainage of excavations;

(2) Drainage from roofs, storm sewers or storm drains;

(3) Greases, oils or sludge from restaurants, service stations, garages, repair shops, machine shops, cleaning establishments or other industries or establishments;

(4) Explosives, volatile or inflammable liquids and gases;

(5) Acids, alkalis or other caustic or corrosive liquids or substances of sufficient strength to damage sewers, manholes, pumping stations, treatment plant equipment or operations;

(6) Paints or waste products from paint manufacture;

(7) Cannery or industrial wastes;

(8) Any substance which will form deposits or obstructions in the sewer system or which, when mixed with sewage, will precipitate materials causing deposits in sewer lines;

(9) Ashes, cinders, sand, earth, coal, rubbish or metals of any kind;

(10) Live steam, exhaust steam or water having a temperature above 140 degrees Fahrenheit;

(11) Cull fruits or vegetables or pits or seeds from peaches, apricots, cherries, prunes, pumpkins, squash or nuts of any kind, unless properly processed through a properly constructed and installed garbage disposal unit;

(12) Stable or barn manure;

(13) Effluent from septic tanks or dry wells;

(14) Offal from slaughterhouses;

(15) Dead animals or fowl or fish;

(16) Sulfate or sulfite liquor;

(17) Effluent wastewater from fruit and vegetable processing operations. (Ord. 160-91 § 11, 1991)

13.20.120 Discharge monitoring.

As it may deem necessary to the operation of the city sewerage system, the council may authorize the city public works superintendent to undertake periodic monitoring and sampling of effluent discharge of any sewerage system user for the purposes of controlling strength or flow of waste discharge or for establishing equitable fees and charges. (Ord. 160-91 § 12, 1991)

13.20.130 Violation – Penalty.

(1) Any person found to be violating any provision of this chapter shall be served by the city of Hubbard with a written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violations.

(2) Any person who shall continue any violation beyond the time limit provided herein shall be guilty of a misdemeanor, and on conviction thereof, shall be fined in an amount not exceeding $500.00 for each violation. Each day in which any such violation shall continue shall be deemed a separate offense.

(3) Any person violating any of the provisions of this chapter shall become liable to the city of Hubbard for any expenses, loss or damage occasioned by the city by reason of such violation. (Ord. 160-91 § 13, 1991)

Chapter 13.25
CROSS CONNECTIONS

Sections:

13.25.010 Definitions.

(1) "Backflow" means the undesirable reverse flow (whether from back siphonage or back pressure) of any water or mixture of water and other liquid, gases or other substances into the distribution pipes of the municipal potable supply of water.

(2) "Backflow prevention device" means a device approved by the state of Oregon to prevent backflow into a potable water system. The type of device used shall be based on the degree of hazard existing or possible hazard as a result of the conditions.

(3) "Contamination" means the entry into or presence in the municipal water supply of any substance which may be deleterious to health and/or quality of the water as defined by the Health Division of the state of Oregon.

(4) "Cross connection" means any unprotected actual or potential connection between the municipal potable water system and any other source or system through which it is possible to introduce into any part of the municipal system any used water, industrial fluid, gas, or substance other than the intended potable water with which the system is supplied. By-pass arrangements, jumper connection, removable sections, swivel or changeover devices of which backflow can or may occur are also considered to be potential cross connections. (Ord. 191-94 § 1, 1994)

13.25.020 Cross connection prohibited.

The installation or maintenance of a cross connection which will endanger the water quality of the municipal potable water system is strictly prohibited. Any such cross connection now existing or hereafter installed is hereby declared to be a public hazard and the same shall be abated. The control or elimination of cross connection shall be in accordance with the requirements of this and applicable provisions of Oregon Administrative Rule, Chapter 33, and the official plumbing codes of the state of Oregon as amended. (Ord. 191-94 § 2, 1994)

13.25.030 Rules and regulations.

The city of Hubbard reserves the right to establish rules, regulations or requirements which are more stringent than those of the state of Oregon when deemed necessary because of local conditions. In any event, the strictest applicable rule shall be applied. The public works superintendent of the city of Hubbard, or designated representative, is hereby authorized to enforce the provisions of this chapter. (Ord. 191-94 § 3, 1994)

13.25.040 Use of backflow prevention devices.

(1) Service of water to any premises shall be discontinued if a backflow prevention device required by this chapter is not installed, tested and maintained, or if it is found to be removed, by- passed, or if an unprotected cross connection exists on the premises. Service will not be restored until such conditions or defects are corrected.

(2) Each customer shall provide ample opportunity, at reasonable times, to allow for inspection by the city to determine whether cross connections or potential cross connections exist. When such a condition becomes known, the public works superintendent shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the condition. However, if it is determined by the superintendent that no immediate threat to the public health or safety exists as a result of the condition, the superintendent may specify a given length of time for the customer to correct the condition prior to having service discontinued.

(3) In all cases where it is determined that an approved backflow prevention device is to be required, one such device shall be installed on each service line to a customer's water system at or near the property line or immediately inside the building being served; but in all cases, before the first branch line leading off the

service line.

(4) Approved backflow prevention devices shall be installed under circumstances including, but not limited to, the following:

(a) Premises having an auxiliary water supply, including a private well;

(b) Premises having cross connections that are not correctable, or intricate plumbing arrangements which make it impractical to ascertain whether or not cross connections exist;

(c) Premises where entry is restricted so that inspections for cross connections cannot be made with sufficient frequency at sufficiently short notice to assure that cross connections do not exist;

(d) Premises having a history of cross connections being established or re-established;

(e) Premises on which any substance is handled under pressure so as to permit entry into the public water supply or where a cross connection could reasonable by expected to exist. This shall include the handling of processed water and cooling waters;

(f) Premises where materials of a toxic or hazardous nature are handled in such a way that, if backflow should occur, a serious health hazard might result;

(g) Backflow prevention devices shall be required for each of the following businesses or operations:

(i) Hospitals, mortuaries, medical clinics;

(ii) Car washes;

(iii) Metal plating industries;

(iv) Sewage treatment plants and pump stations;

(v) Chemical plants using a water process;

(vi) Other potentially hazardous facilities as may be identified by the public works superintendent.

(5) The type of protective device required shall depend on the degree of hazard which exists.

(a) An air-gap separation or a reduced-pressure-principle backflow prevention device shall be installed where the public water supply may be contaminated with sewage, industrial waste of a toxic nature or other contaminate which could cause a health or system hazard.

(b) In the case of substances which may be objectionable but not hazardous to health, double check valve assembly, air-gap separation, or a reduced-pressure-principle backflow prevention device shall be installed, at the option of the public works superintendent.

(6) Backflow prevention devices required by this chapter shall immediately be inspected and tested by a state-certified backflow prevention device tester.

(7) Any protective device required must be of a type approved for the specific use by the State Health Division.

(8) Backflow prevention devices shall be furnished and installed by and at the expense of the customer.

(9) It shall be the duty of the customer at any location where backflow prevention devices are installed to have certified inspections and operational tests made at least once per year. In those instances where the city deems the hazard to be great enough to warrant such action, certified inspections may be required at more frequent intervals. These inspections and tests shall be at the expense of the water user and shall be performed by a certified tester licensed by the State Health Division to perform such services. It shall be the duty of the superintendent to see that these timely tests are made. The customer shall notify the superintendent in advance when the tests are to be undertaken so that he or his representative may witness the test if so desired. These devices shall be repaired, overhauled, or replaced at the expense of the customer whenever said devices are found to be defective. Records of such tests, repairs, and overhauls shall be kept and copies sent by the water user to the public works superintendent.

(10) No underground sprinkling system shall be installed without adequate backflow prevention devices meeting the requirements of the State of Oregon Plumbing Code.

(11) Failure of the customer to cooperate in the installation, maintenance, testing or inspection of backflow prevention devices required by this chapter or by state law shall be grounds for the termination of water service to the premises. (Ord. 191-94 § 4, 1994)

13.25.050 Cross connection inspection.

(1) No water shall be delivered to any public, commercial, or industrial facility until the site has been inspected by appropriately trained members of the public works department and found to be free of cross connections.

(2) Any construction for industrial or other purposes which is classified as creating a potentially hazardous situation, where it is reasonable to anticipate intermittent cross connections, shall be protected by the installation of one or more backflow prevention devices at the point of service from the public water supply or any other location designated by the public works superintendent.

(3) Inspections shall be made at the discretion of the public works superintendent of all buildings, structures, or improvements of any nature now receiving water through the municipal system, for the purpose of ascertaining whether cross connections exist. (Ord. 191-94 § 5, 1994)

13.25.060 Notification of installation.

If backflow prevention devices are found to be necessary, the owner of the property being serviced must notify the city of the pending installation of such devices, indicating the type and design of the device to be used. (Ord. 191-94 § 6, 1994)

13.25.070 Liability.

This chapter shall not be construed to hold the city of Hubbard responsible for any damage to persons or property by reason of the inspection or testing herein, or the failure to inspect or test or by reason of approval of any system which eventually results in a cross connection. (Ord. 191-94 § 7, 1994)

13.25.080 Applicability.

The requirements of this chapter are intended to apply primarily to commercial, industrial, multiple-family residential, and public or semi-public facilities. The potential for cross connection also exists in small residential facilities, but is not generally of a hazardous nature. Public works staff may take appropriate enforcement steps where an actual or potential serious cross connection situation is found in a small residential facility, including single-family dwellings, as well as larger facilities. (Ord. 191-94 § 8, 1994)

City of Hubbard Biosolid Management Plan
October 23,1998

The City of Hubbard owns and operates a sewage collection system and a 0.55 MGD Schreiber activated sludge treatment plant. The sewage treatment system is operated under NPDES Permit 100877 and file no. 40494. The waste water treatment facility processes sewage from a population of 2205. The city has a small industrial park that discharges into Hubbard's sewage system no septic discharge is permitted. Treated effluent from the waste water treatment plant is disinfected prior to being discharged into River Mile 5.3 of Mill Creek, a tributary of the Willamette.

Raw sewage flows by gravity into the lift station then passes through an upper headworks where flow is recorded and course solids are removed via a self cleaning mechanical bar screen. Wastewater is then directed to a 550,000 gallon aeration basin via a lower head works. The aeration basin has a rotation bridge equipped with 40 rubber air diffusers Oxygenated effluent from the aeration basin discharges to a 150,000 gallon secondary clarifier. Clarified effluent undergoes chlorination before it is discharged into Mill Creek.

Excess waste activated biosolids from the secondary clarifier is pumped to digester No.1 60,000 gallon aerobic digester. When the digester fills with solids (approximately every 60 days) its aeration unit is turned off for a period of 24 hours and partially digested sludge is allowed to settle. At the end of the settling process, supernatant is returned to the aeration basin. After supernatant is decanted, the biosolids are transferred to digester No.2 for further digestion. The biosolid concentration, sludge volume, and the number of pounds of solids remaining in the digester are determined. Then sufficient calcium hydroxide is added to the digester basin to elevate the ph. of the remaining solids to a ph. of 12.2 . After alkali addition, the solid's mixture is aerated and continues until land applied.

Hubbard lime stabilizes its biosolids since past operations of the City's aerobic digester have not resulted in a 38% (minimum) volatile solids reduction. Hubbard's digested solids resident time have also normally failed to meet minimum federal regulations for aerobic digester (i.e., 40 CFR Part 257.3-6, Appendix 11, Section A) EPA regulations require a minimum of 60 days residence time where digester operating temperatures range from 15 C to 20 C.

Lime stabilized, biosolids are pumped from the aerobic digester via a four-inch pipe and loaded into the City's 2,500 gallon tank truck. Biosolids are trucked to the City's 22.2 acre DEQ authorized solids land spreading site. Solids can be applied directly via truck spreader plate or be broadcast over the site by a boisolid irrigation pump. Due to inherent soil drainage limitations, solids loading to the DEQ authorized site varies seasonally. Biosolid loading rates are higher at better drained sites than they are where more poorly drained soils occur.

Hubbard's DEQ authorized biosolid land spreading site is capable of assimilating 22.3 times the City's annual available nitrogen production(Attachment B). Annually the City of Hubbard generates about 21.4 (excludes the weight of lime product used to stabilize solids)dry tons of lime stabilized biosolids. The biosolids contains about 2,629.632 lbs. available nitrogen, 1.164 lbs.

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lead, 39.795 lbs. zinc, 1.241 lbs. copper, 13.880 lbs. nickel, and 0.1626 lbs. cadmium. Based on a perennial biosolid land spreading rate which would provide 50 lbs. available nitrogen per acre annually (i.e., 3.416 dry ton total solids per acre per year), Hubbard's biosolids land spreading sites would have a site life of 414.23 years based on sludge zinc content.

In the event a biosolid spill was to occur at Hubbard's sewage treatment facility or between the WWTP and the biosolid land spreading site, City officials would contain and remove spilled solids. The spill incident would be reported to the Department's Willamette Valley Region Office.

Spill Reporting Procedure:

Other than emergencies involving individual welfare, damages are likely to create situations resulting in the discharge of sewage to public water. The correct response to such a spill is described in the City of Hubbard NPDES Waste Discharge Permit. The following guidelines summarize the procedure to follow in the event of an emergency discharge. Compliance with these procedures is essential for the protection of the public waters of the state and the long-term welfare of the inhabitants.

PROCEDURES TO FOLLOW IN CASE OF SEWAGE SPILLS OR DISCHARGE TO PUBLIC WATERS

A. Unavoidable Emergency Discharges

Unavoidable equipment breakdown, uncontrollable power outages, accidental spill, etc., can result in an unavoidable discharge of raw sewage into public waters. Good maintenance and operation of the facility will minimize such occurrences. However, when such an emergency discharges occur, the following must be done:

1. Take immediate action to correct the problem; stop the discharge (if possible); and if automatic controls to start equipment have failed, attempt a manual start of necessary equipment.

2. Immediately notify the Department of Environmental Quality (DEQ).

WEEKDAYS

DEQ (Portland) = 229-5696
DEQ (Salem) = 378-8240

NIGHTS, WEEKENDS, & HOLIDAYS

State Police (Salem) = 1-800-452-0311

3. Clean up spilled or discharged material where possible

4. Submit follow-up report in writing explaining fully what occurred, what was done to correct the problem and prevent a recurrence, and the cleanup measures used.

B. Planned Shutdowns for Essential Maintenance.

Equipment maintenance or other problems occasionally require deliberate action to temporarily remove equipment from service and as a result cause a temporary discharge of raw sewage. Such essential maintenance should be planned and scheduled to minimize adverse environmental effects. In the event such circumstances arose, the following should be done:

1. Submit written request to the DEQ for permission for temporary discharge of raw sewage a minimum of ten days in advance of any planned bypass. This notification shall include;

   a. The reason for the necessity of bypass or reduced efficiency.

   b. The time and duration of the proposed bypass (NOTE: The work to be performed must be kept to the shortest duration possible).

   c. The dilution available in the receiving waters (NOTE: Wherever possible, the maintenance work must be scheduled during the winter season to utilize the high stream flow period).

2. Obtain the DEQ's approval in writing to nay such discharge and comply with their conditions as written.

3. Follow-up with written report stating down-time, etc.

C. Failure to Comply

The preceding emergency and planned shutdown procedures are essential for the protection of the public waters of the state. They are covered under the requirements of the NPDES Waste Discharge Permit. Failure to comply with these procedures could result in enforcement action by the DEQ.