

# CHAPTER 1

## INTRODUCTION

This report documents the development of a schedule of sewer system capacity charges to recover the cost of capacity in the City of Modesto (City) sewer utility system from new applicants for service. The introduction describes the study objectives; terminology; the conceptual approach and methodology used to calculate the recommended capacity charges; and the report organization.

### **Project Authorization and Objectives**

In May 2006, Brown and Caldwell (BC) entered into an agreement with the City to develop a schedule of sewer system capacity charges for its sewer utility. This study documents the development of sewer system capacity charges for Fiscal Years (FYs) 2007/08 through 2048/49 (the last year in the proposed financing period). This period includes the period in which build out is assumed to occur. The sewer system capacity charge development process in this study is in accordance with standard industry practices and regulatory requirements.

### **Terminology**

A "capacity charge" is defined in the State of California Government Code as a charge to pay for public agencies' facilities in existence at the time the charge is imposed or to pay for new facilities that will be constructed in the future that are of benefit to the person or property being charged (new development).<sup>1</sup> The term "capacity charge" is not synonymous with the term "connection fee." The State of California Government Code defines a connection fee as a fee to recover the cost of the physical facilities necessary to make a water connection or a sewer connection, including, but not limited to, meters, meter boxes, and pipelines from the structure or project to a water distribution line or sewer main, and that does not exceed the estimated reasonable cost of labor and materials for installation of those facilities.<sup>2</sup> In the case of the City of Modesto, this "connection fee" would be equivalent to the City's current Lateral Charge (described later in this chapter). Sections 66012 – 66014 of the State of California Government Code are included in Appendix A.

The City currently refers to capacity charges as connection fees. Throughout this report the term "capacity charge" is used instead of the term "connection fee."

### **Sewer Service Area**

The City operates its own wastewater collection system and associated infrastructure facilities that serve the City and some unincorporated areas. Figures

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<sup>1</sup> Section 66013(b)(3) of the State of California Government Code.

<sup>2</sup> Section 66013(b)(5) of the State of California Government Code.

that illustrate the City's sewer service area and existing facilities are included at the end of this chapter as Figures 1 – 4.<sup>3</sup>

### **Conceptual Approach**

In developing sewer system capacity charges for the City, we have endeavored to satisfy the rational nexus and proportionality criteria generally applied to these types of charges. A rational nexus-based sewer system capacity charge must:

- Be rationally based on public policy that demonstrates a nexus between a new connection to the utility system and the need to expand or build facilities to accommodate that connection.
- Not exceed the new connection's proportional share of the cost of facilities needed to serve that connection, after crediting it for other contributions that it has already made or will make toward that cost.
- Not be arbitrary or discriminatory in its application to individual customers or customer classes.

As will be shown subsequently in this report there is a clear nexus between the cost of a new connection and the capacity charge. This is established by indicating each item in the \$420,551,000 (June 2006 dollars) Capital Improvement Plan that provides capacity for growth (totaling \$176,575,450) and only recovering this cost via the capacity charge. Similarly, proportionality is clearly established by developing unit costs based on the cost of the capacity and the amount of capacity, and applying these unit costs to each new connection based on their expected use.

### **Alternative Capacity Charge Calculation Methodologies**

There is no single, established method for the determination of capacity charges that is either appropriate for all utilities or eminently fair to all new applicants for service. The classical textbook on the development of capacity charges, *System Development Charges for Water, Wastewater and Stormwater Facilities*, identifies seven methods used for the calculation of capacity charges.<sup>4</sup> Those methods are listed below:

- Market capacity method
- Prototypical system method
- Growth-related cost allocation method
- Buy-in method
- Replacement cost method
- Marginal cost method
- Average cost method

The first two methods are summarily dismissed in the textbook because they fail to meet the rational nexus test. The market capacity method essentially charges "what

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<sup>3</sup> Figures are from the Wastewater Collection System Master Plan and Wastewater Master Plan Phase 2 Update prepared by Carollo Engineers for the City of Modesto.

<sup>4</sup> Nelson, Arthur C., Lewis Publishers, 1995.

the market will bear.” That is, it is not based on costs and, thus, will not meet the requirements of the California Government Code. Similarly, the prototypical system method calculates capacity charges based on the costs associated with a system fully built out in a comparable community. Because no two communities are exactly alike, costs are likely to be different and thus the use of this method is questionable.

The growth-related method essentially recovers CIP costs allocable to growth over a specific period of time even if the CIP includes expansion capacity that will benefit new customers beyond the specified period of time. If the time period for recovery matched the life of the capacity provided, this method would be the equivalent of the marginal cost method. The buy-in method results in new customers reimbursing exiting customers for their proportionate share of existing capacity. This method only works when there is significant available capacity in the existing system and that capacity can be identified by major system component. It further suffers from the fact that it does not contain financing costs and is often based on historical costs. The replacement cost method is the same as the buy-in method but at a replacement cost. This leaves the marginal cost and average cost methods for further consideration. These are described below.

**Average Cost Method.** Capacity charges are designed to derive the average investment per connection. This method is employed using either the historical (acquisition) value or replacement value of the existing utility system. If historical value is used, this method suffers from the fact that it is based on the original cost of the utility assets and is thus not a measure of the current cost (original cost adjusted for inflation) associated with serving a new connection. However, if the replacement value of the existing facility is used and it includes near-term capital improvements to the utility system, then this average cost method is appropriate because it recovers the current average cost of the capacity in the utility system (including near-term capital improvements) necessary to serve a new customer. This method is most appropriate for those utilities with available capacity in the existing system.

**Incremental (Marginal) Cost Method.** Capacity charges are designed to derive the incremental cost of system expansion. This method is based on the sound economic principal that new applicants for service should be responsible for only those incremental capital costs which they cause to be incurred. Under this method, the capacity charges are designed so that the utility rates would not have to be increased over the planning period to pay for growth-related capital improvements as long as the projected growth occurs. However, this method suffers from the fact that the incremental costs associated with meeting the demand of future customers may vary significantly from planning period to planning period. Because of the variance in both the costs of expansion and the number of new applicants, these charges could vary considerably from planning period to planning period.

**Recommended Method.** The capacity charges developed in this study are based on the marginal cost method. The marginal cost method was chosen over the average cost method for the following reasons:

As a practical matter, because the Jennings Road Secondary Treatment facility is currently operating at its rated disposal capacity, there is no capacity available for new applicants for service. This matter was the subject of the "Domestic Wastewater Near Term Capacity Study" (March 2006).<sup>5</sup> There is, however, capacity available in the trunk sewer system. How much capacity and what portions of the trunk sewer system have capacity may be difficult to calculate. In the Brown and Caldwell draft "Wastewater Connection Fee Study" (September 1998), it was calculated that the value of this capacity (not depreciated) was approximately \$25 per Equivalent Dwelling Unit (EDU). The relevant sections from the 1998 Brown and Caldwell draft study are included in Appendix B for reference. A cursory calculation of this value for this (current) capacity charge study indicated a value of less than \$50 per EDU.

Because basing a capacity charge on the concept of "buying into" an existing depreciated system is always controversial (developers often claim that the existing system has been paid for and/or that it has no available capacity) and because the cost of this portion of the capacity charge is so small, we recommend eliminating consideration of the "buy in" (or "average cost") method for calculating the capacity charge.

### **Consideration of Financing Cost (Interest)**

Because it is expected that most, if not all, of the proposed CIP costs associated with expansion will be financed via the issuance of bonds, interest costs must also be considered in the development of the capacity charges. That is, in using the recommended marginal cost method for calculating the capacity charges, the interest costs associated with that portion of the CIP allocable to expansion should be included as a cost to be recovered via the capacity charges. It is also the generally accepted industry practice to recover interest costs (in the case were CIP costs are financed by the issuance of debt) via capacity charges. Basically, there are three methods for recovering interest costs:

- Alternative 1: No interest recovery
- Alternative 2: Recover the total interest cost
- Alternative 3: Recover the present value of the interest cost

**Alternative 1. No interest recovery.** No consideration is given to the recovering of financing costs (interest) associated with the proposed CIP allocable to new customers. Because the capacity charges developed using this alternative would not recover financing costs, it is only used to show the impact which results from not including interest costs. It is not recommended that this alternative be used because it would result in existing customers paying (through their wastewater rates) the interest costs associated with financing capacity projects constructed to serve growth.

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<sup>5</sup> *Domestic Wastewater Near Term Capacity Study*, Carollo Engineers, March 2006.

**Alternative 2.** Calculate the total interest cost over the term of the debt and add it to the replacement cost of the facilities in the CIP to determine the total amount to be recovered via capacity charges. This method suffers from two perceived shortcomings. First is the fact that a new connection in the first year pays the same amount for interest as a new connection in the last year that the capacity provided by the CIP is available. This is in spite of the fact that the new connection in the first year could argue that it is not responsible for the interest expense in succeeding years. That is, if everyone connected in the first year (or even the first few years) the CIP would not have to be financed via the issuance of debt (and thus responsible for interest costs).

This argument would be more compelling if capacity could be economically added in equal increments to meet only the new capacity requirement for a single year. Because investments in both pipeline and treatment capacity are lumpy (have to be made in units of capacity that are relatively large [greater than that necessary to serve only a single year or even a few years capacity needs]) this argument is not compelling. Alternatively, because of the lumpy nature of capacity additions, it could be argued that all future connections can be thought of as a single customer class, each equally responsible for not only their share of the entire CIP but also of the interest cost. This is our view.

In addition, this method suffers from the fact that the interest payments are made annually and, therefore, adding the total interest over the term of the debt issue to the CIP costs overstates the amount collected because of the time value of money. This latter concern can be eliminated by adding the present value (PV) of the total interest cost to the CIP cost (rather than the total interest cost).

**Alternative 3.** The same as Alternative 2 except that the PV of the annual interest costs are added to the CIP replacement costs (rather than adding the total interest cost). This method still suffers from the fact that a connection in the first year pays the same interest cost as a connection in the last year.

### **Current Sewer Capacity Charges, Other Fees, and Local Codes**

The current sewer related charges (capacity charges and other types of charges and fees applicable to new development) implemented by the City are listed below.

- Sewer Bond Redemption Charge
- Subtrunk Sewer Extension Charge
- Lateral Charge
- Permit Fee
- Inspection Fee
- Parcel Reduction Fee
- Reimbursement Agreement Prep Fee
- Outside City Limits Agreement Prep Fee

The amount and applicability, Modesto Municipal Code (MMC) reference, and description of each of the charges are provided in the Table 1.1. Documents provided to the public and used by the City of Modesto Public Works – Development Services to implement the charges and fees are included in Appendix C. Sections of the Modesto Municipal Code that are applicable to implementation of the current charges and fees are included in Appendix D.

The capacity charges developed in this study are intended to replace the Sewer Bond Redemption charge. This charge was originally designed to meet the debt service on a bond issue used to finance main trunk lines which have been paid in full. This charge is now used to recover the cost of capacity in the wastewater treatment and collection facilities. As will be shown subsequently in this report, it does not accomplish this objective. As a result, it will be replaced by the capacity charge developed in this study.

The 1998 Brown and Caldwell draft study noted that the Subtrunk Sewer Extension charge recovered the cost of subtrunk extension, not previously recovered, from a property (or portion thereof) based on gross acres. Section 5-6.803(a) of the MMC states that, "Payment shall be made in accordance with a schedule approved by the Council from time to time by resolution." Review and revision of the Subtrunk Sewer Extension charge is not part of the current study and will be conducted by the City.

**Table 1.1 Current Sewer Related Charges and Fees**

Charge or Fee Item	Amount & Applicability	MMC *	Description
<b>Sewer Bond Redemption Charge</b>	Residential: \$500 per du Comm/Ind: \$2,000 per net acre	5-6.801	Pays toward the construction of the Wastewater Treatment Plant and the sewer trunk system throughout the City
<b>Subtrunk Sewer Extension Charge</b>	All: \$645 per gross acre	5-6.803	Pays toward the construction of the subtrunk lines
<b>Lateral Charge</b>	All: \$33 per liner foot of lot frontage adjacent to the sewer line	5-6.805	Pays toward the specific sewer lateral that extends down the street or alley serving the specific property
<b>Permit Fee</b>	\$20 for each sewer permit	5-9.105	Pays for the time and materials required to process the plumbing permit
<b>Inspection Fee</b>	\$15 for each structure on the property		Pays for the time required for the inspection of the house sewer line(s)
<b>Parcel Reduction Fee</b>	\$37 per occurrence	5-6.801	Pays for the time required to inspect the parcel in order to determine the size of acreage to be used in calculating the Bond Redemption Charge and Subtrunk Sewer Extension Charge
<b>Reimbursement Agreement Prep Fee</b>	\$175 per occurrence	5-6.309	Pays for the time and materials required to prepare a Sewer Reimbursement Agreement, including review of costs and administrative preparation
<b>Outside City Limits Agreement Prep Fee</b>	\$35 per occurrence	5-6.309	Pays for the time and materials required to prepare a Sewer Agreement for property outside the City limits, including review of costs and administrative preparation

\* MMC = Modesto Municipal Code Title 5 (Sanitation and Health), Chapter 6 (Sewage Collection and Disposal).

**Capacity Charges for Outside the City New Connections**

The City currently assesses capacity charges for new development in areas within Municipal Sewer District No. 1 but outside the City limits. Those development areas are listed below.

- Empire Sanitary District
- City of Ceres (North Ceres Sewer Service Area)
- Unincorporated County Areas

The City has agreements with the Empire Sanitary District (ESD) and the City of Ceres (for the North Ceres Sewer Service Area) that describe implementation of charges for new development. Charges for new development in Unincorporated County Areas are assessed using the same mechanism as for new development in the City. Excerpts from the agreements with ESD and the City of Ceres are described below. The agreements between the City and the ESD and the City of Ceres would need to be revised to incorporate capacity charges developed in this study.

The "Agreement for Sewer Service and Sewer Billing" between the City of Modesto and the Empire Sanitary District states in section 7 that, "District shall pay City a connection charge for each dwelling unit, or its equivalent (as that equivalence may be determined by the City), connected to the District's system in the same amount as

the connection that would be charged to a user connecting to the Modesto Sewer District No. 1.”

The “Northern Ceres Sewer Service Area Agreement” between the City of Modesto and the City of Ceres states in section 9 that, “Ceres shall collect and pay to Modesto a sewer bond redemption charge for each residential dwelling unit, mobile home or mobile home space in a mobile home park connected to the North Ceres Sewerage System pursuant to this agreement. Said charge for each connection made from the effective date of this agreement until June 30, 1980 is \$275 per dwelling unit. Commencing July 1, 1980, said charge is subject to a \$25 per year increase the first day of July, unless the increase is specifically waived by the Modesto City Council.”

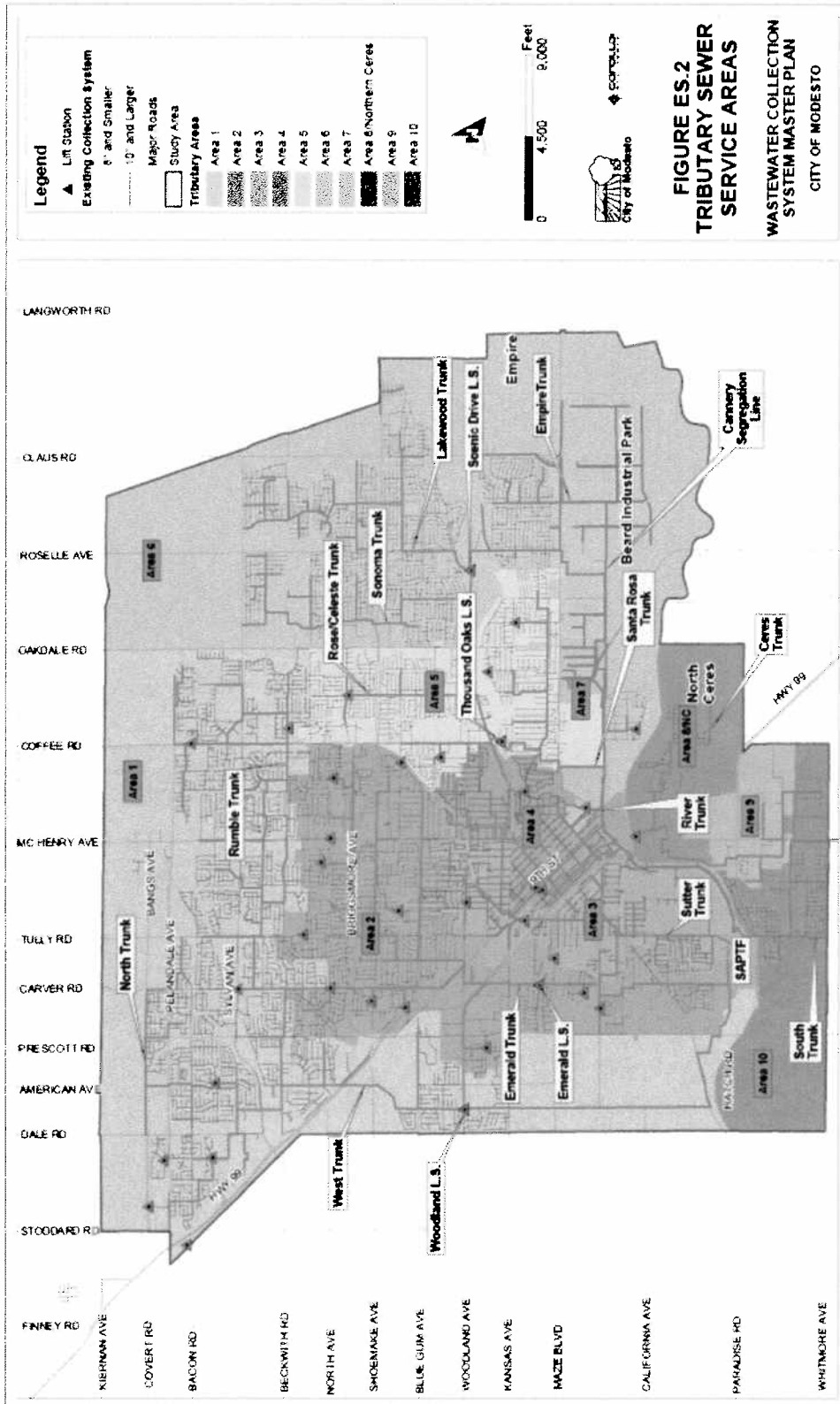
### **Peer Review**

The City of Modesto retained the firm of HF&H Consultants, LLC, to conduct a peer review of Brown and Caldwell’s January 10, 2007 draft report titled *City of Modesto Sewer Capacity Charges*. The results of HF&H’s peer review were presented in a Technical Memorandum. HF&H made several useful observations and comments. Items accepted by Brown and Caldwell and the City’s Sewer Task Force are incorporated into this final report as noted in Appendix G.

### **Report Organization**

The report is organized into four chapters and multiple appendices. Following the introduction, Chapter 2 describes the capital improvement program and capacity added as a result of capital improvements. Chapter 3 describes the development of unit costs of capacity, capacity charges and expected annual revenue from capacity charges. Chapter 4 describes the implementation of capacity charges and the capacity charges implemented by selected other cities in the Central Valley.

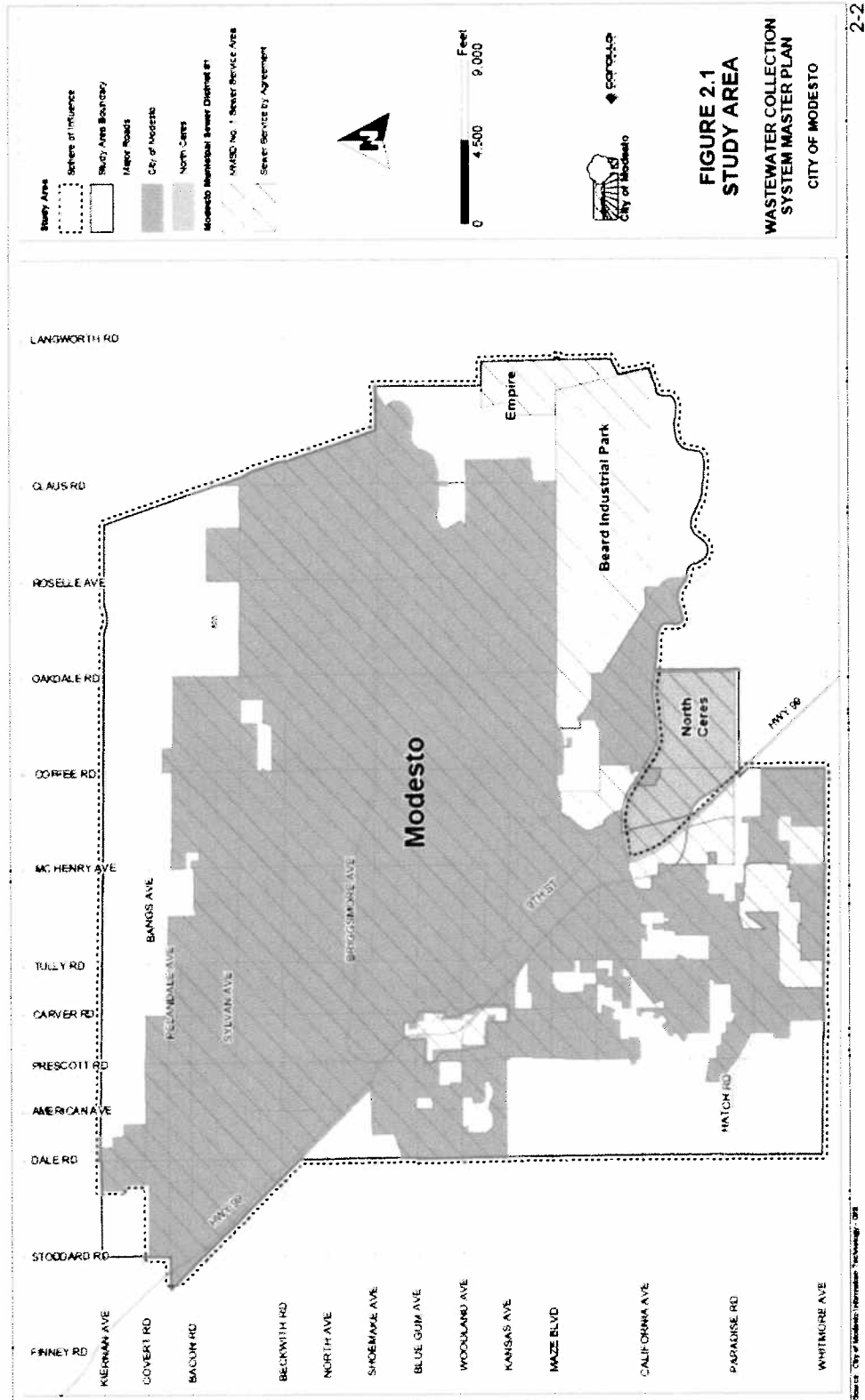
Figure 1.1 Tributary Sewer Service Areas



ES-5

Source: City of Modesto Information System, 2010

Figure 1.2 Study Area



2-2

Figure 1.3 Layout of Existing Facilities, Sutter Avenue Facility

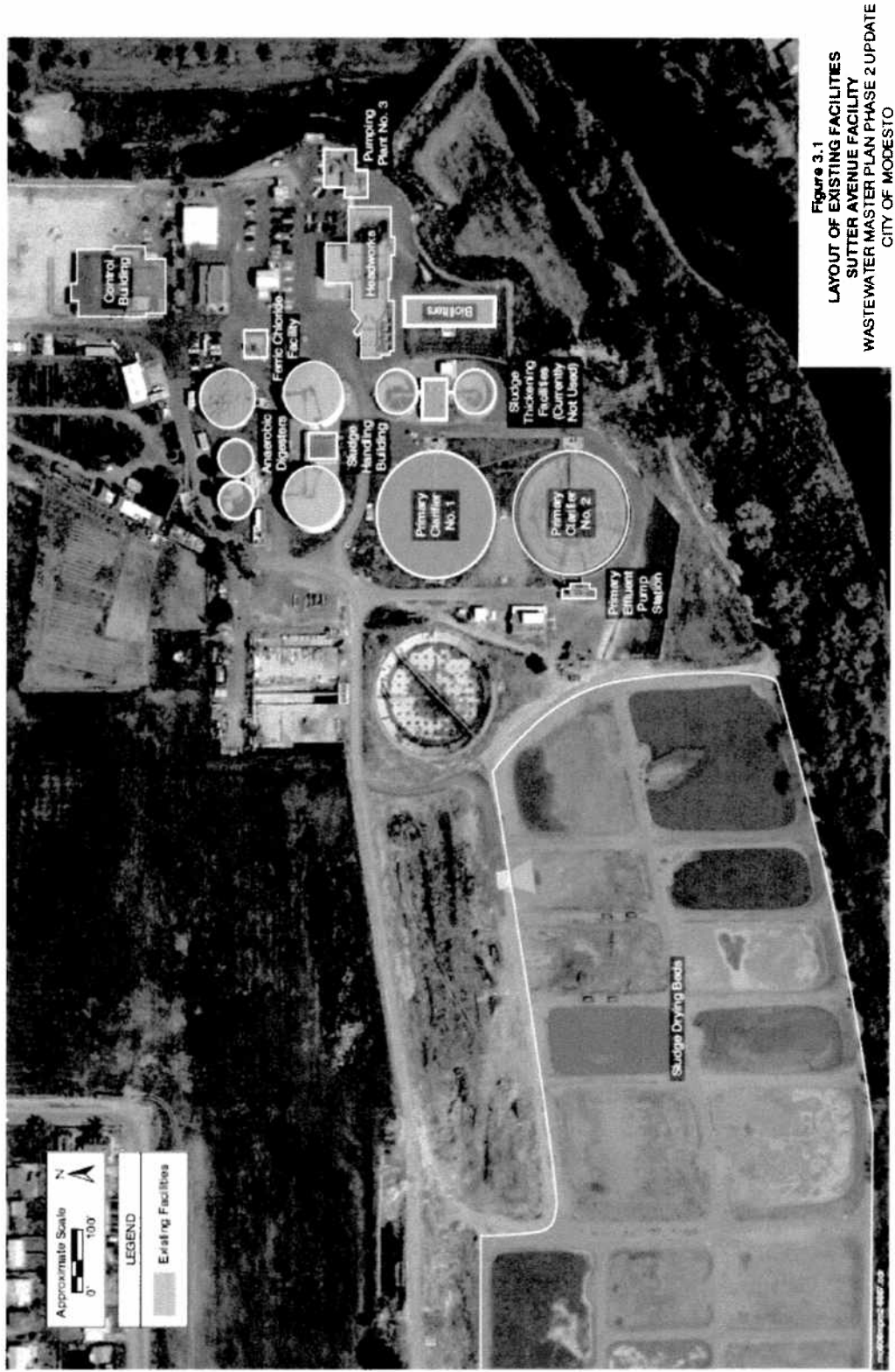


Figure 1.4 Layout of Existing Facilities, Jennings Road Facility

