

FACILITIES PLAN

8.0 FINANCIAL ANALYSIS

8.1 Capital Cost Allocation

Table 8.1 provides a summary of the CWWTF costs from Chapter 7 in 2005 dollars. Estimated quantities and costs for the CWWTF were updated based on the preliminary site plan layout identified in Figure 7.1. Conveyance and discharge costs are based on the recommended discharge route as illustrated in Figure 7.2 and is based on conveyance to a river outfall at the Bridge.

Table 8.1 Total Capital Cost Carnation Wastewater Treatment Facility King County Department of Natural Resources and Parks	
Cost Parameter	Total Cost (\$)
CWWTF	
Construction cost	9,377,000
Allied cost	3,092,000
Conveyance and discharge	
Construction cost	1,352,000
Easement allowance	38,000
Allied cost	<u>358,000</u>
Total Capital Cost^a	14,217,000
a. Cost does not include purchase or leasing of land for the CWWTF.	

8.2 Operations and Maintenance Cost Allocation

Annual O&M costs include labor, power, equipment replacement, and chemical usage. Table 8.2 presents the annual and present worth costs anticipated for the CWWTF. The total annualized capital, operations, and maintenance cost is approximately \$1,610,000, assuming a 5.875 percent discount rate over 22 years.

Table 8.2 Operations and Maintenance Costs Carnation Wastewater Treatment Facility King County Department of Natural Resources and Parks			
Parameter	Quantity of Units	Unit Price (\$/unit)	Total (\$)
Annual Costs			
Labor ^a	2,080 hr	43	90,000
Energy	690,000 kWh	0.065	45,000
Maintenance	1 LS	93,000	93,000
Chemicals	1 LS	72,000	72,000
Solids Transportation ^b	1 LS	122,000	122,000
Miscellaneous	1 LS	20,000	<u>20,000</u>
<i>Total O&M Cost</i>			<i>442,000</i>
Total Present Worth^c			5,380,000
LS = lump sum			
a. Assumes one full-time employee equivalent during normal operation (50 percent maintenance duties, 50 percent operations duties).			
b. Annual estimated transportation cost based on thickening to two percent solids.			
c. In 2005 dollars (22 years, 5.875 percent discount rate).			

8.2.1 Period of Analysis

A planning period is selected to approximate the life of the capital facilities to be compared in the economic analysis, as well as to capture the influence of significant factors on economic decisions. A planning period of 22 years was selected for this project, encompassing the design period from December 2007 through 2030. This represents the typical period for facilities planning and approximates the life of major equipment in wastewater treatment facilities. In addition, 20 years is the planning period required in EPA Facilities Planning.³¹²

8.2.2 Operations Labor Rate

The operations labor rate is estimated to be \$43 per hour, including fringe benefit costs, based on the 2004 fiscal year average rates for the County's operations and maintenance personnel. An employee crew equaling one full-time employee equivalent will be tasked with routine preventive maintenance procedures as well as normal operation of the facility. To minimize operations costs, the facility will be designed to an automation level to be routinely operated from a remote location. This will include such activities as the review of process parameters and the daily wasting of solids from the activated sludge process. Routine maintenance tasks include inspection of pumps and valves, review of recorded information, testing of alarm systems, and water quality sampling and testing. O&M duties

will be performed in conjunction with maintenance personnel from the County's other facilities. Such utilization of the County's staffing resources will allow any planned or emergency procedures to be completed in a timely manner.

8.2.3 Power Cost

The power cost rate is estimated to be approximately \$0.065 per kilowatt-hour based on information from PSE and the County's power consumption costs for existing pump stations from previous years. Power usage at the CWWTF is anticipated to be more in line with the power usage at the County's Hollywood and York Pump Stations than with the County's larger wastewater treatment facilities. Therefore, the \$0.065 per kilowatt-hour rate will be used for the facility power cost.

8.2.4 Chemical Cost

Estimated costs for commonly used chemicals at the CWWTF are based on costs for sodium hypochlorite, sodium hydroxide, and citric acid. Individual chemical costs are based on previous and anticipated costs provided by process equipment manufacturers and budgetary quotes from local vendors.

8.2.5 Maintenance Cost

To estimate the cost of maintaining new facilities, an allowance is made based on the original construction cost of the facility. For this analysis, an allowance for mechanical equipment maintenance was selected to be three percent, based on previous engineering experience.

8.2.6 Solids Transportation Cost

Transportation costs were based on the County purchasing a new 6,000-gallon septic tanker trailer. The trailer would be transported to the South Plant as required. Each sludge load haul would cost approximately \$300.³¹³

8.3 Project Financing

8.3.1 Project Financing

The County's Wastewater Treatment Division (WTD) capital improvement program (CIP) is funded primarily through proceeds from sewer revenue bond sales, short-term borrowing, capacity charge revenues, and transfers from the operating fund. Additionally, some low-interest loan programs such as the State Revolving Fund and the Public Works Trust Fund may be available. The operating fund derives the majority of its revenue from monthly charges to sewer customers that are collected by WTD's component agencies. Transfers from the operating fund to the capital program are the result of additional cash generated to meet the financial policy requirement of maintaining a debt service coverage ratio of no less

than 1.15 of all debt service payments. WTD uses these transfers to reduce the amount of borrowing necessary to finance the capital program.

The County's Sewer Rate and capacity charge are set annually by the County Executive and Council to reflect the current monetary requirements forecast. In June 2004, the County Council adopted a monthly wholesale sewer rate of \$25.60 and a capacity charge of \$34.05 for 2005. Revenues generated by this rate and capacity charge are sufficient to fund the 2005-2010 WTD financial plan that includes construction of the CWWTF, while fully complying with WTD's financial policies.

Prior to facility operation, the capital costs associated with the CWWTF will be financed through the resources available for costs associated with any new facilities and in accordance with the financial policies of the County and the WTD. The actual mix and cost of these instruments will reflect economic and financial conditions, WTD's financial position, and the appropriateness of the project for securing below-market rate resources.

8.3.2 Customer Charges

Once facility operations commence, the costs associated with construction plus operation and maintenance of the facility will be reimbursed or supported through a combination of user charges. These include the regular monthly sewer rate, the capacity charge and a special surcharge applied to the City's customers. The monthly rate is an amount uniformly levied on all system customers or customer equivalents. The capacity charge is levied on new connections to the system for a period of 15 years, with the option of payoff at a discount. The special surcharge, specified as a percentage of the regular monthly sewer rate, is designed to recover the additional capital-related costs incurred in the construction of facilities for the City.

The rate surcharge to the City's customers is based on the present value of the principal and interest payments incurred in constructing the facilities, over a 35-year period at a discount rate of 5.5 percent. These costs are then compared to the present value of the monthly sewer rate and capacity charge revenues from the City's customers during the same period. The surcharge, specified as a percentage of the monthly rate revenue, is set such that the sum of the resulting revenues equal the costs within the time frame. The O&M costs of the County-constructed facilities are anticipated to be recovered through the revenue from the regular monthly rate payment of the City's customers.

Assuming that the City is unable to secure grant funding, the City's initial estimate of a typical monthly sewer bill for a single-family residence would be \$155. This includes local service charges in addition to County charges indicated above.

Notes

³¹² EPA *State and Local Assistance*, 40CFR35.2030, (2004)

³¹³ Mark Lucas, King County Department of Natural Resources and Parks, e-mail message to John Komorita, September 29, 2003.