Nipomo Community Services District

Water and Sewer System Master Plan 2001 Update

VT-N04-101-06

March 2002

BOYLE ENGINEERING CORPORATION

BOYLE

5851 Thille Street, Suite 201
Ventura, CA 93003
TEL: (805)644-9704
FAX: (805)642-8277
www.boyleengineering.com

Mr. Doug Jones, General Manager
NIPOMO COMMUNITY SERVICES DISTRICT
148 South Wilson Street
P.O. Box 326
Nipomo, CA 93444-0326

March 5, 2002
VT-N04-101-06

Final Water and Sewer System Master Plan 2001 Update

Dear Doug:

We are pleased to deliver the following in completion of the tasks outlined in our original scope of services:

- 10 copies of the final *Water and Sewer Master Plan 2001 Update*
- Input files for the water and sewer system models on disc
- Hard copies of the maps showing the node and pipe numbering used for each model

This study recommends significant improvements to the water distribution system to serve existing and future needs and meet possible changes in Title 22 requirements. This analysis indicates that water demand has increased significantly and is expected to continue to increase as the area develops. The improvements will enable the water system to meet the growing demand.

This study also outlines improvements needed to meet existing and future sewage collection system needs. Although the system is generally well designed to handle both existing and future sewage loads, improvements will be needed so that lift stations and pipelines have adequate capacity.

Please note the following responses to the comments we received from the board and from NCSD personnel following our presentation of the Draft Master Plan Update as follows:

1. References to State Water were changed to "Supplemental Water".
2. The text was refined to emphasize that, although Black Lake was not analyzed as part of this report, Master Plan data is available for Black Lake in the 1995 report.
3. Population projections and phasing of improvements were revised to reflect a 5% growth rate.

March 5, 2002

4. A note was added to **Plate 1**, and the report was modified to emphasize that the annexation and service to potential developments (i.e. The Woodlands and Bluffs) was only considered for the purpose of analysis and is not guaranteed by this report.
5. **Figure 3** – Unaccounted for water was revised according to the updated consumption data for the year 2000 that we received last week.
6. **Page 45** – Average day demands were modeled with all wells off. Under those conditions, the maximum pressure modeled was under 200 psi. Under peak hour demand, with the wells on, the maximum pressure modeled was nearly 200 psi, in the vicinity of the Eureka Well.
7. **Page 49** – The criteria set forth recommends three pumps at large lift stations. Three pumps may increase the efficiency of pumping at large lift stations. However, the text was revised to indicate that two or three pumps can be used, depending on the flow characteristics of the pump.
8. **Section 12** – References to the hydropneumatic pump station and pressure zone as "recommended" were revised.
9. **Section 12** – Analysis was completed assuming 305 Summit Station residences at buildout per our meeting on January 4, 2002. (Demand was calculated for 144 residences, but demand for 305 residences was used for analysis in order to be consistent with the Master Plan analysis that had already been completed.)
10. **Page 71** – The supplemental alternatives do not necessarily avoid unwanted high pressure. Individual pressure reducing valves are recommended for that reason.
11. **Figure 8** – A note was added to indicate the approximate number of pressure reducing valves.
12. **Table 19** - Recommendations regarding hydrant security/control were revised.

We appreciate your comments and assistance in providing us with the information needed to complete this study. It has been our pleasure to prepare this report for the District.

Sincerely,

Boyle Engineering Corporation

Glen Hille, PE
Managing Engineer

David Rice, PE
Project Engineer

Enclosures: Water and Sewer System Master Plan Update 2001 (10 copies)

Nipomo Community Services District Water and Sewer System Master Plan Update 2001

Nipomo Community Services District

Client Representative	Doug Jones, General Manager
Client Staff	Lee Douglas, Maintenance Supervisor Lisa Souza Bognuda, Asst. Admin.

Boyle Engineering Corporation

Project Manager	Pamela Gene Cosby, PE, AICP
Project Engineer	David W. Rice, PE

REGISTERED PROFESSIONAL ENGINEER
PAMELA GENE COSBY
NO. C044305
Exp. 6/30/05
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
DAVID W. RICE
No. 61717
Exp 6/30/05
CIVIL
STATE OF CALIFORNIA

VT-N04-101-06

March 2002

BOYLE

5851 Thille Street, Suite 201, Ventura, CA 93003

Table of Contents

Executive Summary

In November 2000, the Nipomo Community Services District Board of Directors (NCSD) authorized this update of their Water and Sewer System Master Plan. The prior 1995 Water and Sewer Master Plan identified several improvements to the water distribution and wastewater collection systems needed to meet existing and projected demands. The purpose of this document is to update the 1995 Master Plan based on current information regarding existing District customers and the future development forecast for an expanded Nipomo Community Services District service area. This report only provides master planned improvements for the town division service area. The 1995 Master Plan will continue to provide a recommended improvement plan for the Black Lake service area. An updated facility improvement program is recommended herein.

In the last six years, the District has constructed many of the improvements recommended in the 1995 Master Plan. Several prior deficiencies identified in the water system have been reduced or eliminated. The remaining deficiencies are typical for a system of this size and age. The wastewater collection system is generally well designed to meet current needs.

Improvements will be required for both the water and sewer systems to serve new developments as they are built.

Recommended Improvements to Meet Existing Needs

Water System

Water demand is projected to increase from 1890 AFY to 4910 AFY with an associated increase in service area population from an estimated 10,790 to 24,660 at buildout.

The existing water system was found inadequate in several aspects with regard to meeting existing needs. Sufficient water supply is available to meet current demand, however, an additional 480-gpm of water production is recommended to more reliably meet peak summertime demands. This report quantifies water needs but is not intended to be a water supply planning document. Also, it is noted that some of the existing well pumps and motors are operating at low efficiencies. It is recommended that the District continue with a pump and motor replacement program to improve pumping efficiency and save on energy costs.

With regard to storage volume, the District currently has 2.28 million gallons (MG) of effective storage at two locations. By the criteria stated herein, an additional 1.14 MG is needed to reliably meet the needs of existing customers. This deficit is currently met by the gas-operated Sundale Well which can provide 1.62 MG of water over a 3-day period to meet water demand during an emergency, such as an extended power outage.

The water distribution system consists of the central business district (Olde Towne) and the western residential areas (Mesa and Summit Station). These areas are separated by Highway 101 and Nipomo Creek. Water is currently transmitted east to west at two creek crossings and three freeway crossings. Lower pressures occur in Summit Station, because of high elevations, and in the Mesa Area, because of the distance that separates these services from the tanks and sources of supply.

The NCSD water distribution system is unique in many ways. The primary challenge of the distribution system has been transmission of water from the wells on the west end of the system to storage on the east and north ends of the system.

The NCSD water distribution system is unique in many ways. The primary challenge of the distribution system has been transmission of water from the wells on the west end of the system to storage on the east and north ends of the system. Supply and storage facilities are separated by miles of distribution piping. Recommended improvements are intended to increase transmission from the wells to areas of high demand, and to the storage tanks.

Overall, $3.7 million in water system improvements are recommended to reliably meet the needs of existing customers.

Overall, $3.7 million in water system improvements are recommended to more reliably meet the needs of existing customers. The criteria used to determine reliable service for this report are based on raising minimum service pressures to 30-psi. Improvements are aimed at increasing capacity from the wells to the Mesa Area, improving pressures in Summit Station, and increasing flow capacity from the east side of town to the west.

The improvements needed to increase minimum pressures in Summit Station to 30-psi account for $1.2 million of the recommended water system improvements. A supplemental section (Section 12) was provided to investigate more economically feasible improvement alternatives for Summit Station. Supplemental analysis indicates that installation of a single booster pump station to serve all of Summit Station would reduce the cost of improvement by $0.7 million. Successful implementation of a private booster pump rebate program could reduce the cost of improvements by nearly $1.0 million, but would not increase pressures in the distribution system to meet the stated criteria.

Sewer System

The existing wastewater collection system was found to be well designed to handle existing needs.

The existing wastewater collection system was found to be well designed to handle existing needs. Areas of note are the gravity collector in Division Street, the excess capacity of most of the existing lift stations, and the recent and expected increase in flows to the Tefft Street Lift Station as several developments are completed.

Regarding Division Street, an existing 8-inch diameter gravity collector is undersized to transport local gravity flow plus flow from four lift stations to the Frontage Road main trunk line. To address this situation, a gravity relief line, which would in effect eliminate the Nipomo Palms Lift Station, is recommended as part of the Montecito Verde II sewer connection project. The two existing County Service Area No. 1 lift stations could also be routed through the proposed relief line.

Regarding the lift station capacities, it was noted that all of the District's lift stations, with the exception of the Tefft Street and Gardenia Lift Stations, appear oversized to meet existing (and projected) needs. The District is advised to evaluate wet well volumes, pump and motor sizes, and on/off levels at the oversized lift stations, in order to ensure that the pumps are cycling on and off properly.

The Tefft Street Lift Station is currently operating near capacity. District personnel have observed wet well capacity problems, particularly during power outages. The flow to the lift station will soon increase with the completion of the new high school and the proposed Hermrick development. Upgrades are recommended to increase the Tefft Street Lift Station capacity.

Overall, $1.7 million of improvements, including the Tefft Street Lift Station upgrades, the Montecito Verde II/Nipomo Palms bypass project, and upgrades to the trunkline and main lift station are recommended to reliably meet existing and near-term sewage collection system needs.

Recommendations for the Master Planned System

Water System

The projected 160 percent increase in water demand, coupled with expansion of the service area to the west, will require the installation of distribution mains, a total of 5.25 MG of additional storage, and additional supplies to reliably meet projected demands. It is anticipated that some of the storage deficit will continue to be met by use of the Sundale Well during emergencies.

This report quantifies future water need, but does not identify sources of water supply. However, for this study, some assumptions regarding future supply were made. Potential sources of supply are currently being evaluated by others as part of another study. Identification of future water sources will be critical to supply projected water demands.

To meet future water demands, $11.4 million will be needed for system improvements.

An estimated $11.4 million in system improvements are recommended to meet projected water demands. Many of these improvements can be funded by developers. These improvements are intended to increase water storage and supply capacity, improve flow capacity from the Standpipe and wells to the Mesa Area, provide additional flow capacity within the Mesa Area, and extend service to anticipated developments.

Sewer System

Wastewater flow is projected to increase from 0.42 MGD to 1.05 MGD.

Facilities to meet projected community sewering needs include upgrades of the main WWTP and lift station, additional gravity collectors, one new lift station near Amado Street, and greater capacity in the Frontage Road trunk line. An additional $2 million in sewer system improvements are recommended to meet future sewage collection system needs.

1.0 Introduction

1.1 Overview

The Nipomo Community Services District is located along Highway 101 in the southern portion of San Luis Obispo County, California, as shown on **Figure 1**. The District is situated approximately halfway between the cities of San Francisco and Los Angeles.

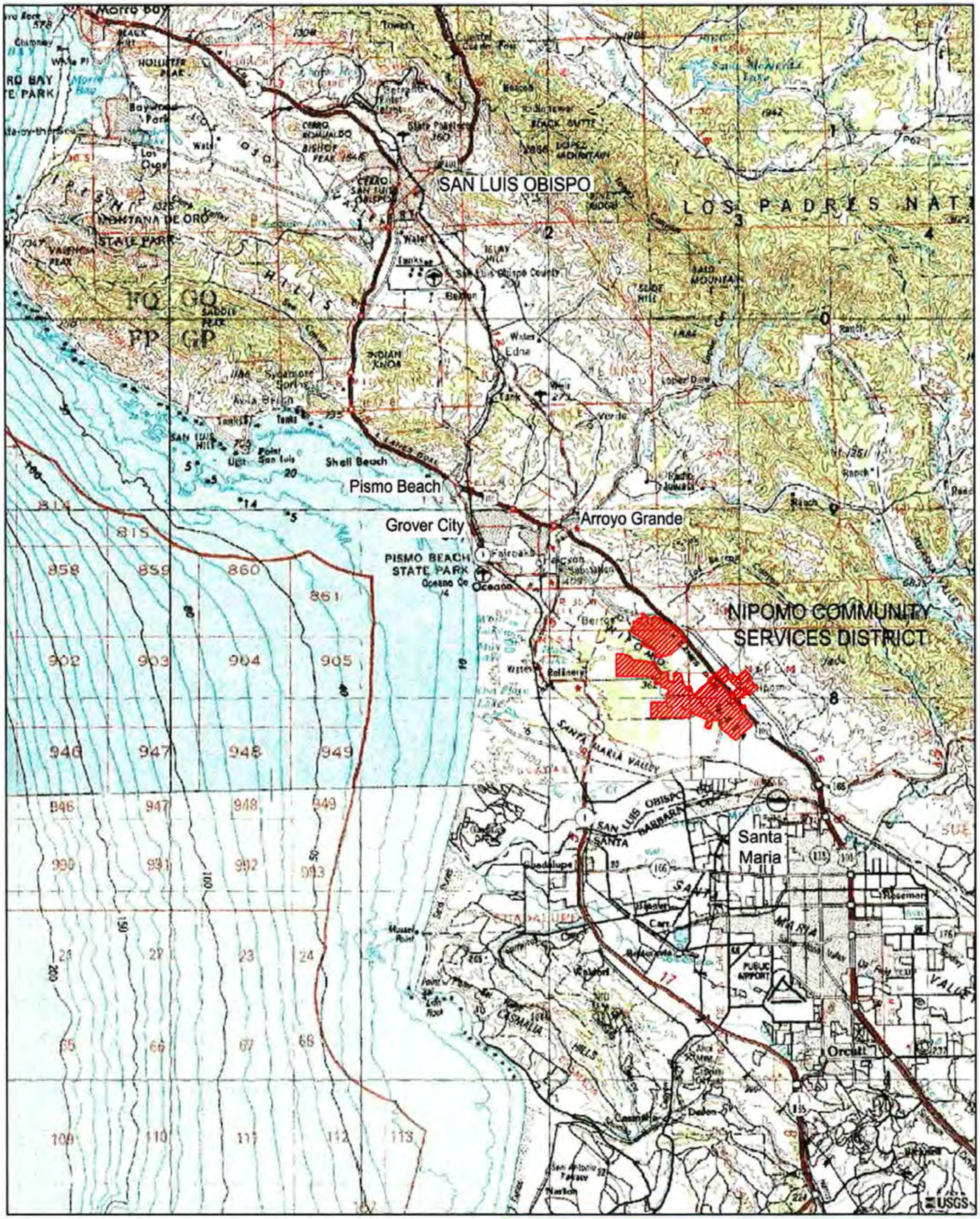
The District provides water and sewer service to an unincorporated area of San Luis Obispo County. Land use is regulated by the County. The District currently provides water service to approximately 10,800 people. Approximately 50 percent of the service area is currently sewered.

Nipomo has sustained a fairly brisk rate of development in recent years, a trend which is expected to continue. In 1995, the District selected Boyle Engineering Corporation to prepare a water and sewer system master plan. The result was a plan for sewer collection and water distribution and storage facility upgrades to meet the needs of existing and future customers.

The District has experienced a portion of the growth projected in the 1995 report. Several upgrades to the District's water and sewer systems have been constructed to accommodate the growth. In order to plan for continued orderly expansion of water and sewer facilities, the District selected Boyle Engineering to prepare this update to the 1995 Water and Sewer Master Plan. The resulting plan reflects changes in the District since 1995 and provides updated recommendations for upgrades to the District's water and sewer facilities.

These upgrades are necessary to address two issues:

- During the next few years, several new developments are proposed for an expanded Nipomo CSD service area. If all the proposed developments are constructed, the NCSD service area population will grow from 10,800 to 24,700 people at build out. Significant upgrades to the District's water production, storage and distribution facilities will be required to serve the growing population.
- The Department of Health Services is considering revisions to the Title 22 Waterworks Standards. Among other changes, DHS has



SCALE: 1"=24,000'

NIPOMO COMMUNITY SERVICES DISTRICT

2001 WATER AND SEWER MASTER PLAN UPDATE

VICINITY MAP

BOYLE ENGINEERING CORPORATION

VT-N04-101-06 FEB. 2002 FIGURE 1

DWG: F:\cosby\N0410106\ACAD\FIGURE-1.dwg USER: drollnes
DATE: Feb 28, 2002 4:33pm XREFS:

considered increasing the system-wide minimum pressure requirement to 30 pounds per inch at all times except during emergencies. A single structure fire is not considered an emergency. Analysis indicates that meeting this requirement during a fire would require upgrades to the existing water system.

The District receives most of its supply of water from wells that pump water from the Nipomo subunit of the Santa Maria Groundwater Basin. This master plan quantifies projected water needs, but is not intended to be a water resource management-planning document. A separate document, being prepared by Kennedy-Jenks Consultants, identifies potential water supplies.

The District currently operates two separate water and sewer systems, one serving the main Nipomo area and one serving the Black Lake development. This report only addresses the main Nipomo area. The 1995 Master Plan will continue to serve as the recommended plan for upgrading the systems that serve the Black Lake development.

Wastewater is treated and disposed at two locations: the main Nipomo wastewater treatment plant located south of the service area, and at the Black Lake development located to the northwest. Both treatment and disposal facilities are to remain in service. This master plan updates projected wastewater collection system flows to the main Nipomo wastewater treatment plant only and is not intended to define necessary treatment or disposal upgrades.

The hydraulic planning effort for this master plan update is based on the District's existing set of atlas maps and the new atlas maps prepared by others in GIS format.

1.2 Purpose and Scope

The purpose of this study is to identify improvements to the main (Town Division) NCSD sewer collection and water distribution systems required to meet existing and projected demands, and to develop a sewer and water facilities improvement program to aid the District in conducting long-term planning. This study is an update of the study undertaken to complete the 1995 Master Plan and is based on changes since that study was completed six years ago. Specific tasks which were undertaken to accomplish this include:

Collection and Review of Data

Water data was collected, including updated distribution system record drawings, water consumption records (1995-2000), water production records (1995-2000), well and storage characteristics, updated land use plans and topographic mapping.

Sewer data was also collected, including WWTP flows (1995 – Sep. 2001), records of existing collector diameter, slope, and manhole locations throughout the service area. Additionally, information was reviewed and updated on lift stations, including run times (1998 – Sep. 2001) number and type of pumps in place and force main diameters and location.

Updated population and land use information was obtained from the County of San Luis Obispo Department of Planning and Building. District water usage records were also used to estimate the number of existing water service connections.

Development of Design Parameters

Water duty factors for both residential and non-residential land uses were updated using historic water consumption data (1995-2000). Peaking factors for maximum day demand and peak hour demand were estimated. Fire flow requirements were established by consultation with the California Division of Forestry (which serves as the County Fire Department), the District, and the California Fire Code.

Sewer duty factors for both residential and non-residential land uses were updated using a ratio to historic water consumption data (1995-2000). Peaking factors were assumed, based on figures for similar communities.

Estimated Demands

Existing land use information obtained from the San Luis Obispo County Department of Planning and Building, along with District records, were used to approximate existing and future demand distribution. Descriptions of several proposed land developments were obtained from NCSD. Existing and future sewer loading was based on similar available information.

Update of Computer Models

Computer models prepared for the 1995 Master Plan were updated to simulate the District's sewer and water system performance under both existing and future demands. The District's sewer and water systems were reviewed using record drawings and atlas maps recently digitized to GIS format. Data input files were updated for use with hydraulic and sewer network software used for this study: Boyle NET and Boyle SWAN.

The water model was calibrated using results of fire hydrant flow tests performed by District staff during the summer of 2000. The sewer model was calibrated using lift station capacities and run times, WWTP flows, and NCSD staff observations.

Identification of Existing Deficiencies and Future Needs

Hydraulic analyses were performed to analyze the adequacy of the existing sewage collection and water distribution pipelines under both existing and projected demands. Upgrades were recommended where deficiencies were found. Recommendations for existing and future lift stations, conveyance systems, and storage facilities were made.

Prioritization and Cost Estimation for Recommended Improvements

The cost and priority of recommended improvements to meet existing and projected water and sewer demands were established and a capital improvement plan was prepared.

2.0 Water Demands and Sewer Loading

2.1 Historic Demand

Historic water production and metered consumption data for January 1995 –December 2000 was obtained from District staff. This data is included in **Appendix A**. Water production represents the total metered production from each of the District's wells. Consumption, on the other hand, represents the sum of all metered water sales throughout the service area. From this data, average annual and peak monthly water demands were estimated.

The average yearly metered consumption for the years 1995-2000 was 1518 AF. The maximum yearly consumption was 1644 AF in 1999. The average annual production for the same period was 1716 AF, with a maximum 2004 AF water production in 2000. Peak monthly production is estimated to be 240 AF. These estimates only include the main Nipomo system (Black Lake was not analyzed as part of this report).

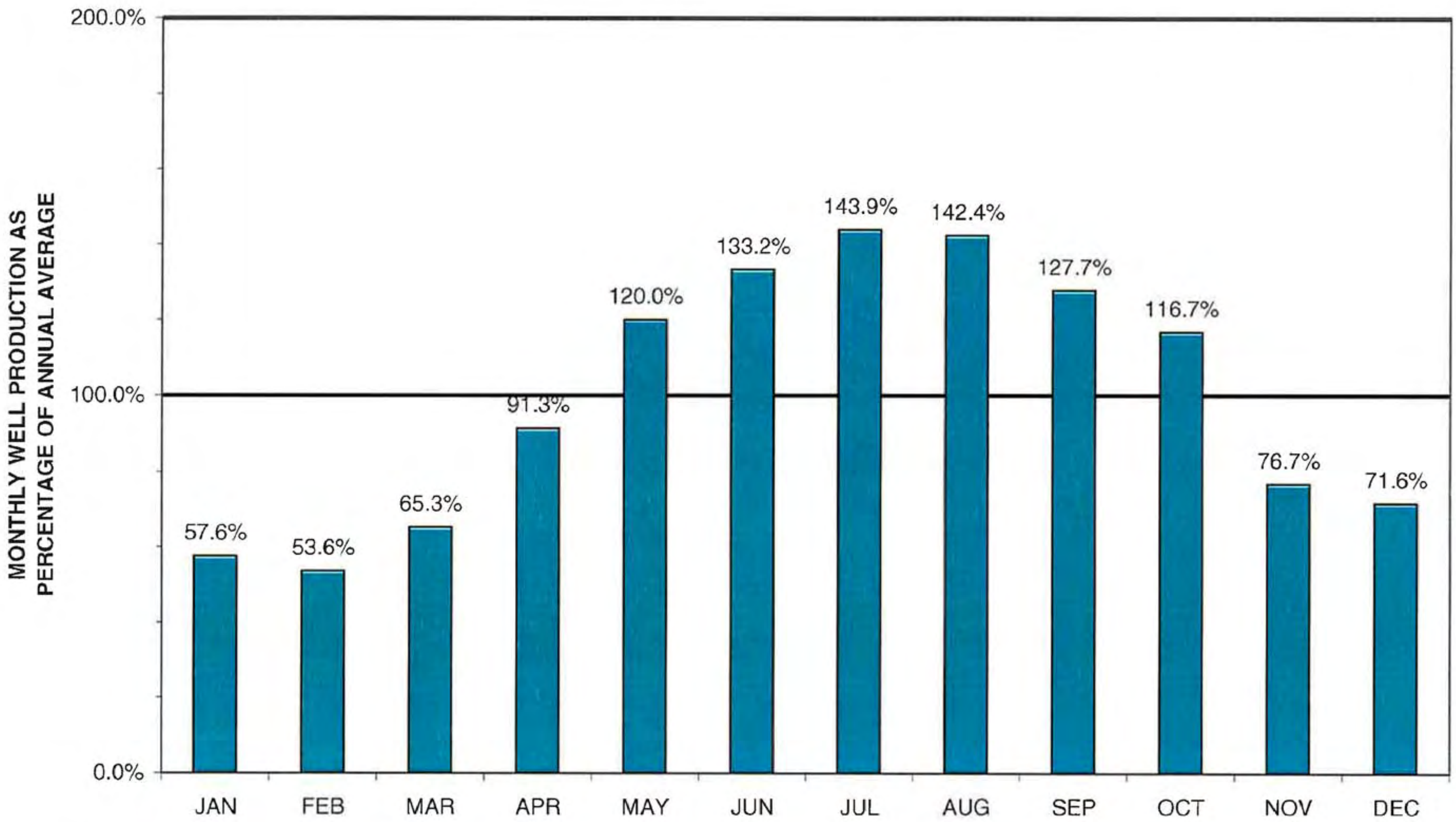
Water demand increases during the hot summer months as illustrated in **Figure 2**. Typically, monthly summertime demand is up to 1.5 times higher than average annual demand. The peak monthly water demand was during July 2000 when monthly water use was 1.50 times average annual demand.

The District provided records of treated wastewater flows at the main treatment plant for 1995 through September 2001. These records included metered WWTP flows based on flume meter readings started in May 2000. Temporary flow metering information for the sewage collection system was not made available during the course of this master plan development. Therefore, sewage flows were estimated based on lift station capacities and run times, metered water production, and available records of treated wastewater as described in Section 2.3.

2.2 Unaccounted For Water

Both water production and consumption records for the 1995 through 2000 period were reviewed. The difference between metered water production and metered water consumption is known as "unaccounted for water." There is typically unaccounted for water in every domestic water system, comprised of:

FIGURE 2
AVERAGE MONTHLY WELL PRODUCTION
For Years 1995-2000



- Distribution system and lateral leakage
- Metering inaccuracies
- Unmetered hydrant flows for construction, fires or other uses
- Unmetered connections to the system
- Other factors

For Nipomo, unaccounted for water has ranged from 4 to 13 percent in the past six years, as shown in **Figure 3**. Unaccounted for water is typically less than 15 percent for systems of this size, as discussed in AWWA Manual M32.

Nipomo sustained an average unaccounted for water level of approximately 11 percent from 1995 through 2000, which is considered fair for a system of this size. Unaccounted for water should continue to be monitored regularly to measure the performance of the system.

2.3 Determination of Water and Sewer Duty Factors

Water Duty Factors

The District's monthly water production and consumption records (**Appendix A**) were used as the basis for estimating water "duty factors." Duty factors are estimates of water demand per residence or per acre by land use category.

The District provided Assessor's Parcel Maps which indicated individual lots receiving water and/or sewer service. This provided both an accurate count of the number of lots receiving service as well as a basis for distributing water demand throughout the service area. Metered consumption data for large users were also provided and were considered in estimating water duty factors for Nipomo.

First, overall water production was compared to estimates of current service area population. Statistics for the South County Planning Area, as published by the County of San Luis Obispo, were referenced. The current population of the water service area, excluding Black Lake, is estimated to be 10,790 based on Census 2000 data and estimated occupancy rates indicated in **Table 1**. This equates to a

FIGURE 3
Nipomo Community Services District
Unaccounted for Water - Excluding Black Lake

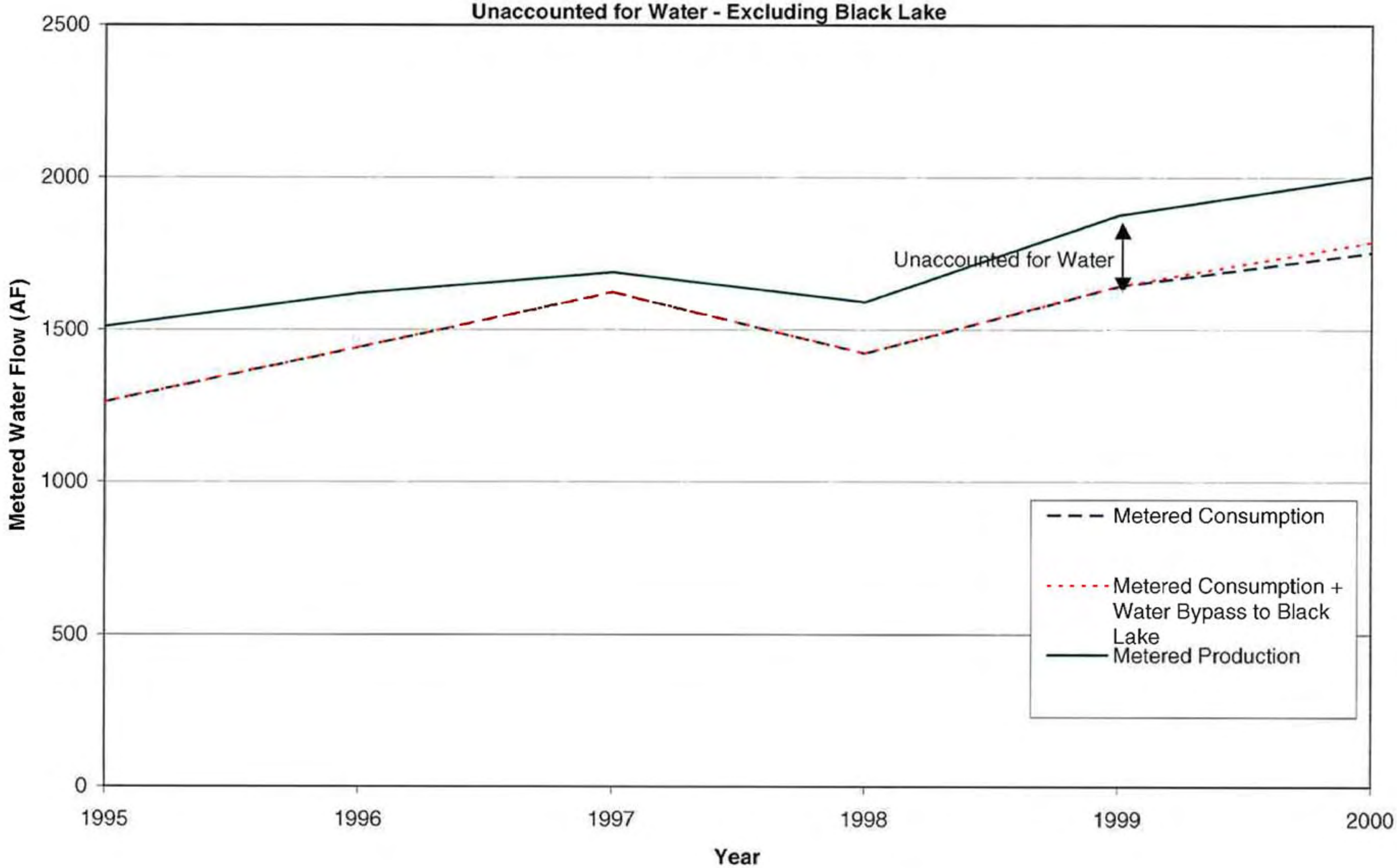


TABLE 1
EXISTING LAND USE AND WATER DEMAND

MAIN NIPOMO WATER SYSTEM:

User	Est. No. of Units (dwelling units) (1)	Est. Occupancy Rate (persons/unit) (2)	Est. per Capita Consumption (gpcd) (3)	Avg. Annual Demand (gpd) (4)	Summertime Demand (gpd) (5)
Residential Unit - Large Lots	885	3.15	175	487,900	624,500
Residential Unit - Small Lots	1,656	3.40	120	675,600	864,800
Residential Multi-Family	818	2.90	45	106,700	136,600
RESIDENTIAL SUBTOTAL =	**3,359**			**1,270,200**	**1,625,900**
EST. MAIN SERVICE AREA POPULATION =		**10,790**			

	Est. No. of Acres (acres)	Est. Consumption Rate (gal/acre/day)	Avg. Annual Demand (gpd) (4)	Summertime Demand (gpd) (5)
Commercial Service Acreage	49	310	15,300	19,600
Commercial Retail Acreage	75	350	26,400	33,800
Office/Professional Acreage	14	230	3,300	4,200
Public Facility Acreage	29	530	15,600	20,000
NON-RESID. SUBTOTAL =	**168**		**60,600**	**77,600**

	Avg. Annual Demand (gpd)	Summertime Demand (gpd)
Large Users[6]:		
Nipomo Regional Park	41,428	53,000
Brassica Nursery - 675 Grande	16,778	21,500
Bar K Mobile Home Park	9,508	12,200
Vons/Safeway US Retail	7,847	10,000
Nipomo Area Rec. Assoc.	6,823	8,700
Cal City #1	6,737	8,600
Buena Vista Mobile Home Park	6,472	8,300
Church - 312 Oakglen	6,026	7,700
Abacus Property - 477 Amado	4,679	6,000
Landscape Meter - 479 Ave de Socios	4,162	5,300
Carnival Marketplaces - Swap Meet	3,303	4,200
Charles Rice Laundromat - 277 W Teft	3,242	4,200
Jocko's Restaurant	2,989	3,800
BCG Properties	2,908	3,700
Central Coast Investment	2,694	3,400
St. Joseph's Church	2,412	3,100
Caltrans Irrigation Meter	2,247	2,900
Apartments - 480 Ave de Socios	2,244	2,900
J B Kies Commercial Building	2,107	2,700
McDonald's	2,004	2,600
LARGE USER SUBTOTAL =	**136,610**	**174,800**
SUBTOTAL=	**1,467,410**	**1,878,300**
UNACCOUNTED FOR WATER (15%)[7]=	**220,112**	**281,745**
TOTAL WATER DEMAND MAIN NIPOMO WATER SYSTEM =	**1,687,522 gpd**	**2,160,045 gpd**
	1,170 gpm **1,890 AFY**	**1,500 gpm**

(1) Source: Assessor's Parcel Maps provided by District and 2000 public Water System Statistics. The number of single family units is the number of units receiving water service. The number of multi-family units is based on the acreage of muti-family developments receiving water service at a density of 10 du/acre.

(2) Source: Average household size based on 1990 census.

(3) Estimated per capita and non-residential consumption based on metered consumption data and occupancy rate data.

(4) Source: Average annual residential usage based on occupancy rate stated in (2) above at the estimated per capita consumption rate stated. Large user statistics based on metered consumption for the users listed as provided by Nipomo CSD staff for the June 98 thru August 00 period. Current total average annual usage based on 2000 production records provided by Nipomo CSD.

(5) Source: Average summertime (May-Sep) demand is 1.28 X the average annual demand, according to consumption records provided by the District for years 1995-2000.

(6) The acreages of those properties on the large users list were not included in the demand calculation by acreage for each type of land use.

(7) Source: Average percentage of unaccounted for water from last 10 years of production and consumption records.

gross per capita consumption rate of 156 gallons per day. "Gross" per capita consumption refers to total community water demand, including non-residential water uses and unaccounted for water.

The District provides water service to businesses, schools, irrigation meters, and other land uses in addition to residences. To estimate the water demand associated with non-residential land uses, water consumption records for the 20 largest water users were examined. Acreages for non-residential users were also estimated based on the Assessor's Parcel maps provided by the District.

Table 1 indicates the estimated number of residential dwelling units in the main Nipomo water system. Similarly, non-residential land uses are also tabulated. An allowance of 15 percent of the estimated water demand is included for unaccounted for water in the demand calculation. Average annual and "summertime demands" (i.e. May through August) are both listed in **Table 1**.

Sewer Duty Factors

Because sewage services are not metered, determining sewage duty factors for planning purposes is more difficult. For this study, various data sources were examined in order to estimate per capita sewage production for various land uses.

The District maintains records of sewage flow at the main wastewater treatment plant, and since May 2001, metered daily sewage flow records have been maintained. Before then, estimates of plant sewage flows were based on estimates of capacity of the treatment plant lift station and run times. These records indicate that:

- Average monthly flow in 1998 was measured at 0.43 MGD.
- Average monthly flow in 1999 was measured at 0.36 MGD.
- Average monthly flow in 2000, excluding February and March when the plant was in by-pass mode during the plant expansion, was measured at 0.41 MGD.

The District also currently operates ten sewage lift stations. Records of monthly electrical use is available at each lift station, however, accurate records of pump capacity are not. Pump efficiency tests, done to calibrate the actual pump capacity at various electrical consumption rates, have not been conducted during the last decade.

It was eventually determined that the best available data upon which to estimate sewage loading duty factors was water consumption data. Estimates of the ratio of water use that flows to the sewage collection system compared to the metered water sales were made for each land use category. This was compared to available metered flow data for the main treatment plant.

The number of residential units and non-residential development within each of the nine lift station tributary areas were estimated based on the District's Assessor's Parcel Map information. These are tabulated in **Table 2**. Nominal lift station capacities were multiplied by the average daily run times at each lift station, determined from PG&E records, to estimate the average flows handled at each lift station. Estimates of sewer duty factors were iteratively derived to arrive at the sewage duty factors listed in **Table 2**, attempting to balance estimates of flow based on land use with those based on lift station operating data.

These flow estimates based on land use and lift station run time did not balance well for the following lift stations:

- Gardenia Lift Station – The flow based on land use is 31 percent higher. This may be because recent development in the lift station tributary area is not reflected in the historic lift station run time records.

- North Oakglen Lift Station – the flow based on the lift station capacity and run time is high, indicating that the pumps have operated below their listed capacity, or that infiltration and inflow (I/I) problems exist in this area.

- La Mirada Lift Station – the flow based on the lift station capacity and run time is high, indicating that the pumps have operated below their listed capacity.

- Tejas Lift Station – the flow based on land use is higher because of recent development in the lift station tributary area is not reflected in the historic flows.

- CSA-1 Lift Stations – the flow based on the lift station capacity and run time is high, indicating that the pumps have operated below their listed capacity.

TABLE 2
SEWER DUTY FACTORS AND EXISTING FLOWS

Land Use	% of Water Going to Sewer
Res-Lg lot	0.36
Res-Sm lot	0.47
Office/ Comm.	0.8
Pub. Facility	0.3
RMF	0.75

	Water Use gpd/du, or gpd/acre	Sewer Flow at % stated	
Res. Lg. lot	551	198	gpd/unit
Res. Sm lot	408	192	gpd/unit
Comm. Retail	350	280	gpd/acre
Comm. Service	310	248	gpd/acre
Office/Prof.	230	184	gpd/acre
Public Facility	530	159	gpd/acre
Resid. Multi Family	1305	979	gpd/acre

MAIN NIPOMO SEWER SYSTEM:

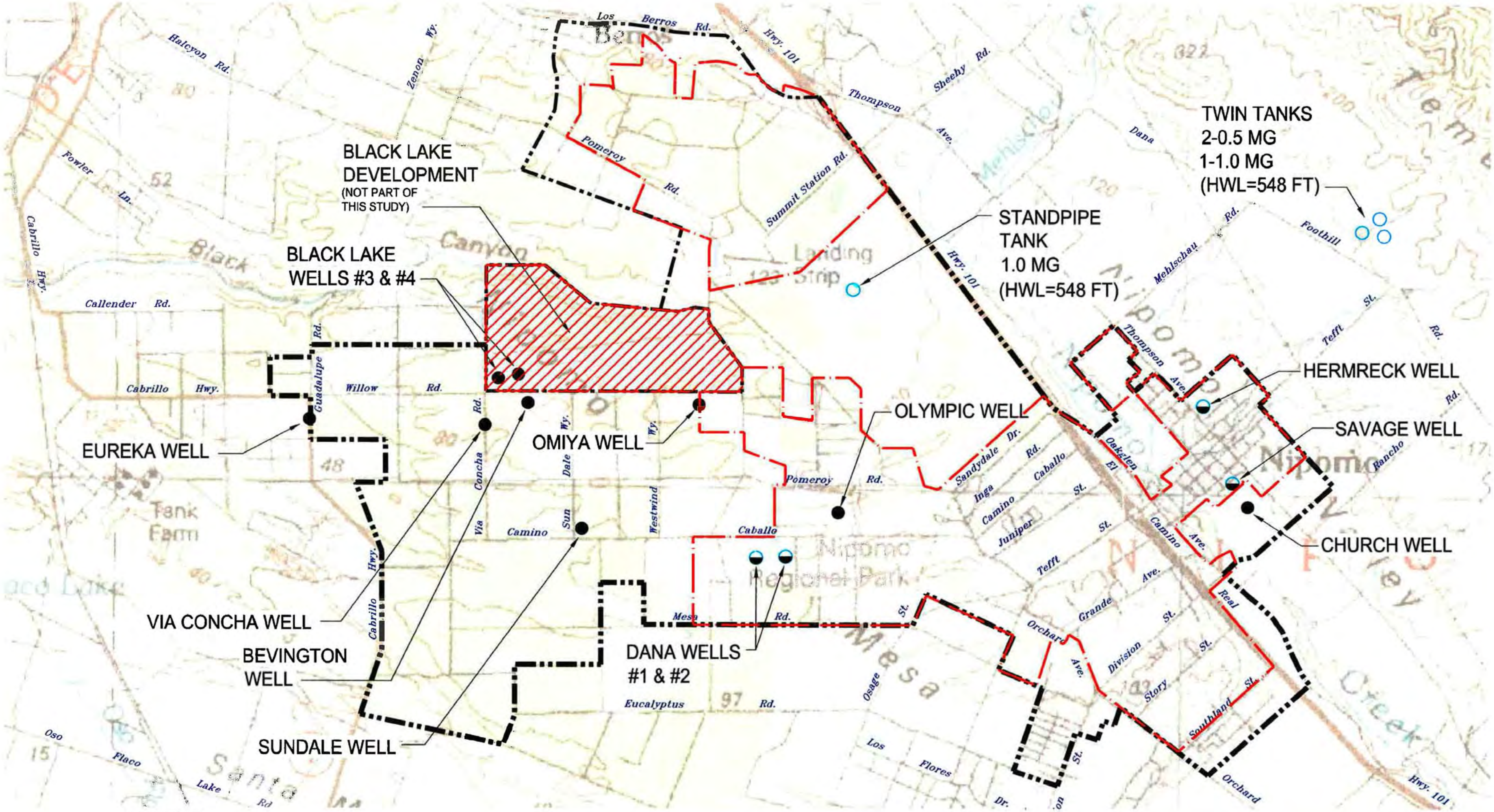
TRIBUTARY AREA	NO. OF LARGE LOTS	NO. OF SMALL LOTS	Commercial Retail (acres)	Commercial Service (acres)	Office/ Professional (acres)	Public Facility (acres)	RMF (acres)	Est. Flow (gpd) (1)	Flow based on run time (gpd) (2)	Diff. (3)
Tefft Street Lift Station	6	436	10.75	0	4.25	8.5	10.5	100,218	93,700	-7%
Juniper Lift Station	0	165	0	0	0	0	0	31,640	32,665	3%
Bracken Lift Station	0	26	0	0	0	0	0	4,986	4,430	-13%
Gardenia Way Lift Station	2	117	0	0	0	19	0	25,854	18,808	-37%
North Oakglen Lift Station	0	18	0	0	0	1.5	0	3,690	7,685	52%
La Mirada Lift Station	0	93	0	0	0	0	0	17,834	28,737	38%
Nipomo Palms Lift Station	0	162	0	0	0	0	0	31,065	34,819	11%
Tejas Lift Station	0	15	0	0	0	0	0	2,876	1,664	-73%
Honey Grove Lift Station	6	0	0	0	0	0	0	1,190	1,215	2%
Gravity flow to Treatment Plant	44	442	41	8	9.3	0	22.5	130,683	130,683	N/A
CSA-1 (4)		342						65,582		56%
Galaxy Park									119,459	
People's Self Help Lift Station									29,410	
Totals	58.00	1816.00	51.75	8.00	13.55	29.00	33.00	415,618	503,273	
								0.42 MGD	0.50 MGD	

(1) Estimated flow is average dry weather flow based upon number of tributary residential units at the sewer duty factors stated above and based upon the approximate number of acres of non-residential land use at the sewer duty factors stated above.

(2) Tributary area flow based on lift station run time is the total number of hours of operation for each lift station per month during Oct. 2000-Sep. 2001 times the nominal lift station flow capacity for each station.

(3) "Difference" is the percentage difference between calculated tributary area flow based on duty factors as compared to flow base on run time records.

(4) Galaxy Park and Peoples Self Help Housing lift station flow estimates based on nominal lift station capacity times average station run time (4/00-4/01).



LEGEND

- ● NIPOMO CSD WELLS
- ◒ NIPOMO CSD WELLS (STANDBY)
- ○ NIPOMO CSD TANKS
- FUTURE WATER SYSTEM SERVICE AREA BOUNDARY
- EXISTING WATER SYSTEM SERVICE AREA BOUNDARY

SCALE: 1"=3000'

NIPOMO COMMUNITY SERVICES DISTRICT
2001 WATER AND SEWER MASTER PLAN UPDATE
TOWN DISTRICT WATER SYSTEM BOUNDARIES
BOYLE ENGINEERING CORPORATION
VT-N04-101-06 FEB. 2002 FIGURE 5

> The difference in estimated flows for this last lift station account for most of the difference in the total sewage flow estimates. County personnel were contacted to verify lift station capacities and run times. They indicated that the Galaxy Park Lift Station was old and was not operating at its design capacity. However, because the lift station is unmetered, it is difficult to estimate its operating capacity.

The total sewage flow estimated by lift station capacities and run times was much higher than the historical treatment plant flows. For this reason, duty factors were adjusted to calibrate the total estimated flow to historical treatment plant flows.

Using these duty factors, average annual flows to the main Nipomo wastewater treatment plant (WWTP) are estimated to be 0.42 MGD. In May 2001, NCSD began operating a flume meter for monitoring sewage flows at the WWTP. Based on the records from this meter, the average flow rate from October 2000 through September 2001 was 0.41 MGD.

It should be noted that the District's sewage collection system handles sanitary flows only. A separate storm drainage system is maintained by the County.

2.4 Projected Demand

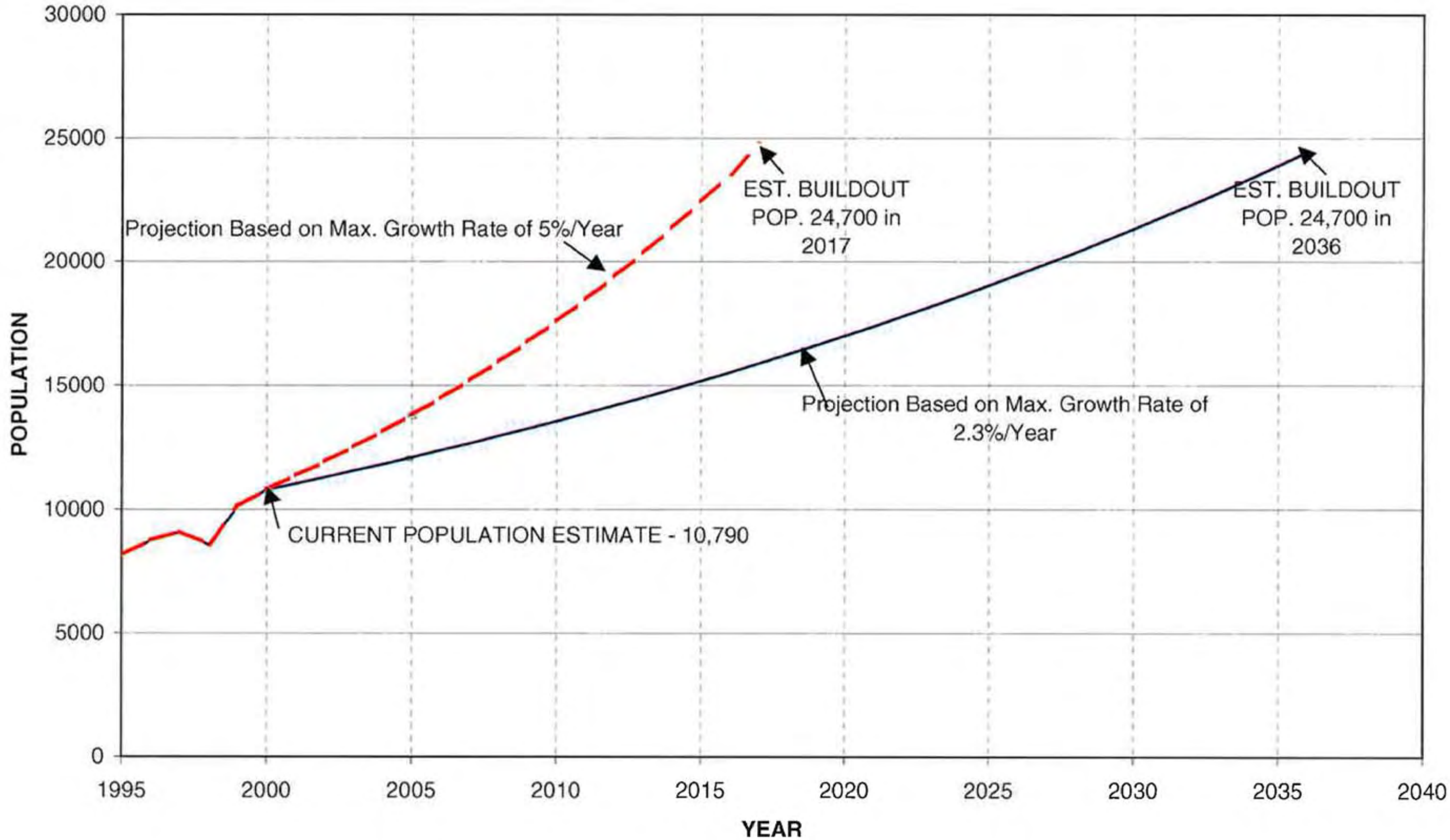
This master plan is based on extending water and sewer service to the future service area boundaries illustrated in **Figures 5 and 6*** respectively. The future service area boundary presented in the 1995 Master Plan encompasses somewhat larger areas.

Water service area population trends are illustrated in **Figure 4**. From 1995 through 2000, approximately 80 new connections per year have been added to the water system. Many factors affect the pace at which development will continue within Nipomo.

Due to the limited groundwater supply and the current adjudication process, the County has adopted a building permit limit based on a maximum 2.3% growth rate each year for the Nipomo area. **Figure 4**

* Figures 5 and 6 are found in Sections 3 and 4 respectively.

FIGURE 4
POPULATION FORECAST



shows a population projection based on this rate of growth. **Figure 4** also shows population projected at a growth rate of 5% each year. According to District personnel, this rate represents the actual rate at which the District population has grown recently. This study assumes that the growth rate will not limit the build out population, but it will determine when the buildout population is reached. At a 5% per year growth rate, the projected ultimate service area population of 24,700 would be reached in the year 2017.

The County Land Use Element and Local Coastal Plan were studied to determine land use zoning within the service area boundaries. Future areas to be served were tabulated in terms of additional residential units and non-residential land use acreages. The water and sewer duty factors shown in **Tables 1 and 2** were used to estimate water demands and sewage loadings within the study area. Areas currently shown in the Nipomo Area Plan zoned for agriculture are presumed to be converted to the residential zoning shown in the Nipomo Area Plan for the purposes of projecting water and sewer needs. The estimates of buildout population and demand are higher than those presented in the 1995 Master Plan due to updated information on future developments and more conservative assumptions about buildout densities.

Projected water demand is summarized in **Table 3**. Based on the total number of acres for residential land uses and the occupancy rates shown in **Table 3**, projected water demand during an average rainfall year at buildout is estimated to be 4,900 AFY. During a drought year, the projected water demand could be 5,400 AFY. The distribution pipelines proposed in this master plan have been sized and laid out to accommodate these projected water demands.

Regarding sewer needs, **Table 4** tabulates the projected sewage loading throughout the service area illustrated in **Figure 6**. At full build-out and at 100% occupancy, average annual wastewater flows to the main Nipomo wastewater treatment plant are projected to be 1.1 MGD.

2.5 Fire Flow Requirements

It is often the case that meeting fire flow requirements governs the sizing of a community's water distribution system. Thus, it is important to establish realistic fire flow requirements for both existing and future development. The California Department of Forestry (CDF)

TABLE 3
FUTURE LAND USE AND WATER DEMAND

MAIN NIPOMO WATER SYSTEM:

User	Est. No. of Units (dwelling units) (1)	Est. Occupancy Rate (persons/unit) (2)	Est. per Capita Consumption (gpcd) (3)	Avg. Annual Demand (gpd) (4)	Summertime Demand (gpd) (5)
Residential Unit - Large Lots	1,394	3.15	175	768,400	983,600
Residential Unit - Small Lots	3,625	3.40	120	1,479,000	1,893,100
Residential Multi-Family	1,327	2.90	45	173,200	221,700
RESIDENTIAL SUBTOTAL =	**6,346**			**2,420,600**	**3,098,400**
EST. MAIN SERVICE AREA POPULATION =		**20,560 /24,660[7]**			

	Est. No. of Acres (acres)		Est. Consumption Rate (gal/acre/day) (6)	Avg. Annual Demand (gpd) (4)	Summertime Demand (gpd) (5)
Commercial Service Acreage	70		385	27,000	34,600
Commercial Retail Acreage	133		420	56,000	71,700
Office/Professional Acreage	29		310	9,000	11,500
Public Facility Acreage	42		610	25,700	32,900
NON-RESID. SUBTOTAL =	**275**			**117,700**	**150,700**
Large Users[8]:					
Woodlands Development				1,095,840	1,402,700
Nipomo High School				72,000	92,200
Nipomo Regional Park				41,428	53,000
Brassica Nursery - 675 Grande				16,778	21,500
Bar K Mobile Home Park				9,508	12,200
Cal City #1				6,737	8,600
Buena Vista Mobile Home Park				6,472	8,300
Church - 312 Oakglen				6,026	7,700
Abacus Property - 477 Amado				4,679	6,000
Landscape Meter - 479 Ave de Socios				4,162	5,300
Central Coast Investment				2,694	3,400
St. Joseph's Church				2,412	3,100
Caltrans Irrigation Meter				2,247	2,900
Apartments - 480 Ave de Socios				2,244	2,900
LARGE USER SUBTOTAL =				**1,273,227**	**1,629,800**
SUBTOTAL=				**3,811,527**	**4,878,900**
UNACCOUNTED FOR WATER (15%)[9]=				**571,729**	**731,835**
TOTAL WATER DEMAND MAIN NIPOMO WATER SYSTEM =				**4,383,256 gpd**	**5,610,735 gpd**
				3,040 gpm	**3,900 gpm**
				4,910 AFY	

(1) Source: Number of Residential Units is based on the SLO South County General Plan Land Use With the following buildout densities assumed:

RSF-4 du/acre — RS-0.5 du/acre were undeveloped-1 du/acre were development is already that dense
RMF-10 du/acre — RL/RR 0.1 du acre in undeveloped areas-0.2 du/acre in Summit Station
AG-In Old Towne area converted to RSF at 2 du/acre. Near standpipe converted to RS at 0.2 du/acre

(2) Source: Average household size based on 1990 census.

(3) Estimated per capita and non-residential consumption based on metered consumption data and occupancy rate data.

(4) Source: Average annual residential usage based on occupancy rate stated in (2) above at the estimated per capita consumption rate stated. Large user statistics based on metered consumption for the users listed as provided by Nipomo CSD staff for the June 98 thru August 00 period. Current total average annual usage based on 2000 production records provided by Nipomo CSD.

(5) Source: Average summertime (May-Sep) demand is 1.28 X the average annual demand, according to consumption records provided by the District for years 1995-2000.

(6) The acreages of those properties on the large users list were not included in the demand calculation by acreage if each type of land use. Commercial properties listed with the large users for the existing demand calculation were not included on this list, but were included in the demand calculation for commercial land uses in order to determine a more typical average demand for those uses.

(7) Population without Woodlands Development/with Woodlands Development. (Demand included with large users)

(8) Woodlands development demand from EIR for development. Development is zoned REC and will include residential, commercial recreational, and other uses.

(9) Source: Average percentage of unaccounted for water from last 10 years of production and consumption records.

TABLE 4
PROJECTED SEWAGE LOADING AT BUILDOUT

Land Use	% of Water Going to Sewer
Res-Lg lot	0.36
Res-Sm lot	0.47
Office/ Comm.	0.8
Pub. Facility	0.3
RMF	0.75

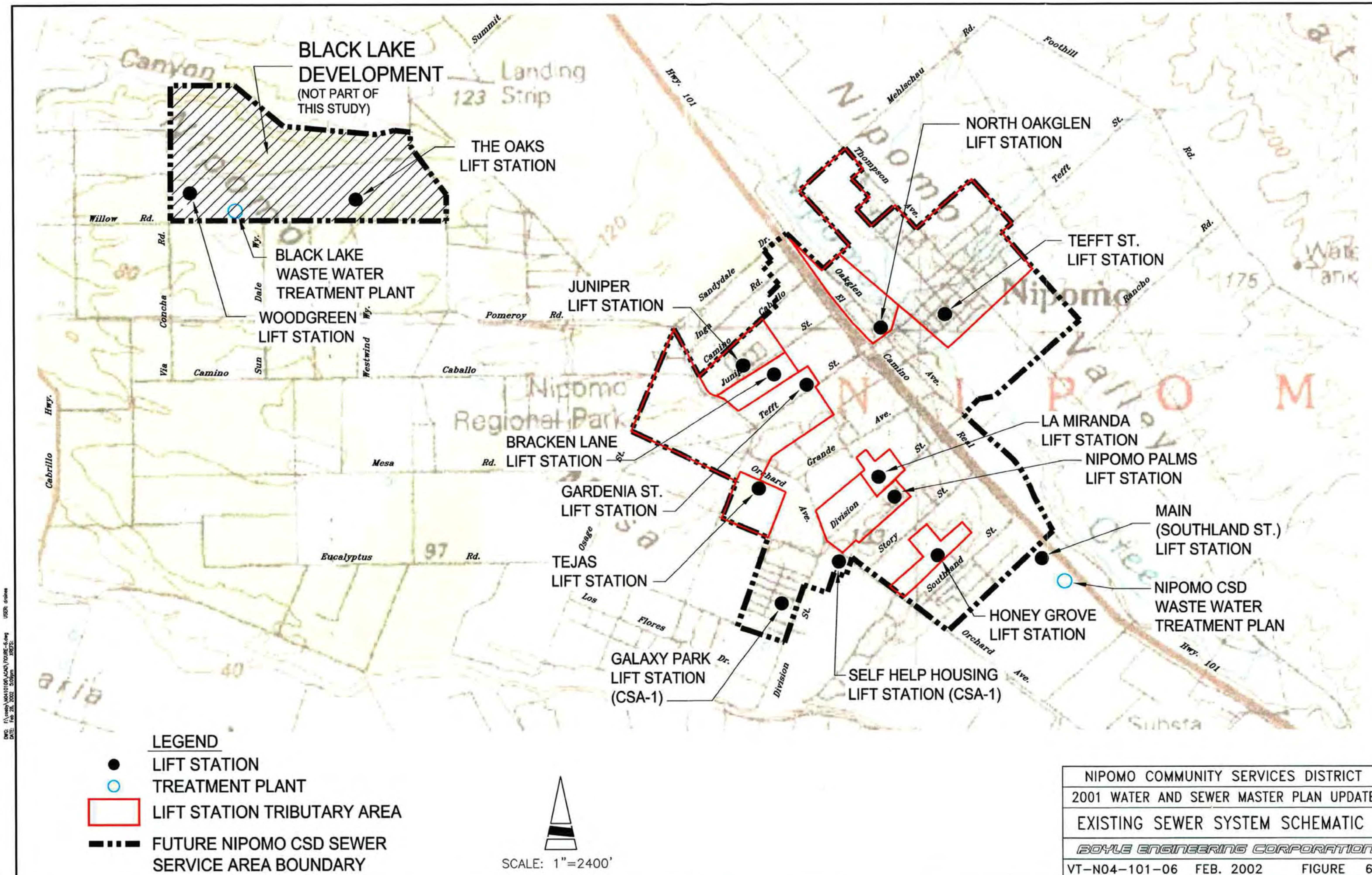
	Water Use gpd/du, or gpd/acre	Sewer Flow at % stated	
Res. Lg. lot	551	198	gpd/unit
Res. Sm lot	408	192	gpd/unit
Comm. Retail	350	280	gpd/acre
Comm. Service	310	248	gpd/acre
Office/Prof.	230	184	gpd/acre
Public Facility	530	159	gpd/acre
Resid. Multi Family	1305	979	gpd/acre

MAIN NIPOMO SEWER SYSTEM:

TRIBUTARY AREA	NO. OF LARGE LOTS	NO. OF SMALL LOTS	Commercial Retail (acres)	Commercial Service (acres)	Office/ Professional (acres)	Public Facility (acres)	Resid. Multi Fam (acres)	Est. Flow (gpd) (1)
Tefft Street Lift Station [2]	0	876	43.5	0	13.3	14.2	24.55	254,895
Juniper Lift Station	0	185	0	0	0	0	0	35,476
Bracken Lift Station	0	145	0	0	0	0	0	27,805
Gardenia Way Lift Station	0	310	0	0	9.3	19	0	64,178
North Oakglen Lift Station	0	78	0	8.6	0	1.5	0	17,329
La Mirada Lift Station	0	98	0	0	0	0	0	18,792
Nipomo Palms Lift Station	0	242	7.5	0	0	0.8	11	59,399
Tejas Lift Station	0	180	0	0	0	0	0	34,517
Honey Grove Lift Station	60	40	0	0	0	0	0	19,572
Gravity flow to Treatment Plant	88	1081	81.5	62	6.4	0	72.2	334,788
Proposed Amado Street LS	0	390	0	0	0	0	0	74,786
CSA-1		550						105,468
Galaxy Park	-	-	-	-	-	-	-	
People's Self Help Lift Station	-	-	-	-	-	-	-	
Future Totals	**148**	**4175**	**133**	**71**	**29**	**36**	**108**	**1,047,005**
								1.05 MGD

(1) Estimated flow is average dry weather flow based upon number of tributary residential units at the sewer duty factors stated above and based upon the approximate number of acres of non-residential land use at the sewer duty factors stated above.

(2) The loading for Tefft Street Lift Station includes 46,000 gpm for the high school, not shown as an acreage. The high school will generate sewage in the near term.



BLACK LAKE DEVELOPMENT
(NOT PART OF THIS STUDY)
THE OAKS LIFT STATION
BLACK LAKE WASTE WATER TREATMENT PLANT
WOODGREEN LIFT STATION
JUNIPER LIFT STATION
NORTH OAKGLEN LIFT STATION
TEFFT ST. LIFT STATION
BRACKEN LANE LIFT STATION
GARDENIA ST. LIFT STATION
TEJAS LIFT STATION
LA MIRANDA LIFT STATION
NIPOMO PALMS LIFT STATION
MAIN (SOUTHLAND ST.) LIFT STATION
NIPOMO CSD WASTE WATER TREATMENT PLAN
HONEY GROVE LIFT STATION
GALAXY PARK LIFT STATION (CSA-1)
SELF HELP HOUSING LIFT STATION (CSA-1)
Canyon
Summit
Landing Strip
Hwy. 101
Mehlschau
Rd.
Foothill
St.
Rd.
Tefft
Thompson
Ave.
Rd.
Rancho
Willow
Rd.
Rd.
Wy.
Dale
Concha
Wy.
Pomeroy
Rd.
Sandydale
Dr.
Rd.
Caballo
Inga
Camino
St.
Oakglen
El
Camino
Ave.
Real
Via
Camino
Sun
Westwind
Caballo
Nipomo Regional Park
Tefft
Ave.
Grande
Orchard
St.
Hwy.
Cabrillo
Mesa
Rd.
St.
Division
Ave.
St.
Story
St.
Southland
Eucalyptus
Rd.
Osage
Los
Flores
Dr.
St.
Division
Orchard
Ave.
Hwy. 101
LEGEND
LIFT STATION
TREATMENT PLANT
LIFT STATION TRIBUTARY AREA
FUTURE NIPOMO CSD SEWER SERVICE AREA BOUNDARY
SCALE: 1"=2400'
NIPOMO COMMUNITY SERVICES DISTRICT
2001 WATER AND SEWER MASTER PLAN UPDATE
EXISTING SEWER SYSTEM SCHEMATIC
BOYLE ENGINEERING CORPORATION
VT-N04-101-06 FEB. 2002 FIGURE 6

provides fire protection services to Nipomo. CDF was contacted for information regarding fire flow requirements throughout Nipomo. CDF reportedly uses the California Fire Code and the Insurance Services Organization guidelines to establish flow requirements.

Planning the water system, however, requires establishment of fire protection guidelines throughout the service area. To update fire protection guidelines for Nipomo, CDF personnel were contacted and the California Fire Code was consulted.

CDF personnel suggested that because new large commercial and public buildings in the Nipomo area would probably be sprinklered, the fire requirement would not exceed 1,500 gpm. However, the California Fire Code suggests that unsprinklered buildings greater than 3,600 ft^2 in area require fires flows greater than 1,500 gpm. In order to evaluate the system conservatively, the recommended fire protection guidelines from the 1995 Master Plan were left unchanged, with the exception of the requirement for Summit Station. A residential fire demand of 500 gpm is recommended for Summit Station based on the CDF Standard for San Luis Obispo County of 500 gpm for 2 ½-acre or larger residential parcels.

Table 5 summarizes recommended fire flow requirement for various types of developments. Water system improvements proposed herein are based on meeting a 1,000-gpm residential fire demand at a minimum residual pressure of 20 psi, except in Summit Station, where a 500-gpm residential fire was assumed. Similarly, the system's ability to meet a 3,000-gpm commercial and public facility fire demand at 20-psi minimum pressure was assessed.

Table 5
Fire Flow Criteria

Zoning	Req. Flow at 20 psi Minimum Pressure (gpm)	Duration (hours)	Number of Hydrants Flowing
Residential Rural	1,000	2	1
Residential Suburban	1,000	2	1
Res. Single Family	1,000	2	1
Summit Station	500	2	1
Res. Multiple Family	1,500	2	1
Commercial Retail	3,000	3	2
Commercial Service	3,000	3	2
Office & Professional	1,500	2	1
Public Facility	3,000	3	2

2.6 Peaking Factors

Water

In the preceding sections, water demand and sewage loading were described principally in terms of average annual flows. However, both water demand and sewage flow rates vary throughout the year and throughout the day.

Water demand fluctuates according to the time of year, time of day, level of tourism, and other factors. Seasonal demands are typically the highest in the months of July and August, and the lowest in the months of January and February as shown in **Figure 2**. It is not uncommon for the District to experience a "hot spell" within the summer months resulting in many consecutive days of high water use. Sizing the system to accommodate these "hot spells" is essential in maintaining system reliability.

For Nipomo, average annual water demand is approximately 1,170 gpm (excluding Black Lake). Average summertime demand is estimated to be 1,500 gpm. For purposes of assessing distribution system needs, the average summertime demands were simulated as the base demand condition.

Two demand conditions typically of interest when sizing components of water systems are the average demand during the maximum usage day of the year (referred to as the maximum day demand, MDD) and the demand during the maximum usage hour of that day (referred to as the peak hour demand, PHD). The District's distribution system should also be capable of reliably supplying the average day demand plus fire flow conditions at the minimum pressures stated in **Table 5**.

Purveyors typically do not keep daily or hourly water demand records. Nipomo is typical in this regard. Based on system assessments in communities with similar populations, land use, and climate, maximum day demand is typically twice the average summertime demand. Similarly, peak hourly demand has been found to be twice the maximum day demand.

These typical peaking factors were used to assess Nipomo's water system. For existing water demands, peaking factors are as follows:

- Average Annual Demand (ADD) = 1,170 gpm (Main system)
- Average Summertime Demand = 1,500 gpm (Main system)
- Maximum Day Demand (MDD) = 2.0 times Summertime Demand (3,010 gpm)
  Use MDD = 2.57 x ADD
- Peak Hourly Demand (PHD) = 4.0 times Summertime Demand (6,020 gpm)
  Use PHD = 5.15 x ADD

Sewer

Regarding sewage flows, three flow conditions are of interest in sizing components of the wastewater collection system:

Average Dry Weather Flow (ADWF)

ADWF refers to the average annual flow conditions in the system which generally occur during the summer at mid-day (i.e. not peak morning or evening flow conditions).

Peak Dry Weather Flow (PDWF)

PDWF refers to the peak anticipated daily flow which generally occurs in the morning or evening hours at which times residential flows reach their maximum. PDWF conditions do not include an inflow/infiltration component as would be expected during periods of rainfall.

Peak Wet Weather Flow (PWWF)

PWWF is the maximum anticipated flow rate for a given system. PWWF refers to the peak anticipated daily flow which coincides with the occurrence of inflow and infiltration into the system. Inflow and infiltration is comprised of rainfall and runoff that enters the system through manholes, infiltration into gravity collectors resulting from high groundwater, and illegal storm drain connections to the sanitary sewer system.

The District maintains records of monthly high flows as measured at the main treatment plant. During the month of July 2001, which was a dry month, the peak daily flow recorded at the plant was 0.655 MGD, which is 1.6 times the average recorded monthly flow rate. This was compared to peaking factors used in other wastewater collection system assessments.

In general, small collection systems experience wider flow variations than large systems. For example, smaller tributary areas such as residential lift station tributary areas experience high flows in the mornings and early evenings. The collection system must be sized to handle peak flows, particularly peak flows that coincide with incidents of inflow and infiltration.

Sewage loading peaking factors for Nipomo, based on averages for communities of similar size, are estimated to be:

- Peak Dry Weather Flow 2.0 times ADWF
- Peak Wet Weather Flow 3.0 times ADWF

3.0 Existing Water System

3.1 Overview

A schematic of the District water system is shown in **Figure 5**. The main water system is a single pressure zone system consisting of the following:

- Two storage sites – Standpipe Tank (1.0 MG nominal capacity, 0.26 MG effective capacity) and Twin Tanks (2.0 MG total capacity)
- 7 active wells
- A distribution system comprised of 6-, 8-, 10-, 12-, and 16-inch diameter pipes

The Black Lake development is served by a separate water system. The main water system and the Black Lake system are currently intertied only by an emergency connection. Records indicate that during the last six years (1995-2000), the intertie was only used during 2000 to supplement supply in Black Lake from the main system. Although this report does not include an analysis of Black Lake, the intertie is significant because it can represent a demand or emergency supply for the main system.

Another significant feature of the water system is that the central business district and the outlying residential rural areas of the District are separated by Highway 101 and Nipomo Creek.

Significant upgrades to the District's main water system since 1995 have included a 12-inch pipe connecting North Oakglen to Sea Street, a 12-inch freeway crossing at Tefft Street, an additional 1 MG storage tank at the Twin Tanks site with a parallel 12-inch pipe connecting the tank to Thompson and Tefft Streets, and additional piping added to create looping in Olde Town and in the Mesa area

As shown in **Figure 5**, the Twin Tanks are located at the easternmost portion of the District's water system near North Dana Foothill Road. The main downtown area of Nipomo is served by parallel 12-inch and 10-inch diameter pipes from the Twin Tanks in addition to the Church Well and the Savage Well, which is currently off-line.

The Standpipe is located off of Hetrick Avenue north of Cherokee Place. This area of the system is also supplied by the Bevington, Eureka, Olympic, Omiya, Via Concha, and Sundale wells as shown in **Figure 5**.

Regarding existing water system operations, it was noted that the Standpipe plays a key role in the hydraulic operations of the system. It fills first because it is closest to the District's largest wells and its water level can drop relatively rapidly at an average rate of emptying. Further, the Standpipe directly influences the available pressure in the Summit Station area. For example, if the Standpipe drops just one-third (12 feet below full), static pressures in Summit Station drop below 35 psi. Operationally, this means that operators try to keep the Standpipe full rather than allowing the tank level to fluctuate throughout the day to meet daytime demands.

3.2 Sources of Supply

Groundwater is currently the sole source of water to the District. Historical production from each of the District's wells is tabulated in **Appendix A**. & Knollwood '04

There are currently seven active wells used by the District for water delivery to the main system. The District has three wells that are on standby, and one that is not in operation due to water quality concerns. **Table 6** lists data for existing wells in the main water system.

PG&E tests performed in 1994 and 1995 indicate the flow rate, pumping water level, and motor efficiency for test conditions at each well. PG&E personnel were unavailable to perform tests more recently. In general, pumps with efficiencies greater than approximately 65 percent are considered to be in "good" condition by PG&E. PG&E's pump tests indicated that all of the well pumps were operating at efficiencies less than 65 percent.

Pumps with efficiencies in the 40 percent to 65 percent range are considered by PG&E to be in "fair to poor" condition. Pumps with efficiencies in this range included Black Lake #3, Bevington, Eureka, Olympic, and Omiya. However, according to District personnel, efficiencies of the Eureka, Bevington, and Olympic Wells have been improved through recent upgrades. Upgrades included new pumps and columns.

Pumps with efficiencies of less than 40 percent were considered in "poor" condition. The Church Well pump fell into this category.

Knollwood

TABLE 6
EXISTING WELL DATA

WELL	FLOW RANGE (1) (gpm)	MEDIAN FLOW (1) (gpm)	TYPICAL DEPTH TO GROUND WATER (1) (feet)	DATE DRILLED	PUMP MODEL	MOTOR TYPE	WELL STATUS
Bevington	392-410	401	317	Jun-85	Peerless Turbine	General Electric 100 HP	Active
Church	158	158	77	Jun-85	N/A	N/A 30 Hp	Active
Eureka	830-870	850	190	6/1/1979 Refurbished 1998	Anderson Turbine	General Electric 200 HP	Active
Olympic	140-150	145	287	Jun-85	N/A	N/A 40 HP	Active
Omiya	120	120	312	Jun-88	N/A Submersible	N/A 30 HP	Active
Savage	125	125	74	Jun-88	N/A	N/A	Off Line
Sundale	1000	1000	256	Aug-98	Floway Turbine - 10 BKM	DelRon Gear Drive 300 HP	Active
Via Concha	703	703	286	N/A	Peerless Turbine	US Motors 150 HP	Active
Dana #1	N/A	N/A	N/A	N/A	N/A	N/A	Stand By
Dana #2	N/A	N/A	N/A	N/A	N/A	N/A	Stand By
Hermwreck	N/A	N/A	N/A	N/A	N/A	N/A	Stand By
TOTAL (Active Wells)	3343-3411	3377					

N/A = Not Available

(1) Based on PG&E pump tests performed in 1990 and 1995, except for Eureka (based on information from District after pump was refurbished) and Sundale (Based on information from District after pump was installed).

PG&E test data was unavailable for the Black Lake #4 and Savage wells.

Upgrading the low efficiency pumps can result in a significant savings in power costs. For example, a 1994 PG&E test report indicated that Eureka Well had an efficiency of 62.5 percent. In addition, the test report stated that improving this efficiency by approximately 6.5 percent could result in an annual power saving of over $8,200. However, energy costs have risen sharply in recent years and so savings resulting from increased efficiency could be as much as double what was reported previously.

Recommendations for well pump and motor replacements are included in Section 11.

Further, the Church and Savage Wells are located near Nipomo Creek but not so close that the provisions of the Surface Water Treatment Rule apply.

3.3 Existing Storage Facilities

Four storage tanks currently serve the District's water system: the Twin Tanks, and the Standpipe. These reservoirs provide daily regulatory, fire, and emergency storage.

The Twin Tanks consists of one 1.0 million gallon tank, with a radius of 43 feet and height of 24 feet, and two 0.5 million gallon tanks, each with a radius of 30 feet and a height of 24 feet. The reservoirs have a high water elevation of approximately 548 feet. Parallel 10-inch and 12-inch diameter inlet/outlet lines along Tefft Street connect the Twin Tanks to the distribution system.

The Standpipe is a 1.0 million gallon welded steel tank, with a diameter of 44 feet and a height of 90 feet. The reservoir has a high water elevation of approximately 548 feet. The bottoms of the Twin Tanks are at 524 feet. Because the Standpipe and the Twin Tanks Reservoirs are part of the same pressure zone, the Standpipe normally operates between 524 and 548 feet, reducing the effective storage in the standpipe to 270,000 gallons. A 16-inch diameter inlet/outlet line to Hetrick Avenue connects the Standpipe to the distribution system.

The 1000 gpm Sundale well also allows the district to use groundwater as storage for fires and emergencies. The well is powered by natural gas and is able to provide pumping capacity in the case of a power outage.

3.4 Distribution and Transmission Pipelines

Plate 1 illustrates the existing water distribution and transmission system. The main distribution pipelines in the District are 8-inch, 10-inch, 12-inch and 16-inch diameter pipelines. Pipes extend east from the freeway along Tefft Street, Juniper Street, and Division Street. Water is distributed to the south through 10-inch and 8-inch piping in Pomeroy and Orchard. A 10-inch pipeline in Camino Caballo and an 8-inch pipeline in Pomeroy connect the wells to the main water system. A 10-inch pipeline connects the standpipe to Summit Station and the Mesa area.

Overall, the water system is well looped without numerous lengthy dead end pipes. One notable feature is that the main system and the Black Lake system are not intertied except for an emergency interconnection. The central business district and the outlying residential rural areas of the District are separated by Highway 101 and Nipomo Creek. Stream crossings at North Oakglen and Tefft Street, and freeway crossings at Juniper, Tefft and Division Street connect the two areas of the water system.

The material of existing pipelines within the District consists of asbestos cement, and polyvinyl chloride (PVC). According to the District, older cast iron and ductile iron pipes have been replaced with PVC. The majority of the pipelines are asbestos cement and PVC. Pipelines range in age from a few months to 35 years.

4.0 Existing Sewer System

4.1 Overview

Approximately 50% of the water service area is connected to the Nipomo community sewer system. The District operates nine sewer lift stations in addition to the lift station at the main treatment plant. These lift stations pump into the District's main collection system, where sewage flows by gravity to the wastewater treatment plant. Wastewater from two areas operated by the County of San Luis Obispo is also introduced into the District's sewer system.

The main sewage collection system consists of a 10- to 12- inch diameter gravity trunk line which extends along both sides of Highway 101 from Juniper Street south to the main wastewater treatment plant. **Figure 6** illustrates principal features of the sewage collection system.

As was previously mentioned, the Black Lake development is on a separate sewage collection and treatment system which is operated by the District. This system was not included in this study.

4.2 Lift Stations

The District's sewer system includes nine lift stations that pump sewage to the main wastewater treatment plant. There is an additional lift station located at the treatment plant headworks and two lift stations that are operated by the County of San Luis Obispo.

The lift stations and capacities are as listed in **Table 7**. The location of each lift station is shown in **Figure 6.**

Table 7
Existing Sewage Lift Stations[1]

Lift Station	Design Capacity (gpm)	Head (ft)	Force Main Dia. (in.)	Estimated ADWF/PWWF (gpm)
Main Plant	2000	N/A	6	91/2286[2]
Tefft Street	315	65	6	70/210
Juniper	175	54	4	22/66
Nipomo Palms	175	58	4	41/123
North Oak Glen	175	29	4	3/9
Bracken	110	70	4	4/12
La Mirada	190	41	4	12/36
Gardenia	111	55	4	18/54
Tejas	111	N/A	4	2/6
Honey Grove	200	N/A	4	1/3
Peoples Self Help Housing (CSA 1)[3]	150	N/A	N/A	N/A
Galaxy Park[3] (CSA 1)	300	N/A	N/A	N/A

1 Information provided by District staff.
2 PWWF at WWTP includes flow from all lift stations pumping at capacity. However, this may be an unlikely scenario. Metered WWTP flows should be monitored to verify peak flows.
3 Peoples Self Help Housing and Galaxy Park Pump Stations are operated by the County and pump to the District's sewage collection system

All lift stations are equipped with two pumps, with each pump originally capable of pumping the full capacity of the lift station. However, some of the lift station pumps are old. Some of these older pumps have lost efficiency and are no longer capable of operating at their design capacities.

4.3 Collection System

The District's sewer system is comprised of approximately 140,000 feet of pipe, including 12-inch diameter gravity collectors. All of the NCSD main sewer system is polyvinyl chloride sewer pipe and is reportedly in good condition.

The majority of the lift station tributary areas (**Figure 6**) are served by 8-inch diameter PVC gravity collectors. The CSA-1 Galaxy Park system contains some clay sewer pipe. The main collection system is comprised of 8-, 10-, and 12-inch diameter PVC, which conveys flow by gravity to the treatment plant in the southern part of the District service area.

Force mains within the system are 4-inch and 6-inch diameter. The District's main sewer system also has approximately 400 sewer access manholes.

The District's main wastewater treatment plant was expanded in the winter of 2000 to its present capacity of 2000 gpm. At that time, a flume meter was installed to monitor flow through the plant. This is the only flow meter in place on the District's sewer system.

5.0 Computer Modeling

5.1 Model Development

Hydraulic network computer models of the District's water and sewer systems were developed as part of the 1995 master plan to aid in analyzing the systems' needs and capabilities. These computer models were updated and used for analysis of water and sewer systems for this 2001 master plan update. Node and pipe diagrams were updated based on information provided by the District. Node and pipe diagrams, as well as computer diskettes containing model input files will be transmitted with the final report. Background information on each of the models follow.

Water Computer Model

The Boyle-developed computer software, Boyle NET, was used to model the District's water system. Boyle NET uses the Hazen-Williams formula as the basis for calculating headloss. Input to the model primarily consists of pipes and "nodes". Pipes are described by the length, size, and Hazen-Williams 'C' factor (or friction coefficient). Nodes are described by elevation and demand. Other water system facilities such as tanks and wells were also modeled. Pump curves were available for each well with the exception of the Olympic Well, which was modeled as a fixed supply into the network.

An AutoCAD base map of the District, including streets and lot boundaries, was provided by the District in 1995. Existing piping and water facilities were drawn on this base map. The map was then reviewed and updated by the District in 2001 to show water facilities built since 1995. This was used in laying out the pipeline network and in estimating the demand area for each water system node.

The input file for the District's existing water system is included in **Appendix C**.

The computer model is a tool by which the hydraulic performance of the system can be simulated under various conditions. The District's updated water system model was used to assess the system's ability to meet existing and projected demands.

Sewer Computer Model

Similar to the water system, a computer model was also prepared for the sewer system. Using Boyle-developed software, Boyle SWAN, the characteristics of the existing sewage collection system were simulated on the computer.

Sewage collectors were described in terms of diameter, length, and roughness coefficient (Mannings 'n' value). Manholes were described in terms of invert elevation.

The AutoCAD base map, provided in 1995, was also used to layout sewer facilities. This map was also reviewed and updated by the District to show sewer facilities installed since 1995.

Sewage loading was estimated for each manhole based on the number of residential units or land use acreage tributary to each reach. The sewage duty factors listed in **Table 2** formed the basis for estimated loading.

Each lift station tributary area was assessed separately. The main gravity collection system to the treatment plant was assessed with fixed flows input to simulate the operation of lift stations.

Appendix C also contains input files for the existing sewage collection system.

5.2 Model Calibration

After the computer models were updated, a series of calibration runs were performed to determine how closely the computer models simulate actual field conditions.

For the water system, the District's operations staff conducted a series of fire hydrant tests during April and June 2000. Six fire hydrants were tested at various locations throughout the system. For each test, the static pressure was measured with a pressure gauge at a water service or other hydrant close to the test hydrant. Then the test hydrant was fit with a pitot measuring device and opened to full flow. At full flow, the pitot measurement and the residual pressure (taken at the same location as the static pressure) were read simultaneously. District staff were also asked to record tank levels and well status at the time of each hydrant test.

The existing demands, as estimated in Section 2.0, were used to simulate demand conditions. The demands were adjusted based on the time of day and weather during which the tests were taken. Static conditions were first modeled and compared to field measured pressures. The assumed demands were then adjusted to achieve reasonable agreement with the field measurements. Once agreement was achieved, the field measured fire flow was modeled. If the model-computed residual was within five pounds per square inch (psi) of the field measured pressure, then the updated model was considered in reasonable agreement with the field measurement. Overall agreement with the field measurement is an indication that the computer model is calibrated and is modeling the actual conditions of the system with a reasonable degree of accuracy.

The results of the fire hydrant tests and calibration runs are included in **Appendix D**. The results of the water calibration exercise confirmed that the computer model is simulating existing water system performance within a reasonable degree of accuracy. Estimates of roughness coefficients and pipe size and layouts simulated in the model are considered representative of the Nipomo system.

Regarding the sewer system computer model, no flow metering was authorized to compare actual rates of flow to estimates. Lift station run time estimates were compared to estimated tributary area flows to achieve a reasonable degree of accuracy for each lift station.

Sewer model "calibration" also consisted of comparing modeled capacity problems with those deficiencies observed by District staff. Problems observed by the District were confirmed by the computer model.

The District may wish to consider temporary flow metering during the rainy season to confirm the peaking factors estimated herein. Such temporary wet weather flow metering would also help identify which areas of District sewage collection system are subject to infiltration and inflow (I/I).

6.0 Design Criteria

This section summarizes the criteria that were used as a basis for analyzing the water and sewer systems' adequacy to meet existing and projected demands.

6.1 Water System Design Criteria

Design criteria for the water system are:

Supply Facilities

In order to ensure reliability, the American Water Works Association (AWWA M32) suggests that supply facilities should be sized to meet maximum day demand with the second largest well out of service. Title 22 also presents a method for sizing supply facilities based on the number of service connections and the maximum day demand. The AWWA method provides a higher level of water system reliability, so it was used to size supply for this study.

Storage Capacity

Storage capacity is required to provide daily regulatory storage, fire storage, and emergency storage. The following criteria were used to estimate these volume requirements:

Regulatory Storage

Regulatory storage is the volume of storage recommended to meet peak daily demands in excess of what water supplies are capable of producing. Supply facilities are sized to supply the maximum day demand (MDD) as stated above. For Nipomo, recommended regulatory storage volume is "maximum daytime demand" (i.e. 1.5 x MDD) less the available rate of supply over a 14-hour demand period, as follows:

- Regulatory Storage Volume = (1.5-1.0) x (MDD) x 14 hrs.

Emergency Storage

Emergency storage is the volume of storage recommended to ensure ongoing supply in the event of a water supply emergency. Emergency planning guidelines suggest that water facilities should be capable of sustaining basic sanitary needs for 72-hours. Thus, emergency storage for Nipomo has been estimated as the volume of water needed to provide a minimum of 50 gpcd for 72 hours.

Fire Storage

Fire storage is the volume of storage recommended to meet fire flow requirements for the duration indicated by the fire protection agency. The fire flow requirements listed on **Table 5** form the basis for the fire storage requirements in the District water service area. The highest requirement governs the fire storage requirements in that particular zone.

To analyze the adequacy of the distribution pipelines the criteria shown in **Table 8** were used. These criteria reflect the anticipated change to the Title 22 Waterworks Standards which could raise the minimum service pressure required to 30-psi, at all times, except during emergencies. Recent discussions indicate that this change may not occur. However, these design criteria also reflect the District's intention to plan for reliable water service. The criteria are typical of those followed by other reliable water systems in the area.

Table 8
Water System Design Criteria

Demand Condition	Min Pressure	Max Static Pressure	Velocity
Existing Criteria (1995 Master Plan)			
Ave Day Demand (ADD)	40 psi	100 psi	5 fps
Peak Hour Demand (PHD)	30 psi	100 psi	10 fps
Max Day Demand + Fire Flow (MDD+FF)	20 psi	100 psi	10 fps
Future Criteria (2001 Master Plan)			
Ave Day Demand (ADD)	45 psi	100 psi	5 fps
Peak Hour Demand (PHD)	35 psi	100 psi	10 fps
Ave Day Demand + Fire Flow (ADD+FF)	30 psi	100 psi	10 fps

The resistance to flow in a pipeline is represented by the Hazen Williams 'C' coefficient. 'C' values characterize the friction losses associated with the interior pipe wall and are a function of pipeline material, condition, and age. For pipelines with identical diameters and lengths, the lower the 'C' value, the higher the headloss. 'C' values were estimated based on the following criteria:

- All pipes existing before 1995: C = 125
- All pipes built after 1995 and proposed pipes: C = 135

These estimates of friction coefficients were used in calibrating the water computer model and found to be reasonable estimates for Nipomo.

Other Design Criteria

Other design criteria utilized in assessing the District's water system are:

- Provide fixed emergency power generators for critical wells, particularly if seeking credit for emergency storage volume.
- Minimum new distribution main diameter is 8-inches; 6-inch minimum in cul-de-sac streets that do not serve a fire hydrant.
- Establish a goal of limiting unaccounted for water to 15% of production.

6.2 Sewer System Design Criteria

Flow Velocities

Regarding flow velocities, 2 feet per second minimum velocity should be maintained under peak dry weather flow conditions, and 10 feet per second should be the maximum velocity at peak wet weather flow conditions.

Flow Depth

Permissible flow depth in terms of depth (d) relative to pipe diameter (D):

- ☐ d/D = 0.5 maximum at average dry weather flow
- ☐ d/D = 0.75 maximum at peak dry weather flow
- ☐ d/D = 0.9 maximum at peak wet weather flow

Roughness Coefficient

The sewer model calculations are based on Manning's equation, which uses "n" as a factor for pipeline roughness. Pipeline roughness coefficient 'n' estimated to be 0.011 for existing collectors.

Manhole Depth

Limit proposed collector and manhole depth to reasonable construction limitation (approximately 15 feet deep). Consider installation of a lift station at greater depths.

Lift Stations

Lift stations must have sufficient capacity to handle the peak wet weather flow condition. Small lift stations (100 gpm and less) should be equipped with two pumps. Larger lift stations should be equipped with three pumps. In all cases, lift stations should be capable of handling peak wet weather flow with one pump out of service.

Force Mains

Force mains should be sized to maintain 3 to 7 feet per second flow velocity.

Wet Well Volumes

Wet well volumes should be sized to minimize pump start/stops while avoiding septic conditions associated with infrequent purging.

Other Design Criteria

Other design criteria used in assessing the District's sewer system are:

- Provide fixed emergency power generators for lift stations, particularly if alarm system is lacking or if consequences of an overflow would be significant.
- Minimum new gravity collector diameter to be 8-inches.
- Eliminate the need for lift stations where practical.
- Continue to provide telemetric controls among lift stations to a control center.

These criteria were applied to the assessment of the existing water and sewer systems and in making recommendations for future system upgrades.

7.0 Analysis of Existing Water System

7.1 Sources of Supply

The design criteria stated in Section 6.0 requires that sources of supply be sized to meet maximum day demands with the second largest well out of service.

For Nipomo, current maximum day demand, excluding Black Lake, is estimated to be 3,010 gpm.

The active wells in the main water system, listed in **Table 6,** have a total estimated capacity of 3,380 gpm. Thus, the District needs nearly all active wells to be operable to meet the estimated maximum day demand.

The three largest wells are the Eureka Well (850 gpm), Sundale Well (1000 gpm), and the Via Concha Well (700 gpm). With the second largest well out of service, the total estimated capacity of the system is 2,530 gpm. By the supply source criteria stated herein, the District should have an estimated 480 gpm additional well capacity to improve reliability to meet the needs of existing customers, as shown in the calculation below:

Existing Capacity	3380 gpm
MDD	3010 gpm
Net Existing Well Production Surplus	**370 gpm**
Less second largest source (Eureka Well)	-850 gpm
Net Existing Well Production Deficit	**-480 gpm**

Another item of note in examining the existing system performance is the fact that the pump curves and pumping water levels given for the District wells indicate that the majority of the well pumps are operating at low efficiencies. The Eureka, Bevington and Olympic wells were recently upgraded. They are now operating close to their original design efficiencies. The District is encouraged to re-evaluate proper pump and motor sizing for all of the active wells. Current efficiency tests should be conducted of the District's pumps and motors.

To more accurately estimate the District's Maximum Day Demand, the District could add totalizing flow meters to each well. Together with monitoring daily water storage tank elevations, the well production records could allow NCSD to more accurately calculate actual daily water production and consumption.

7.2 Storage Facilities

By the criteria stated in Section 6.0, recommended storage volume to meet existing needs for the main Nipomo system is as shown in **Table 9**:

Table 9
Existing Storage Requirements

Storage Component	Criteria	Volume Recommended
Regulatory	(1.5 – 1.0) x MDD over 14 hours	1.26 MG
Emergency	50 gpcd for 3 days Population 10,790	1.62 MG
Fire	3,000 gpm for 3 hours	0.54 MG
Total Storage Requirement		**3.42 MG**

The District currently has a total of 3.0 MG of storage in place. However, only the volume of storage in the Standpipe above the bottom of the Twin Tanks can be considered useful storage, as shown in **Table 10**. The total useful storage capacity is 2.28 MG. Thus, an additional 1.14 MG of storage is recommended to reliably meet the needs of existing customers.

One option to providing additional above-grade storage is to, in a sense, utilize the groundwater basin as emergency storage. To do so reliably, natural gas driven engines or fixed emergency power generators should be maintained at key wells to ensure their availability during a prolonged power outage. The Sundale Well, installed in 1998, has a capacity of 1000 gpm and uses natural gas as its energy source. It has the capacity to provide all of the required emergency storage, or one third of the fire storage. Thus, a credit of 1.62 MG emergency storage or 0.18 MG fire storage can be applied. **Table 10** indicates that if the Sundale Well can be used to provide emergency storage, the District has sufficient storage to meet existing needs.

Table 10
Existing Storage Capacity

Facility	Total Storage Volume	Useful Storage Volume
Twin Tanks	2.0 MG	2.0 MG
Standpipe	1.0 MG	0.28 MG
Subtotal	3.0 MG	2.28 MG
Credit for [1] Sundale Well	1.62 MG	1.62 MG
Required Storage	3.42 MG	3.42 MG
Surplus	**1.20 MG**	**0.48 MG**

1 Assumes that Sundale Well can reliably provide 1000-gpm of emergency water supply.

The Standpipe plays a key role in the hydraulic operations of the system. It fills first because it is closest to the District's largest wells and its water level can drop relatively rapidly at an average rate of emptying. Further, the Standpipe directly influences the available pressure in the Summit Station area. If the Standpipe drops 12 feet, static pressures in Summit Station drop below 35 psi. Operationally, this means that operators try to keep the Standpipe full rather than allowing the tank level to fluctuate throughout the day to meet daytime demands. NCSD personnel indicated that the system typically operates within the top 12 feet of its storage reservoirs. Hydraulic analysis completed for this master plan assumed minimum operational storage tank levels of 536.4 feet.

An evaluation was completed in November 2000 of the water service to the Summit Station area. In many cases, low pressures are a result of on-site piping that does not conform to Uniform Plumbing Code (UPC) guidelines. The UPC recommends sizing on site plumbing according to the distance from the meter to the point of use. A two-step solution to the low pressure problems was presented as a result of the November 2001 study. The first step was to establish a program providing homeowners with homes at or above 425 feet in elevation with the opportunity to purchase and install private inline booster pumps with the financial help of the District. The second step was to evaluate the creation of a new pressure zone as part of this master plan update.

One of the options evaluated as a result of the second recommendation is that the District operate the Summit Station area as a separate hydraulic grade zone and provide a booster station with hydropneumatic tank to serve the residences. Approximately 50 residences lie at elevations at or above 425 feet. The advantages of serving these customers by a separate booster station are that:

- Fluctuations in water pressure could be minimized,
- Overall pressure could be raised to a hydraulic grade of approximately 600 feet such that minimum static pressure would be raised to 60 psi, and
- Fluctuations in the elevation of the Standpipe would not significantly influence water pressure at Summit Station.

Disadvantages of installing a separate booster station are:

- Capital and operations cost associated with the construction and operation of a booster station,
- Pressure reducing station would be required to serve lower areas of Summit Station, and
- Increased system complexity (i.e. operation of a two-zone water system).
- Additional pipelines would be needed to complete looped water distribution system to each pressure zone.

Other Considerations are:

- Level fluctuations at the Standpipe would continue to affect other areas near the standpipe.
- Does not address pressure drops between meter and house for connecting pipelines that do not comply with Uniform Plumbing Code Requirements.

7.3 Distribution System Assessment

The BoyleNET hydraulic network computer model was used to simulate the ability of the existing distribution system to meet existing needs.

Following the design criteria stated in Section 6.0, a series of modeling runs were made. The results discussed below are summarized in **Table 11**.

Average Day Demand

Average daily demands were modeled with both tank facilities assumed to be full (548 feet hydraulic grade line) and all of the wells off. The average hydraulic gradient throughout the system was approximately 544 feet, with the lowest pressure of 38 psi in the Summit Station area. Pressures exceeded 100 psi in the vicinity of the wells along Willow Road. No deficiencies were noted with regard to meeting average day demand.

Peak Hour Demand

Peak hourly demands were simulated throughout the system with tanks set at the bottom of the regulatory storage (536.4 feet) and all of the wells operating. The average hydraulic gradient dropped to approximately 500 feet with the lowest pressure of 33 psi in the Summit Station area. Flow velocities were favorable throughout the system. The maximum modeled pressure was nearly 200 psi in the vicinity of the Eureka Well.

Fire flow Conditions

One of the main purposes of this Master Plan Update is to evaluate the ability of the water system to meet a possible change in the Title 22 pressure requirement. Title 22 currently requires that the District provide a minimum 20-psi service pressure at the main. A possible change to the Title 22 requirements would increase this requirement to 30 psi. The pressure must be maintained at all times, except during an emergency. A single structure fire is not considered an emergency.

Table 11
NIPOMO COMMUNITY SERVICES DISTRICT
WATER SYSTEM MODEL RESULTS - 2001 MASTER PLAN UPDATE - EXISTING DEMAND

Pressures (psi)

AREA	LOCATION	ELEV. (ft)	Existing ADD Wells Off Tanks at 548'	Existing PHD All Wells On Tanks at 536.4'	Exisitng ADD + 3000 gpm FF at Division and Orchard Sundale On Tanks at 536.4'	Exisitng ADD + 500 gpm FF at end of Poppy Lane Sundale On Tanks at 536.4'	Existing ADD Wells Off Tanks at 548' Improvements[1]	Existing PHD All Wells On Tanks at 536.4' Improvements[1]	Exisitng ADD + 3000 gpm FF at Division and Orchard Sundale On Tanks at 536.4' Improvements[1]	Exisitng ADD + 500 gpm FF at end of Poppy Lane Sundale On Tanks at 536.4' Improvements[1]
Summit St	Summit Station and Futura Lane (node414)	458	38	33	33	30	71	64	66	53
Summit St	End of Poppy Lane (node424)	459	38	32	33	25	71	63	65	33
West Mesa	Calimex and Pomeroy (node203)	343	83	78	70	81	83	77	69	80
Olde Towne	Thompson and Eve (node283)	316	85	66	67	81	85	70	68	82
Mesa	Tefft and Orchard (node137)	395	63	36	29	60	64	48	43	60
Mesa	Black Hawk and Perigrine (node323)	404	59	30	18	56	60	39	30	56
Mesa	Trevino and Archer (node362)	408	58	37	35	54	58	42	39	55

NOTES:
1-Improvements include those recommended to meet existing demand (See **Plate 1**).

A series of average day demand plus fire flow model runs were conducted. Overall, the existing system is found to be well laid-out to meet current residential fire flow requirements. With a fire flow of 500 gpm at Summit Station and Futura Lane, a residential pressure of 28 psi was modeled during average day demand conditions.

Commercial, public facility, and multi-family housing fire flows presented a different case. The capacity of the system to meet the 20 psi minimum service pressure requirement while providing the recommended 3000-gpm fire flow is marginal in some areas. With a 3000-gpm fire flow from hydrants near Division Street and Orchard Avenue, pressure at the highest elevations near Grande Street could drop to 18 psi.

Improvements to the system since 1995, including a freeway crossing at Tefft Street, a creek crossing near North Oakglen Avenue, a new Twin Tanks storage tank and connecting pipe, and other miscellaneous piping along Tefft Street and Grande Avenue have increased the system's ability to transmit large fire flows. However, as demand increases additional improvements will be needed to maintain the required 20-psi minimum service pressure.

The system would not be able to maintain a 30-psi service pressure in all water mains while providing the fire flows described. Providing the capacity needed to maintain a minimum service pressure of 30-psi will improve system reliability, by providing a "margin of error", and enable the system to comply with possible Title 22 revisions. Improvements needed to raise the minimum service pressure of the existing system to 30 psi during all existing demand conditions were evaluated.

In addition to the specific demand conditions stated above, overall system reliability was also assessed. Specifically, the central business district and the outlying residential rural areas of the District are separated by Highway 101 and Nipomo Creek. Additional east to west piping is recommended to improve system reliability as well as to improve distribution.

Recommended improvements to meet existing demands are illustrated on **Plate 1**. A listing of the recommended facilities, as well as priorities is included in Section 12.0.

Water Service for Higher Elevation Structures

It has been noted that some developments in the service area have structures that lie at a significantly higher elevation than the District's distribution system. For example, a home that rests 15 feet higher than the District's water main will have a static water pressure that is 6 to 7 psi less than the pressure in the main. A home that is located 94 feet higher than the meter will have a static water pressure that is 41 psi lower than the pressure in the main. This has resulted in some pressure complaints and concerns regarding fire fighting.

The District has no control or authority governing building pad elevations. However, the County Building Department can enforce the *Uniform Plumbing Code (UPC)* requirements regarding water pressure reductions between the meter and the residence or other structure. It is therefore recommended that the District continue enforcing its policy of meeting water pressure and fire flow requirements at the main and that owners of structures that lie at higher elevations be alerted to the need to provide larger diameter service connections and private water booster pumps or other means to maintain adequate pressures. Specifically, development of lots higher than 425 feet of elevation should require "elevation" agreements. The developer should agree to construct pipeline connections that comply with the UPC requirements, and to install either private booster water pumps to those homes, or a larger pump to serve several homes as the need dictates. These "elevation" agreements can be recorded with the property deeds, alerting future property owners to the service limitations that have been established. The main area of concern is Summit Station. Recommendations to improve existing pressures at homes in Summit Station are included in Section 12.0.

8.0 Analysis of Existing Sewer System

8.1 Lift Stations

Table 7 lists features of the existing lift stations excluding those in Black Lake, including estimated average dry weather and peak wet weather flows. Each of the nine tributary lift stations currently operated by the District in the main sewer system appears adequate to meet existing sewage flows with only one pump running. However, the capacity of the Main WWTP Lift Station is not large enough to handle peak wet weather flows if all other lift stations are operating at capacity at the same time as peak gravity flows occur.

Most of the lift stations appear adequately sized to meet existing needs. However, many of the lift stations are old and have lost capacity as efficiency has declined. All of the lift stations, with the exception of the Tefft and WWTP Lift Stations, appear to have design capacities that are at least double the estimated peak wet weather flows. Operationally, this means that:

1. The wet wells are not permitted to fill and the relatively large pumps run for short periods, or
2. The wet wells are permitted to fill and conditions become septic in the wet well between pump starts. Odor and quality problems could result.

In either case, the District should re-evaluate wet well volumes, pump and motor sizes, pump efficiency, and on/off levels in the stations listed above.

Section 6.0 listed criteria for lift station design as follows:

- Small stations (up to 100 gpm) should be equipped with two pumps.
- Larger stations should be equipped with two or three pumps depending on the flow characteristics of the pumps. The District has indicated that all of its lift stations are currently equipped with two pumps.

In both cases, lift stations should be capable of handling peak wet weather flows with one pump out of service.

In January 2001, a report was completed by Engineering Development Associates that outlined potential options for connecting the Montecito

Verde II development to NCSD's sewer system. The District currently plans to use a 12-inch gravity collector connecting to the development near Crystal Way and Meredith Avenue. The 12-inch collector would tie into an existing manhole in Story Street.

As part of the project, a 12-inch gravity collector will also be installed to bypass the Nipomo Palms Lift Station. The connection will tie into a low manhole near the lift station and then head east under a swale between Story and Division Street to the Montecito Verdi II collector in Crystal Way. This will allow wastewater from the Nipomo Palms Lift Station area to flow by gravity to the treatment plant.

Concurrent with the elimination of the Nipomo Palms Lift Station, the District plans to reconnect the force main from CSA-1 to a manhole at Division Street and Orchard Road. This would route CSA-1 flows through the Nipomo Palms area to the newly connected gravity collector. An upgrade of the sewer lines in between the manhole where the CSA-1 force main is reconnected and the Nipomo Palms Lift Station will be required to convey the additional flow from CSA-1.

8.2 Collection System Assessment

The BoyleSWAN sewer model was used to assess the existing collector system capacity. Results of the computer simulations are:

Tributary Area	Results
La Mirada LS	No capacity problems noted
Bracken LS	No capacity problems noted
North Oak Glen LS	No capacity problems noted
Nipomo Palms LS	No capacity problems noted
Gardenia LS	No capacity problems noted
Juniper	No capacity problems noted
Honey Grove LS	No capacity problems noted
Tejas LS	No capacity problems noted
Tefft Street LS	No capacity problems noted
Main Gravity Zone to the Treatment Plant	Division Street 8" inadequate; Frontage Road 12" from Division Street south inadequate

Overall, the existing collector system has adequate capacity to handle average and peak wastewater flows. The exceptions to this are areas along Division Street and the Frontage Road as noted above. Capacity problems on Division Street can be addressed by routing the CSA-1 lift stations flow through the Nipomo Palms lift station tributary area and constructing the new gravity collector to eliminate the need for the Nipomo Palms lift station. If CSA-1 flows are not routed through the Nipomo Palms area, upgrades will be required to the lines in Division and in the Frontage Road, from Division to Story. Piping upgrades are also currently needed along the Frontage Road south of Story Street to the Main Lift Station. These are illustrated in **Plate 2**.

9.0 Evaluation of Future Water System

9.1 Sources of Supply

Future water demand for build-out within the main service area boundary illustrated in **Figure 5** and **Plate 2** (excluding Black Lake) is estimated to be 4,910 AFY, more than 2 ½ times the current annual demand. Future maximum day demand is estimated to be 7,820 gpm.

Nipomo's active wells have an estimated combined capacity of 3,380 gpm. The well production capacity will be increased by several new wells to be provided by developers. However, the well production capacity will be less than the estimated MDD, even with all sources operating. If the second largest well is assumed inoperable (per the design criteria outlined in Section 6.0), the deficit will be even greater. The comparison of build out production and demand is as follows:

Existing Pumping Capacity	3380	gpm
Additional Potential Water Sources:		
Supplemental Water Supply	1860	gpm
Hermreck Well	200	
Dana Elementary Well	150	
Woodlands (if developed and annexed)	2000	
Forecast Future Water Production Capacity	7590	gpm
MDD	7820	gpm
Net Future Water Production Deficit	**- 230**	**gpm**
Less second largest future source (Sundale Well)	-1000	gpm
Net Future Water Production Deficit	**-1230**	**gpm**

Additional supplies totaling 1230 gpm will be needed in addition to those listed in order to reliably meet the future needs of the District. Identification of potential sources of water was not a part of the scope of this report. Sources were identified as part of a concurrent study, *Draft Evaluation of Water Supply Alternatives*, by Kennedy Jenks Consultants. However, the potential sources listed above were considered in order to complete analysis of the buildout system.

The hydraulic modeling performed for this Master Plan update assumed that 1860 gpm of supplemental water would be available at a turnout near the high school. However, the Kennedy-Jenks water supply study now recommends that the supplemental water be accessed from the south at Santa Maria, connecting to the existing system near Orchard Road and Southland Street. Results of the analysis of the water system under buildout conditions are summarized in **Table 12**.

9.2 Distribution and Transmission Pipelines

The following improvements are recommended in order to serve new customers and provide the higher minimum system pressures shown in **Table 8** (Section 6.0). These improvements are in addition to those discussed in Section 7. These facilities are illustrated in **Plate 1**.

Transmission from Twin Tanks to Olde Towne Center and Mesa Area

Increased demand will require additional storage at the Twin Tanks and piping capacity to transmit water across town.

Transmission from Standpipe and Future Storage Tank

Increased demand will require additional storage. A future 1.0 MG storage tank, east of Summit Station is proposed to serve the main (548 ft) pressure zone. Piping will be needed to increase capacity from the Standpipe and future storage tank to the Mesa area.

Transmission through Mesa Area

Increased demand will require improvements in transmission of water through the Mesa area west of Highway 101. Loops will need to be closed, and capacity will need to be added by paralleling some lines.

Extension of System to Future Developments

Water service to new developments will require expansion of the District's distribution system. These distribution lines will be funded and built as needed by those developers wanting to connect to NCSD's existing water system.

A prioritized list of improvements is included in Section 11.0. It should be noted that the recommendations are based on the future water supply and storage recommendations shown on **Plate 1**.

Table 12
NIPOMO COMMUNITY SERVICES DISTRICT
WATER SYSTEM MODEL RESULTS - 2001 MASTER PLAN UPDATE - BUILDOUT DEMAND

Pressures (psi)

AREA	LOCATION	ELEV. (ft)	Buildout ADD Wells Off Tanks at 548' Improvements[1]	Buildout PHD All Wells On Tanks at 536.4' Improvements[1]	Buildout ADD + 3000 gpm FF at Division and Orchard Sundale On Tanks at 536.4' Improvements[1]	Buildout ADD + 500 gpm FF at end of Poppy Lane Sundale On Tanks at 536.4' Improvements[1]	Buildout ADD Wells Off Tanks at 548' Improvements[2]	Buildout PHD All Wells On Tanks at 536.4' Improvements2	Buildout ADD + 3000 gpm FF at Division and Orchard Sundale On Tanks at 536.4' Improvements2	Buildout ADD + 500 gpm FF at end of Poppy Lane Sundale On Tanks at 536.4' Improvements2
Summit St	Summit Station and Futura Lane (node414)	458	70	51	64	56	38	28	33	33
Summit St	End of Poppy Lane (node424)	459	69	50	64	35	38	25	32	28
West Mesa	Calimex and Pomeroy (node203)	343	83	62	76	80	85	63	77	80
Olde Towne	Thompson and Eve (node283)	316	90	71	83	85	91	72	84	86
Mesa	Tefft and Orchard (node137)	395	64	37	53	60	65	38	54	60
Mesa	Black Hawk and Perigrine (node323)	404	60	30	45	56	61	31	46	56
Mesa	Trevino and Archer (node362)	408	58	34	50	55	60	35	51	55

NOTES:

1-Improvements include those recommended to meet buildout demand (See **Plate 1**).

2-Improvements include those recommended to meet buildout demand, except for the hydropneumatic pump station and pressure zone in Summit Station (See **Plate 1**). Improvements, including individual booster pumps, would be needed at selected services.

Revisions to Distribution System Recommendations

Additional water supply options, not considered in this analysis, were recommended in the *Draft Evaluation of Water Supply Alternatives*, by Kennedy/Jenks Consultants. The District has indicated that it will take some time to consider and develop future water supplies. The identification of water sources is needed before demand exceeds supply. When the planned water sources are identified, additional distribution system analysis should be completed to confirm and identify future distribution and storage system improvements.

9.3 Storage Facilities

By the criteria stated in Section 6.0, recommended storage volume to meet future water demands of the main Nipomo water system is as shown in **Table 13**.

Table 13
Future Storage Requirement

Storage Component	Criteria	Volume Recommended
Regulatory	(1.5 – 1.0) x MDD over 14 hours	3.28 MG
Emergency	50 gpcd for 3 days Population 24,700	3.71 MG
Fire	3,000 gpm for 3 hours	0.54 MG
Total Storage Requirement		**7.53 MG**

The District currently has a total of 2.28 MG of useful storage in place. Thus, an additional 5.25 MG of storage is recommended to reliably meet the needs of existing and future customers. Additional above-grade storage is recommended to be installed adjacent to the existing Twin Tanks, and at a location in Los Berros Canyon east of Summit Station. Siting and evaluation of a location for a storage tank east of Summit Station is not part of the scope of this study. However, the elevation needed for such a tank to serve the main (548') pressure zone would be roughly 525 feet at the base. The only areas above 525 feet elevation are east of Highway 101.

The Sundale Well, installed in 1998, has a capacity of 1000 gpm with a natural gas powered engine. As discussed in Section 7.0, a pump with a natural gas driven engine can provide a reliable source of emergency supply, reducing the emergency storage requirement. At least 859 gpm of well capacity would need to be equipped with an emergency power supply in order to provide emergency water from the groundwater supply. Sundale Well (1000 gpm) has the capacity to provide all of the required emergency storage, or one third of the fire storage from groundwater. Thus, a credit of up to 3.71 MG emergency storage or 0.18 MG fire storage can be applied.

If the proposed tanks are added at the Twin Tanks and east of Summit Station as shown on **Plate 1**, and if Sundale Well is used as emergency storage, NCSD should have sufficient storage to handle buildout needs, as shown in **Table 14**.

Table 14
Future Storage Capacity

Facility	Total Storage Volume	Useful Storage Volume
Twin Tanks	2.0 MG	2.0 MG
Standpipe	1.0 MG	0.28 MG
Total Existing	**3.0 MG**	**2.28 MG**
Proposed Twin Tanks Tank	1.0 MG	1.0 MG
Proposed Los Berros Tank	1.0 MG	1.0 MG
Total Proposed	**2.0 MG**	**2.0 MG**
Subtotal	**5.0 MG**	**4.28 MG**
Credit for Sundale Well [1]	+ 3.71 MG	+ 3.71 MG
Required Storage	– 7.53 MG	– 7.53 MG
Surplus	**1.18 MG**	**0.46 MG**

1 Assumes that Sundale Well can reliably provide 1000-gpm of emergency water supply.

10.0 Evaluation of Future Sewer System

10.1 Lift Stations

As was described in Section 2.0, average daily sewage flow is projected to increase from 0.42 MGD in the main Nipomo system to 1.05 MGD at build-out. Estimated capacities and projected tributary flows to each lift station, excluding those in Black Lake, are listed in **Table 15**.

Table 15
Projected Lift Station Flows

Lift Station	Current Estimated Capacity (gpm)[1]	Projected Flows - ADWF/PWWF (gpm)[2]
La Mirada	190	13 / 39
Bracken	110	19 / 57
North Oakglen	175	12 / 36
Nipomo Palms	175	41 / 123
Gardenia	111	45 / 135
Juniper	175	25 / 75
Tejas	111	24 / 72
Honey Grove	200	14 / 42
Tefft Street	315	177 / 531
Proposed Amado Street	N/A	52 / 156
Galaxy Park (CSA 1)	300	N/A
Peoples Self Help Housing (CSD 1)	150	N/A
Main Gravity Zone to the Treatment Plant	2000	268 / 3242[3]

1 Refer to Table 7

2 Refer to Table 4

3 PWWF at WWTP includes flow from all lift stations pumping at proposed buildout capacity. However, this may be an unlikely scenario. Metered WWTP flows should be monitored to verify peak flows.

The tributary areas that correspond to the lift station flows listed above are illustrated on **Plate 2**. The following improvements are recommended:

Amado Street Lift Station

One new lift station is proposed to serve the area shown in **Plate 2**. The proposed Amado Street Lift Station is proposed to serve the residential suburban and agricultural area (based on future conversion to residential zoning) east of Highway 101.

Tefft Street Lift Station

Regarding the Tefft Street Lift Station, District staff has observed that the existing wet well volume is inadequate, particularly to handle flows during power outages. Nipomo High School and the Hermreck Development will be completed in the near term and will increase the peak wet weather flow to the Tefft Street Lift Station from 209 gpm to 365 gpm. The current capacity of the lift station is 315 gpm. An additional 315 gpm of capacity is recommended to meet buildout needs. Expansion of the Tefft Street Lift Station is recommended as an improvement to meet existing need because the High School is under construction. Upgrades should be completed as soon as possible, so that the Lift Station is ready for the additional flows. Increased wet well volume or provisions for fixed, emergency power generation are also recommended.

Gardenia Lift Station

The Gardenia Lift Station will also need to be upgraded to handle buildout peak wet weather flows. Existing peak flow is estimated at only 54 gpm, compared to a lift station capacity of 111 gpm. However, there is potential for fill-in development within the lift station tributary area. Buildout peak wet weather flow is projected to be 134 gpm. Increasing the lift station capacity to 150 gpm is recommended to meet buildout needs.

Main Lift Station

All of the other tributary lift stations appear to have sufficient capacity to handle buildout flows. However, the lift station at the WWTP does not currently have the capacity to handle buildout peak wet weather flows if all the lift stations are operating at capacity during peak flow. With all lift stations discharging flows equal to their proposed capacities at the same time that gravity flows are at their peak, the buildout peak flow at the WWTP could be as much as 3242 gpm. However, the probability of all of the lift stations operating at peak capacity at the same time that gravity flows are peaking is remote.

The meter installed at the main lift station should help the District determine when peak flows exceed lift station capacity. Another pump is recommended for the lift station at the WWTP, when peak metered flows exceed 1500 gpm.

10.2 Collection System Capacity

The Boyle SWAN computer model was used to simulate projected wastewater flows throughout the existing collection system. Proposed lift stations and recommendations for capacity upgrades at the Tefft Street Lift Station were simulated.

The only deficiencies noted in the existing collection system were in the gravity collectors that comprise the main zone already addressed in Section 8. In addition to the improvements recommended to meet existing needs, additional upgrades are recommended for the line in the Frontage Road, between Division and Story Streets, the line crossing the freeway at Bermuda Street, and the line in South Oakglen south of Amado.

Improvements needed to meet projected community sewer needs are illustrated in **Plate 2**. Local collectors needed as development occurs will follow future street patterns and therefore cannot be accurately illustrated in a master plan.

11.0 Recommended Improvements

11.1 Estimated Costs and Priorities

Sections 7.0 through 10.0 discussed improvements needed to meet existing and projected water and sewer needs. Recommended improvements are summarized herein and budgetary cost estimates are provided for recommended facilities.

Boyle recommends that the District embark on a capital improvement program. Recommended improvements are illustrated on **Plates 1 and 2**.

Cost Estimates

Opinions of probable construction cost are included for recommended pipeline construction and other improvements. The actual costs of specific projects will vary depending on many factors such as site conditions, the extent of existing utilities, environmental impact mitigation, and market conditions that are both unknown and outside the control of the District or Boyle.

Pipeline construction costs include materials, excavation, installation, backfill, valves and fittings (water), manholes (sewer), pavement replacement, and traffic control. A 25 percent contingency for design engineering, and permitting, and a 20 percent contingency for construction, and general and administrative costs is included in these estimates. Right-of-way acquisition costs are *not* included in the estimates.

Pipeline costs, including contingencies, are based on the following unit costs:

Type	Diameter (inches)	Unit Cost ($/LF)
PVC Waterline	6	95
	8	110
	10	130
	12	150
	14	180
	16	210
Gravity Sewer Line	8	120
	10	140
	12	165
	15	190
	18	260
	21	295
Sewer Force Main	4	110
	6	120

The estimated cost to construct additional water storage is $0.80 per gallon which includes site grading, foundation, tank fabrication, erection, perimeter road, and fence. Sites which require mass grading may more than double this cost. Also, site acquisition costs are not included.

The estimated capital cost of the 300-gpm hydro pneumatic pump station is $475,000. A capital cost of $110,000 is estimated for the proposed Amado Street sewer lift station (approximate capacity = 160 gpm).

The unit costs stated above were utilized in **Tables 16 and 17** to estimate the capital cost of recommended system improvements.

TABLE 16
RECOMMENDED WATER SYSTEM IMPROVEMENTS

IMPROVEMENTS	Diam. (In)	Unit	Amount		Unit Price*		Estimated Capital Cost
IMPROVEMENTS TO MEET EXISTING NEEDS:							
PRIORITY 1 - INCREASE CAPACITY FROM WELLS TO MESA AREA							
Piping - W. Side of Dana Elementary, Osage to W. Tefft Street	12	LF	3010	$	150	$	452,000
SUBTOTAL						$	452,000
PRIORITY 2 - INCREASE EAST TO WEST CAPACITY							
Parallel Piping Tefft - Thompson to 101	12	LF	3010	$	150	$	452,000
Parallel Piping Tefft - 101 Crossing	12	LF	420	$	150	$	63,000
Parallel Piping Tefft - 101 to Pomeroy	12	LF	3570	$	150	$	536,000
Parallel Piping Tefft - Pomeroy to Dana Elementary	10	LF	1750	$	130	$	228,000
SUBTOTAL						$	1,279,000
PRIORITY 3 - INCREASE SUPPLY							
Add an additional 480 gpm well capacity		LS	1	$	750,000	$	750,000
SUBTOTAL						$	750,000
PRIORITY 4 - BOOST MIN PRESSURE IN SUMMIT STATION TO 30 PSI							
Hydropneumatic Booster Pump Station on Hetrick, with emergency generator (1 duty, 1 standby - each 300 gpm at 70 feet)[1]		LS	1	$	475,000	$	475,000
Pressure Reducing Stations on Ewing Lane	8	EA	2	$	50,000	$	100,000
Closed Gate Valves on Applegate, Dale, Hetrick, and Summit Station	8	EA	4	$	1,700	$	7,000
Parallel Piping in Hetrick and Dale	8	LF	2500	$	110	$	275,000
Parallel Piping from New P.S. in Hetrick to Aden Way	8	LF	2100	$	110	$	231,000
Parallel Piping to customers on Ewing, Aden Way	6	LF	1300	$	95	$	124,000
SUBTOTAL						$	1,212,000
TOTAL COST OF IMPROVEMENTS TO MEET EXISTING NEEDS						$	3,693,000
IMPROVEMENTS TO MEET FUTURE NEEDS:							
PRIORITY 1 - INCREASE SUPPLY BY CONNECTING TO STATE WATER							
Pipe From Thompson and Sea to State Water[2]	12	LF	3100	$	150	$	465,000
SUBTOTAL						$	465,000
PRIORITY 2 - INCREASE CAPACITY IN MESA AREA							
Connect W. Tefft to 6" Loop South of Mary Street	10	LF	450	$	130	$	59,000
Parallel Grande - Blume to Orchard	8	LF	2030	$	110	$	223,000
Camino Caballo - Fontage to Existing 8"	8	LF	400	$	110	$	44,000
Inga Rd - Connect Existing 6" to Existing 8"	6	LF	1600	$	95	$	152,000
Hill Street - Close Loop W. from Blume	8	LF	1500	$	110	$	165,000
Parallel Orchard - Tefft to Grande	8	LF	1540	$	110	$	169,000
SUBTOTAL						$	812,000
PRIORITY 3 - ADDITIONAL STORAGE AT TWIN TANKS							
New 1 MG Twin Tank		MG	1	$	800,000	$	800,000
Parallel Tefft - Thompson to Twin Tanks	14	LF	7680	$	180	$	1,382,000
SUBTOTAL						$	2,182,000
PRIORITY 4 - INCREASE CAPACITY FROM STANDPIPE TO MESA AREA							
Frontage - Willow to Sandydale	14	LF	3000	$	180	$	540,000
Frontage - Standpipe to Willow	14	LF	3000	$	180	$	540,000
Standpipe, Connect to Frontage	12	LF	2100	$	130	$	273,000
Willow, Connect to Frontage	8	LF	1000	$	110	$	110,000
Parallel Hetrick - Live Oak Ridge to Standpipe	10	LF	950	$	130	$	124,000
SUBTOTAL						$	1,587,000
PRIORITY 5 - INCREASE CAPACITY FROM WELLS TO MESA AREA							
Camino Caballo to Mesa Road, E. in Mesa Road to Existing 10"	8	LF	5400	$	110	$	594,000
SUBTOTAL						$	594,000
PRIORITY 6 - ADDITIONAL STORAGE EAST OF SUMMIT STATION							
Frontage - Summit Station To Standpipe Connection	14	LF	2940	$	180	$	529,000
New 1 MG Los Berros Tank		MG	1	$	800,000	$	800,000
Connection to Los Berros Tank	13	LF	8500	$	180	$	1,530,000
Add Emergency Generation to Increase Reliability of Emergency Supply		LS	1	$	60,000	$	60,000
SUBTOTAL						$	2,919,000
PRIORITY 7 - MISC. DEVELOPMENT DRIVEN IMPROVEMENTS							
Pomeroy - Willow Road to Aden Way (for development in Summit Station area)	10	LF	5300	$	130	$	689,000
Sun Dale Road - Woodlands Development to Willow Road	12	LF	5000	$	150	$	750,000
Connection to The Bluffs Development	12	LF	9500	$	150	$	1,425,000
SUBTOTAL						$	2,864,000
TOTAL COST OF IMPROVEMENTS TO MEET EXISTING NEEDS						$	11,423,000
TOTAL COST OF IMPROVEMENTS						$	15,116,000

*ESTIMATED UNIT PRICE INCLUDES COST OF MATERIALS AND CONSTRUCTION + 45% FOR ENGINEERING, PERMITTING, ADMINISTRATION, AND CONTINGENCY. APRIL 2001 ENR COST INDEX WAS USED TO GENERATE UNIT COSTS.

1 - Installing a third (standby) pump is optional. Each pump is sized to serve PHD. Two pumps operating together can serve MDD + 500 gpm FF.
2 - The *Draft Evaluation of Water Supply Alternatives* has identified several other possible future water supply sources. If the District choses one or more of those options, additional modeling should be completed to identify upgrades associated with those supplies.

TABLE 17
RECOMMENDED SEWER SYSTEM IMPROVEMENTS

IMPROVEMENTS	Diam. (in)	Unit	Amount	Unit Price*	Estimated Capital Cost
IMPROVEMENTS TO MEET EXISTING/NEAR FUTURE NEEDS:					
PRIORITY 1 - TEFFT STREET LIFT STATION					
Upgrade Tefft Street Lift Station to 630 gpm		LS	1	$ 150,000	$ 150,000
SUBTOTAL					**$ 150,000**
PRIORITY 2 - MONTECITO VERDE II/NIPOMO PALMS					
Connection to Montecito Verde II	12	LF	1550	$ 165	$ 256,000
Nipomo Palms LS Gravity Bypass/ Eliminate Lift Station	12	LF	1200	$ 165	$ 198,000
Reconnect CSA-1 at Division and Orchard[1]		LS	1	$ 25,000	$ 25,000
Upgrade from Division and Orchard to Gravity Bypass[1]	10	LF	2300	$ 140	$ 322,000
SUBTOTAL					**$ 801,000**
PRIORITY 3 - TRUNK LINE					
Upgrade Trunck Line - Southland to WWTP	12" → 21	LF	1160	$ 295	$ 342,000
Upgrade Trunck Line - Story to Southland	12" → 18	LF	1660	$ 260	$ 432,000
SUBTOTAL					**$ 774,000**
TOTAL COST OF IMPROVEMENTS TO MEET EXISTING/NEAR FUTURE NEEDS					**$ 1,725,000**
IMPROVEMENTS TO MEET FUTURE NEEDS:					
PRIORITY 1 - MAIN LIFT STATION/WWTP					
Upgrade Main Lift Station and Treatment Plant[2]		LS	1	$ 250,000	$ 250,000
SUBTOTAL					**$ 250,000**
PRIORITY 2 - TRUNK LINE					
Upgrade Trunk Line - Division to Story	12" → 15	LF	1330	$ 190	$ 253,000
Upgrade East Side Trunck Line - Oakglen S. of Amado and Freeway Crossing	15	LF	2550	$ 190	$ 485,000
SUBTOTAL					**$ 738,000**
PRIORITY 3 - GARDENIA LIFT STATION					
Upgrade Gardenia Lift Station to 150 gpm		LS	1	$ 75,000	$ 75,000
					$ 75,000
PRIORITY 4 - PROPOSED AMADO STREET LIFT STATION					
Install New 160-gpm Lift Station at E. end of Amado Street		LS	1	$ 110,000	$ 110,000
SUBTOTAL					**$ 110,000**
PRIORITY 5 - GRAVITY COLLECTORS					
Story Street	8	LF	2800	$ 120	$ 336,000
Hill Street	8	LF	1750	$ 120	$ 210,000
North Frontage Road	8	LF	2000	$ 120	$ 240,000
Sparks Road	8	LF	2800	$ 120	$ 336,000
SUBTOTAL					**$ 1,122,000**
TOTAL COST OF IMPROVEMENTS TO MEET FUTURE NEEDS					**$ 2,295,000**
TOTAL COST OF IMPROVEMENTS					**$ 4,020,000**

*ESTIMATED UNIT PRICE INCLUDES COST OF MATERIALS AND CONSTRUCTION + 45% FOR ENGINEERING, PERMITTING, ADMINISTRATION, AND CONTINGENCY. APRIL 2001 ENR COST INDEX WAS USED TO GENERATE UNIT COSTS.

1 - If CSA-1 is not routed through Nipomo Palms, this upgrade woud be replaced by upgrading the line in Division, from Beverly to Frontage, and upgrading the trunk line (see Future Improvements Priority 1), from Division to Story.

2 - This upgrade is recommended based on conservative estimates of existing and future peak flows at the WWTP. The flow meter at the plant should be used to determine when peak flows exceed 1500 gpm. Then detailed plans should be made to upgrade the lift station and the treatment plant.

Prioritized List of Improvements

The purpose of this master plan is to provide NCSD with an understanding of the strengths and deficiencies of the NCSD water and sewer systems. Where deficiencies were identified through analysis, recommendations have been made to correct them. **Tables 16 and 17** outlined the costs associated with each of the recommended improvements.

The priority of each improvement is based on urgency of need and potential benefits. The tentative timing of the recommendations assumes that growth will continue at 5% per year as discussed in Section 2, which is greater than the 2.3% per year growth restriction set forth in the General Plan. If this growth rate is modified, the appropriate timing of recommended improvements could change. Changes in the anticipated timing or sizing of future development projects could also change the timing of the recommended improvements. The following outlines the improvements by their priority:

Improvements to Meet Existing Needs

Water

1. **Increase the capacity from the wells to the Mesa Area** by installing a 12-inch waterline from Osage to W. Tefft Street on the west side of Dana Elementary School. This improvement was being designed concurrent with Master Plan preparation and will eliminate a major "bottleneck" in the water system. **(when – now)**

2. **Increase east-west capacity** by paralleling the pipeline in Tefft from Thompson to Dana Elementary. This project will be completed, in part, to increase capacity between the Nipomo high school and the new well capacity provided in exchange for water service to the high school at Dana Elementary School. It also provides a measure of redundancy. (**when – as soon as possible**)

3. **Increase supply**. An additional 480 gpm of well capacity is recommended to reliably meet existing needs. **(when – as soon as possible)**

4. **Boost the minimum service pressure in Summit Station to 30 psi**. In an earlier report, Boyle recommended that the District facilitate the installation of private booster pumps as the first step of a solution aimed at increasing pressure at residences in Summit Station. Although installation of private booster pumps will improve pressures at the point of use, it will not change the pressure in the distribution system.

   In order to meet the criteria stated in Section 6, it is recommended that a separate pressure zone be created by installing a 300-gpm hydro-pneumatic pump station. The higher pressure zone would serve homes above 425 feet elevation, as indicated on **Plate 2**. This would boost pressures at the service meters to those homes as much as 30 psi. Some homes within the hydropneumatic zone may still require private booster pumps or other on-site upgrades, in order to meet UPC requirements. Pressure reducing stations and parallel piping would be required to continue service to areas below 425 feet elevation at a gradient of 548 feet.

   The pump station would be sized to pump peak hour demand at buildout with one pump. A second pump would be included for standby capacity. The pump station would also have the capacity to pump fire flow and average day demand with both pumps operating. An emergency generator would be required to sustain service during power outages.

   Although analysis indicates that these improvements would improve service pressures in Summit Station to meet the stated criteria, the cost of these improvements is high ($1.2 million). Initial review of this recommendation suggests that these improvements may not be economically feasible. For this reason, supplemental information regarding alternative improvements in Summit Station is included in Section 12. It is recommended that these alternatives be reviewed so that NCSD can provide a cost-effective solution to maintaining adequate service in Summit Station. (**when – as soon as possible**).

Sewer

1. **Increase the capacity of Tefft Street Lift Station** in order to accommodate the new High School and the Hermreck

Development. Current capacity is 315 gpm. Add a third 315-gpm pump and expand the wet well volume. **(when – now)**

2. **Install the connection to the Montecito Verde II Development, and a gravity bypass to the Nipomo Palms area.** This will enable the elimination of the Nipomo Palms Lift Station. The CSA-1 force main should also be reconnected to a manhole at Orchard Street and Division Street, and the 8-inch piping between that manhole and the Nipomo Palms Lift Station should be upgraded to 10-inch to accommodate the increased flow. This will eliminate costly lift station operation and relieve capacity problems in the lines in Division Street and in Frontage Road, north of Story Street. **(when – next year)**

3. **Increase the capacity of the trunkline south of Division.** The sewer model indicates that the trunkline from Division Street to the main WWTP plant needs to be upgraded. Model results indicate that the capacity of the existing 12-inch trunkline is about 1080 gpm. If all of the tributary lift stations are operating at capacity at the same time, existing peak flows could exceed 2000 gpm, and buildout peak flows could exceed 3000 gpm. However, these flow estimates are based on conservative assumptions because sewage flows have not historically been metered. Flow through the trunkline should be carefully monitored during rainfall. When peak flows exceed 750 gpm, the trunkline should be upgraded. The flow meter at the main lift station can be used to estimate the peak flow through the trunkline. The recommended upgrades are sized to accommodate buildout peak wet weather flows. **(when – next year, or when peak flows exceed 750 gpm)**

Improvements to Meet Future Needs

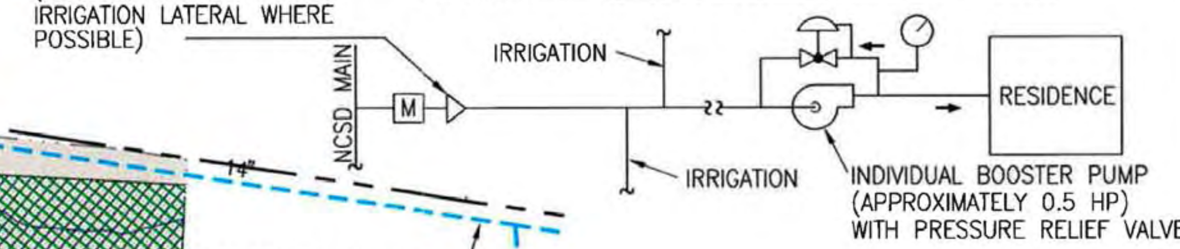
Water

1. **Increase supply.** Additional water supplies need to be added as demand increases with future development. We have assumed that the primary source of supply for future use would be State Project Water, and that it would be received at a turnout by the new High School. However, the *Draft*

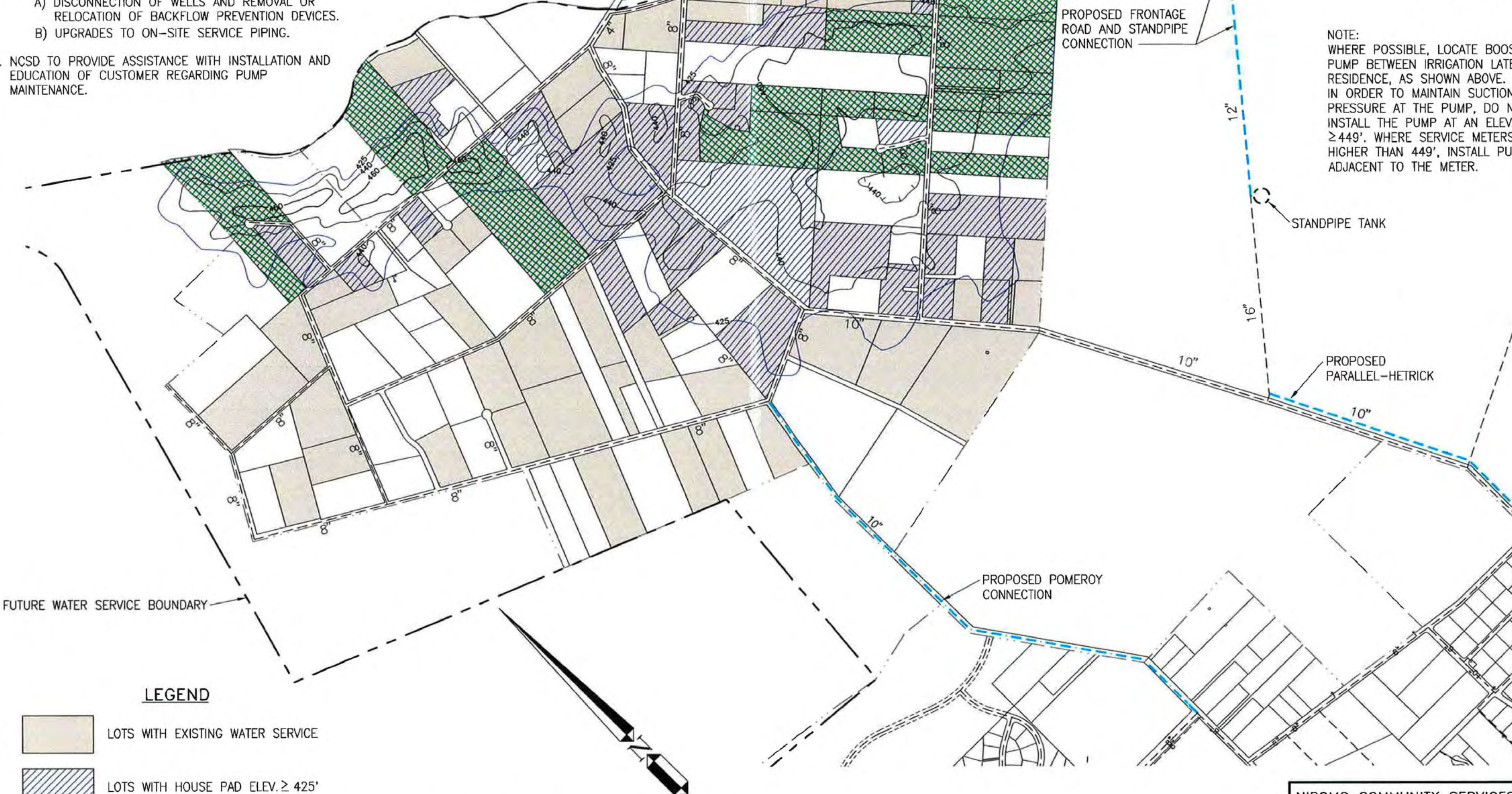
NOTES

1. ALL LOTS WITH HOUSE PAD ELEVATIONS ≥ 425' TO BE CONSIDERED FOR INDIVIDUAL BOOSTER PUMP REBATE PROGRAM. PRIORITY GIVEN TO THOSE WITH METERS AT OR ABOVE 449'.
2. PROGRAM SHOULD ALLOW REBATES FOR ALTERNATE IMPROVEMENTS INCLUDING
   A) DISCONNECTION OF WELLS AND REMOVAL OR RELOCATION OF BACKFLOW PREVENTION DEVICES.
   B) UPGRADES TO ON-SITE SERVICE PIPING.
3. NCSD TO PROVIDE ASSISTANCE WITH INSTALLATION AND EDUCATION OF CUSTOMER REGARDING PUMP MAINTENANCE.

DETAIL – INDIVIDUAL BOOSTER PUMP



NOTE:
WHERE POSSIBLE, LOCATE BOOSTER PUMP BETWEEN IRRIGATION LATERALS AND RESIDENCE, AS SHOWN ABOVE. HOWEVER, IN ORDER TO MAINTAIN SUCTION PRESSURE AT THE PUMP, DO NOT INSTALL THE PUMP AT AN ELEVATION ≥ 449'. WHERE SERVICE METERS ARE HIGHER THAN 449', INSTALL PUMP ADJACENT TO THE METER.



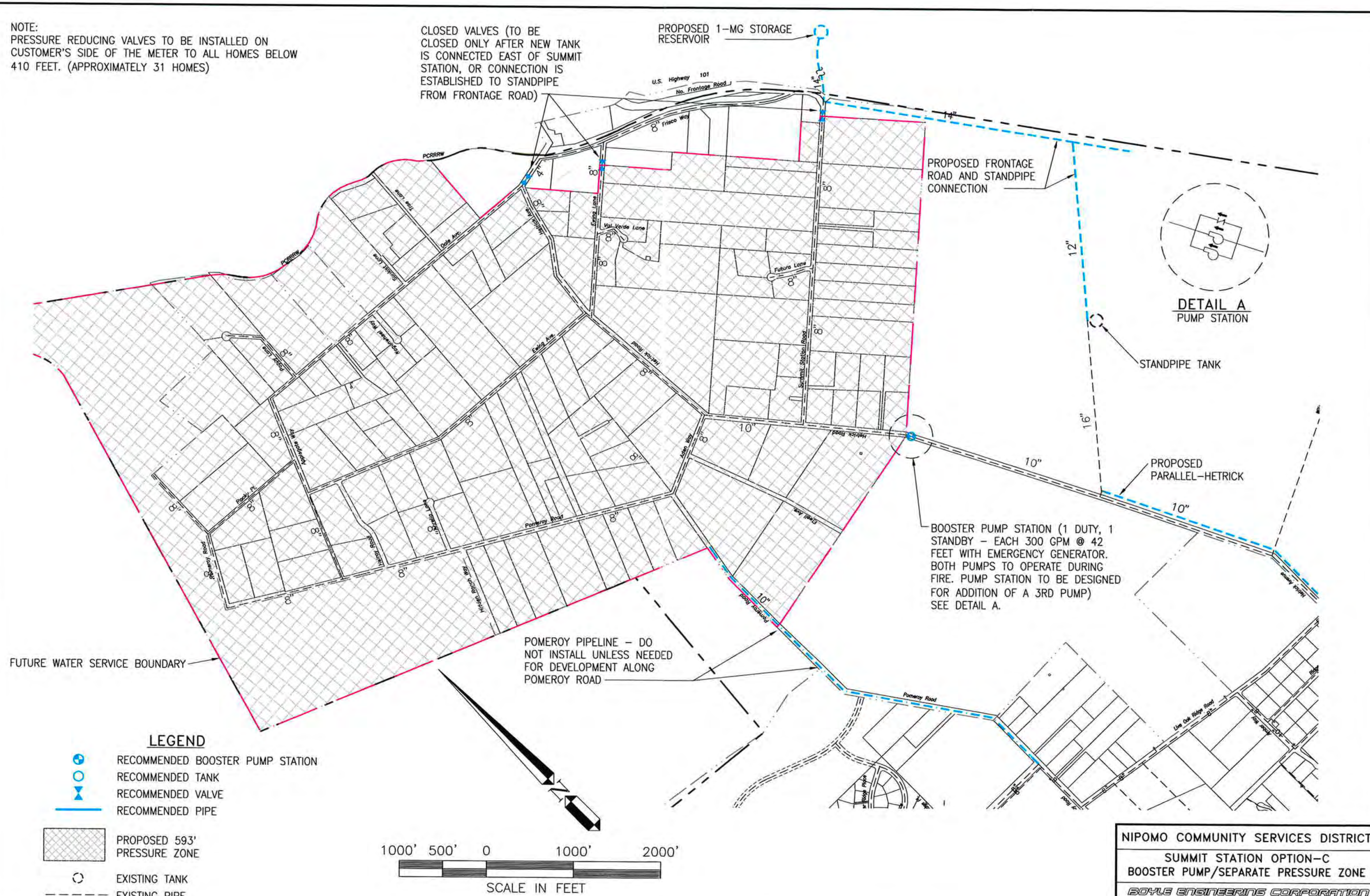
LEGEND

- LOTS WITH EXISTING WATER SERVICE
- LOTS WITH HOUSE PAD ELEV. ≥ 425'
- LOTS WITH METER ELEV. ≥ 449'

1000' 500' 0 1000' 2000'
SCALE IN FEET

NIPOMO COMMUNITY SERVICES DISTRICT
SUMMIT STATION OPTION–B
INDIVIDUAL BOOSTER PUMPS
BOYLE ENGINEERING CORPORATION
VT-N04-101-06 FEB. 2002 FIGURE 7

DWG: F:\cosby\N0410106\ACAD\FIGURE-7.dwg USER: draines
DATE: Feb 28, 2002 4:34pm XREFS: OPTION-BORDER BASE-WATER



NIPOMO COMMUNITY SERVICES DISTRICT

SUMMIT STATION OPTION-C
BOOSTER PUMP/SEPARATE PRESSURE ZONE

BOYLE ENGINEERING CORPORATION

VT-N04-101-06 FEB. 2002 FIGURE 8

DWG: F:\cosby\N0410106\ACAD\FIGURE-8.dwg USER: draines
DATE: Feb 28, 2002 4:34pm XREFS: OPTION-BORDER BASE-WATER

Evaluation of Water Supply Alternatives by Kennedy Jenks Consultants suggests several other supply options, including accessing State Water through Santa Maria. It is recommended that future sources of water and points of connection be identified as soon as possible. Then, further analysis should be completed to evaluate the effects that adding these sources will have on the water storage a distribution system recommendations. (**when –as development dictates, near future**)

2. **Increase capacity within the Mesa area**. Several small improvements are recommended to improve the transmission of water across the Mesa Area. The opportunity to make some of these improvements will arise as fill-in development occurs. NCSD should monitor development to ensure that new pipes improve circulation of water through the area. (**when – as development occurs**)
3. **Install a new 1 MG storage tank at the Twin Tanks.** This storage will provide additional regulatory and fire storage needed as demand grows. It is assumed that the Sundale Well can provide emergency supply to meet the emergency storage requirement on an interim basis. If not, this storage will be needed as soon as possible. A 14-inch line is recommended to connect the tank to the center of town. (**when – next 3 years**)
4. **Increase the capacity of piping from the Standpipe to the Mesa Area**. These improvements are among the costliest because they are sized for buildout demands. However, as demand grows additional capacity will be needed to maintain an even gradient across the system. (**when – next 5 years**)
5. **Increase capacity from the wells to the Mesa Area** by installing an 8-inch pipe from Camino Caballo to Mesa Road, and east in Mesa Road to the existing 10-inch pipe. This will improve future transmission and eliminate bottlenecks in Camino Caballo. (**when – next 10 years, as development occurs**)
6. **Install 1 MG of additional storage east of Summit Station** (HGL ~ 548') to meet future storage requirements. It is assumed that the emergency storage requirement will be met by the Sundale Well. If not, the tank will be required much

earlier and will need to provide 1 MG of storage. Although it is anticipated that the 14-inch pipeline connecting to the tank would cross the freeway near Summit Station, it may prove more feasible to locate this pipe in the new freeway crossing at Willow Road. A detailed siting study should be performed to determine the location of the tank and connecting pipeline. NCSD should also coordinate with Caltrans to ensure that space is provided in the new Willow Road overpass bridge for a future 14-inch waterline. (**when – next 10 years**)

7. **Extend the distribution system to developments** within, and adjacent to NCSD. These pipes will be required for NCSD to annex future developments and provide service to growing areas within the District. (**when – as development dictates**)

Sewer

1. **Upgrade the Main (Southland) Lift Station and Wastewater Treatment Plant**. The capacities of the treatment plant and lift station were recently upgraded from 630 gpm to 2000 gpm. Estimated peak flow at the treatment plant could exceed 3000 gpm if all lift stations are operating at their proposed buildout capacities at the same time. However, this estimate is based on conservative assumptions because metered historical peak flow data was not available. In order to improve monitoring of flow through the lift station treatment plant, a flow meter was installed when the lift station was upgraded. Peak flow meter readings should be carefully monitored to determine when, if at all, an upgrade is needed. When peak metered flows through the lift station exceed 1,500 gpm, or 75% of the lift station capacity, then plans should be made to upgrade the lift station and treatment plant. Expanding the facilities may involve any or all of the following: expanding storage capacity of wet wells, adding additional pumps, and expanding treatment facilities. (**when – when flows exceed 1,500 gpm**)

2. **Upgrade sewer lines in the Frontage Road, between Division and Story Streets, in South Oakglen, south of Amado, and in the freeway crossing**. This capacity will be needed as development takes place in the gravity flow area, as Tefft Lift Station is expanded, and before the proposed Amado

Pump Station is installed. The model indicates that the capacity of the existing 12-inch line is about 970 gpm. The flow through this line should also be monitored during rainfall to ensure that the line is upgraded before peak flow exceeds capacity. (**when – next 5 years, when peak flow through line exceeds 750 gpm**)

3. **Increase the capacity of Gardenia Lift Station to 150 gpm.** This will be needed as development in the tributary area occurs. The lift station should be monitored carefully to ensure that additional capacity is in place before it is needed. (**when – as development dictates**)

4. **Install a proposed 160-gpm lift station at the east end of Amado Street.** This project would likely be required for any development south of the Olde Towne area. (**when – as development dictates**)

5. **Install gravity collectors to areas not sewered.** These projects will probably be built as the need to extend sewer service to unsewered areas arises. (**when – as development dictates**)

11.2 Additional Recommendations

In addition to those specific recommendations given in **Tables 16 and 17**, the following general recommendations can be made:

- Water

  - Provide fixed emergency generators for wells where possible to increase reliability. The District currently has a portable 100 kw generator for emergency power supply. At least one additional large well should be equipped with an emergency generator if the District plans to rely on wells for emergency water supply.

  - Continue to monitor unaccounted for water. Limit unaccounted for water to 15 percent of production by repairing leaks and enforcing metered use of hydrants, except when fighting fires.

  - Require developments to have service evaluated before service is given. This evaluation should include hydraulic analysis to ensure that service pressures are adequate. Services should also meet Uniform Plumbing Code requirements. Implement "elevation" agreements where pad elevations are more than 20 feet higher than the service meter or less than 100 feet below the nominal gradient of the service pressure zone.

- Ensure that water system development creates looping of the water system piping network.
- Test well pump efficiencies and replace as needed to improve efficiency, reduce energy costs, and verify production capacity.

- Sewer
  - Monitor the system for flow problems. Velocities in some pipes are low, and lift stations are oversized. Continue to monitor these facilities to avoid odor and quality problems.
  - Test and replace or renovate lift station pumps as needed. Sewage lift station run times and District observations indicate that both CSA-1 and NCSD pumps are operating at low efficiencies. Having pump tests done, or installing flow meters at lift stations will help the District ensure that the lift stations are operating as designed. The District should encourage San Luis Obispo County to evaluate the CSA-1 lift station as well.
  - Consider providing telemetric control at new lift stations and existing stations where needed. This will enable the District to control pumping remotely and help regulate peak flows to the treatment plant.

The anticipated growth of the Nipomo area will continue to require growth and improvement of the NCSD water and sewer systems. This plan recommends more than 15 miles of new or upgraded water pipe, new tanks, lift station upgrades, 4 miles of new or upgraded sewer pipe, and other new facilities, as well as general practices of operation. These facilities and practices will ensure that NCSD can continue to reliably provide these services to its customers.

Nipomo Community Services District Water and Sewer System Master Plan Update 2001

Supplemental Section 12.0 Supplemental Recommendations for Water Service to Summit Station

Nipomo Community Services District

Client Representative	Doug Jones, General Manager
Client Staff	Lee Douglas, Maintenance Supervisor Lisa Souza Bognuda, Asst. Admin.

Boyle Engineering Corporation

Project Manager	Glen M. Hille, PE
Project Engineer	David W. Rice, PE

VT-N04-101-06

March 2002

BOYLE

5851 Thille Street, Suite 201, Ventura, CA 93003

12.0 Supplemental Recommendations for Water Service to Summit Station

12.1 Analysis of Summit Station

As part of this Master Plan Update, criteria were established for evaluating the ability of the system to meet existing and future needs. As shown in **Table 8** (Section 6), the criteria used to evaluate service pressures was based on providing minimum service pressures in the future of 45-psi during average day demand, 35-psi during peak hour demand, and 30-psi during average day demand with a fire. These criteria exceed the current minimum pressure requirements set by Title 22 and the criteria set forth in the 1995 Master Plan.

The improvements outlined in Section 11 were set forth to enable the future water system to meet the criteria set forth in **Table 8**. Among the improvements are a hydropneumatic pump station, piping and valves needed to create a zone of higher pressure in the Summit Station Area. These facilities would raise existing and future pressures within the Summit Station Area to meet the criteria listed in **Table 8**. However, the estimated cost of these facilities is high ($1.2 million).

Following a preliminary review of Section 11, the need was identified for additional study of more economical improvement alternatives for Summit Station. This section summarizes the results of the additional study.

Background

Currently, NCSD serves potable water to approximately 90 customers within the Summit Station area. In 1994, the Summit Station Area was annexed to NCSD. Before that time, residents in the area had relied on private wells as their sole source of water. However, in the late eighties and early nineties, drought threatened the groundwater supply in the area. In order to increase the reliability of water supply in Summit Station, residents were given the opportunity to annex to NCSD. An assessment district was created to fund the improvements needed to extend water service to Summit Station.

As noted in Section 7, a detailed analysis of water service to the Summit Station Area was completed in November 2000. That evaluation concluded that, under typical operating conditions, the water system serving Summit Station meets the Title 22 minimum 20-psi pressure requirement. The following points were also noted in that evaluation:

- The elevation difference between the high water level in the Standpipe Tank and the highest water services in Summit Station is small. In order to maintain adequate pressure at these services during periods of high demand, operators try to keep the Standpipe Tank full.
- At some residences, a significant amount of pressure is lost between the service meter and the point of use due to pressure loss through backflow prevention devices and on-site piping that is not sized according to the guidelines in the *Uniform Plumbing Code (UPC)*.
- Unauthorized use of a fire hydrant or the breaking off of a fire hydrant may cause pressures in Summit Station to drop below the minimum required pressure. These events have resulted in complaints of low pressure on several occasions.
- Pressure fluctuations occur sometimes due to the operation of the wells and the Standpipe Tank.

As part of the November 2000 evaluation, the following was proposed to address the issues listed above:

1. Set up a program that would enable customers with homes at or above 425 feet elevation to purchase and install private inline booster pumps with financial help from the District.
2. Evaluate the creation of a new zone of higher pressure in Summit Station as part of this Master Plan Update. A pump station and higher pressure zone in Summit Station was evaluated as part of this report, and is presented in Section 11.

Demands

As part of this supplemental analysis of Summit Station, the water demand estimates for Summit Station were revisited. Demand for Summit Station was estimated as part of the total demand shown in **Table 1** (Section 2). Water demand under existing conditions was estimated based on service to 90 customers within Summit Station, as identified through District records and shown below.

Buildout demand was projected for 305 potential customers within Summit Station. This number of potential customers was based on conservative assumptions regarding future land use. A recent review by the District of current planning limitations suggests that 144 total customers will be served in Summit Station. If 144 customers are served in Summit Station at buildout, the average demand will be 69 gpm less than was projected. However, this difference is relatively small when compared to the overall average demand projected for the entire distribution system in **Table 3** (3040 gpm). For this reason, the demands used for analysis were not recalculated for this supplemental analysis.

	No. Services in Summit Station	Domestic Demand		Fire Flow (gpm)
		ADD (gpm)	PHD (gpm)	
Existing	90	39	203	500
Buildout	144	63	325	500
Buildout	305	132	680	500

Hydraulic Analysis

The following alternatives were evaluated as part of this supplemental analysis of Summit Station:

- Installation of private booster pumps and other on-site upgrades as a permanent way to boost pressures at selected residences.
- Installation of a booster pump station that would serve all or most of Summit Station without the parallel piping and valves described in Section 11.

These alternatives were modeled under buildout demand conditions with the other improvements needed to meet buildout demand throughout the distribution system, including the proposed piping in Pomeroy Road, proposed piping in Frontage Road, and the proposed Los Berros Tank. Buildout demand is summarized in **Table 3**, and includes demand for 305 Summit Station services, as noted previously. The capacity of the existing piping within Summit Station was also evaluated as part of this supplemental analysis.

The results of the analysis are summarized in **Table 18**. The following conclusions can be drawn from these results:

- The improvements described in Section 11 and shown on **Plate 1** would increase system pressures within the proposed hydropneumatic pressure zone more than 20-psi during average day and peak hour buildout demand conditions. During a 500-gpm fire, pressures at the end of Poppy Lane would fall to 35-psi.

- With all of the improvements recommended in Section 11 to meet buildout demand, except for the hydropneumatic pressure zone in Summit Station, the minimum expected system pressure would be 25-psi. This scenario represents the conditions that would exist if individual booster pumps and other on-site improvements were installed rather than installing water distribution system improvements (see **Figure 7**). According to the results of this scenario, the buildout system service pressures would still meet current Title 22 requirements.

- During peak hour demand at buildout, without the hydropneumatic pump station, the gradient is expected to fall to 518 feet at the far end of Summit Station. This represents a loss of only 18 feet (8 psi) of pressure from the Standpipe Tank to the north end of the system (through approximately 14,000 feet pipe) during peak demand. Pipe velocities would remain well below 5 fps through Summit Station during peak demand. Upgrading the existing piping within Summit Station will not raise pressures significantly.

- Future development, up to a total of 305 Summit Station services, and the resulting increase in water demand in Summit Station will only decrease the expected minimum buildout pressure 1-2 psi, if at all.

- Providing an alternate booster pump station and pressure zone, as shown in **Figure 8**, would result in a minimum distribution system pressure of nearly 40-psi. The booster pump station analyzed would serve a larger area without raising the pressure as much as the pump station described

Table 18
NIPOMO COMMUNITY SERVICES DISTRICT
WATER SYSTEM MODEL RESULTS - 2001 MASTER PLAN UPDATE - BUILDOUT DEMAND

AREA	LOCATION	ELEV. (ft)	Buildout ADD (SS - 305 Units) Wells Off Tanks at 548' Improvements[1]		Buildout PHD (SS - 305 Units) All Wells On Tanks at 536.4' Improvements[1]		Buildout ADD + 3000 gpm FF at Division and Orchard (SS - 305 Units) Sundale On Tanks at 536.4' Improvements[1]		Buildout ADD + 500 gpm FF at end of Poppy Lane (SS - 305 Units) Sundale On Tanks at 536.4' Improvements[1]		Buildout ADD (SS - 305 Units) Wells Off Tanks at 548' Improvements[2]		Buildout PHD (SS - 305 Units) All Wells On Tanks at 536.4' Improvements[2]		Buildout ADD + 3000 gpm FF at Division and Orchard (SS - 305 Units) Sundale On Tanks at 536.4' Improvements[2]		Buildout ADD + 500 gpm FF at end of Poppy Lane (SS - 305 Units) Sundale On Tanks at 536.4' Improvements[2]	
			PSI	HGL	PSI	HGL	PSI	HGL	PSI	HGL	PSI	HGL	PSI	HGL	PSI	HGL	PSI	HGL
Summit St	Summit Station and Futura Lane (node414)	458	**70**	620	**51**	577	**64**	607	**56**	588	**38**	548	**28**	525	**33**	535	**33**	535
Summit St	End of Poppy Lane (node424)	459	**69**	620	**50**	575	**64**	607	**35**	542	**38**	548	**25**	519	**32**	534	28	524
Summit St	N. End of Pomeroy Road (node423)	330	**91**	542	**73**	500	**86**	530	**87**	532	**94**	548	**81**	518	**88**	534	**87**	531
Summit St	Ewing and Frisco Way (node430)	340	**90**	548	**82**	531	**84**	535	**85**	536	**90**	548	**78**	521	**84**	534	**83**	533

AREA	LOCATION	ELEV. (ft)	Buildout ADD (SS - 90 Units, No Buildout) Wells Off Tanks at 548' Improvements[2]		Buildout PHD (SS - 90 Units, No Buildout) All Wells On Tanks at 536.4' Improvements[2]		Buildout ADD + 3000 gpm FF at Division and Orchard (SS - 90 Units, No Buildout) Sundale On Tanks at 536.4' Improvements[2]		Buildout ADD + 500 gpm FF at end of Poppy Lane (SS - 90 Units, No Buildout) Sundale On Tanks at 536.4' Improvements[2]		Buildout ADD (SS - 305 Units) Wells Off Tanks at 548' Improvements[3]		Buildout PHD (SS - 305 Units) All Wells On Tanks at 536.4' Improvements[3]		Buildout ADD + 3000 gpm FF at Division and Orchard (SS - 305 Units) Sundale On Tanks at 536.4' Improvements[3]		Buildout ADD + 500 gpm FF at end of Poppy Lane (SS - 305 Units) Sundale On Tanks at 536.4' Improvements[3]	
			PSI	HGL	PSI	HGL	PSI	HGL	PSI	HGL	PSI	HGL	PSI	HGL	PSI	HGL	PSI	HGL
Summit St	Summit Station and Futura Lane (node414)	458	**38**	548	29	527	**33**	535	33	535	**58**	593	**46**	565	**53**	581	**46**	566
Summit St	End of Poppy Lane (node424)	459	**38**	548	**27**	522	**32**	534	28	525	**57**	593	**44**	563	**52**	580	**39**	550
Summit St	N. End of Pomeroy Road (node423)	330	**94**	548	**82**	521	**88**	534	**87**	532	**113**	593	**100**	563	**108**	580	98	558
Summit St	Ewing and Frisco Way (node430)	340	**90**	548	**79**	523	**84**	534	**83**	533	**90**	548	**84**	535	**86**	540	**87**	541

NOTES:

1-Improvements include those recommended to meet buildout demand (See **Plate 1**).

2-Improvements include those recommended to meet buildout demand, except for the hydropneumatic pump station and pressure zone in Summit Station. On-site improvements, including individual booster pumps, would be installed at selected services (See **Figure 7**).

3-Improvements include those recommended to meet buildout demand, except for the hydropneumatic pump station and pressure zone in Summit Station, which would be replaced by an alternate booster pump station and pressure zone (See **Figure 8**).

SS - Summit Station

in Section 11. The maximum expected pressure within the new pressure zone would be 113 psi. Approximately 31 homes would experience pressures greater than 80 psi and would require pressure-reducing valves on the customer's side of the meter in accordance with UPC guidelines.

- Although this analysis indicated that under all of the improvement scenarios the minimum 20-psi Title 22 requirements would be met, it does not address high hydrant flows caused by misuse or malfunction. Pressure recordings indicate that hydrant flows caused by accidents or misuse that exceed 500 gpm will likely cause pressures to drop below 20-psi.

12.2 Cost-Benefit Analysis

The improvement alternative outlined for Summit Station in Section 11 is shown on **Plate 1**. The two improvement alternatives analyzed as part of this supplemental study are illustrated in **Figures 7 and 8. Table 19** summarizes the costs associated with these two supplemental improvement alternatives. **Table 20** is a comparison of the costs, benefits, advantages and disadvantages of all three alternatives.

Hydropneumatic Pump Station and Specific Pressure Zone

According to the cost-benefit analysis summarized in Table 20, the hydropneumatic pump station and pressure zone shown on **Plate 1** has a higher capital cost than the other two alternatives. These improvements will result in increased pressure for specific areas in Summit Station, and will not require that water be pumped to areas where an increase in pressure would not be beneficial.

Private Booster Pumps and Other On-site Improvements

Providing a rebate program that would enable customers to install private booster pumps or other on-site system upgrades, as shown in **Figure 7**, would increase pressures at the point of use for those customers who choose to participate. The District would be able focus on each participant, and the program would likely cost less than other improvement alternatives. However, this program would not increase pressure in the water distribution system to meet the criteria set forth in Section 6.

Booster Pump Station and Pressure Zone

Providing the booster pump station and pressure zone shown in **Figure 8** would increase pressures in Summit Station to meet the criteria set forth in Section 6, and would be less expensive than the hydropneumatic system recommended in Section 11. This system would result in water being pumped to areas where the resulting pressures in the distribution system would exceed 80-psi. In order to comply with UPC guidelines, pressure-reducing valves would be required on all services to homes below approximately 410 feet. Pressures would not be expected to exceed the pressure rating (150-psi) of the pipe.

The system shown in **Figure 8** would also eliminate the benefit of the Pomeroy connection. A pipe in Pomeroy Road would only be needed if development occurred along Pomeroy Road. However, it is anticipated that with any of these alternatives, the Pomeroy Road connection would be needed primarily to serve additional development either along Pomeroy Road, or in the Summit Station Area. For this reason, the Pomeroy connection would likely be funded by development no matter which alternative is chosen.

12.3 Alternatives

Because of the high elevation of some of the services in Summit Station, relative to the water level in the existing storage tanks, pressures in the Summit Station distribution system can not be increased to meet the criteria set forth in this master plan without adding pumping facilities.

Three alternatives have been examined in detail; two that include the creation of a new pressure zone with pumping facilities serving the distribution system in Summit Station to the criteria set forth in Section 6, and one that focuses on serving only those customers with the need for increased pressure through individual booster pumps and other on-site improvements.

Installation of private booster pumps and other on-site improvements will not increase pressures in the distribution system. This solution will meet the current Title 22 minimum pressure requirement, but will not increase pressures in the distribution system in Summit Station.

In order to provide a solution that is cost effective and will meet the criteria set forth in the Section 6 of this Master Plan, the following is recommended as an alternative to the improvements presented for Summit Station in Section 11:

1. Install the booster pump station and pressure zone in **Figure 8.** The pressure zone served by the pump station would initially include all of Summit Station. However, after piping is constructed to connect the Standpipe Tank or the Proposed Tank to Summit Station Road, the low elevation area along Frisco Way and Frontage Road can be valved off and served directly from the tank. All services to homes below 410 feet will need pressure regulators on the customer's side of the meter to meet UPC guidelines. Approximately 31 services have been identified to homes that are below 410 feet.

   The booster pump station should initially include 1 duty and 1 standby pump, and would be equipped with an emergency generator. Each pump would be sized to pump approximately 300 gpm at a total dynamic head of 42 feet. One pump would have capacity to pump existing and near future peak hour demand.

   At buildout, if demand were limited to 144 services, both pumps would be required to operate occasionally during peak demand. If buildout exceeds 144 services, a third pump should be available to provide standby capacity. The pump station should be designed to accommodate the addition of a third pump.

   The pump station would also have capacity to pump fire flow during average day demand with two pumps operating. The pumps could be set so that both pumps would turn on once the discharge pressure dropped below a normal operating range, as would occur during a fire or other emergency. Additionally, a check valve in a bypass pipe could open so that fire flow and domestic demands would be served directly from the standpipe tank without pumping. If fire flow is not pumped, residual pressures in Summit Station will fall below 30 psi during a fire.

2. Evaluate the system and install the necessary controls on the wells and Standpipe Tank to minimize the fluctuations in pressure that occur due to system operations.

3. Continue to operate the system within the top 12 feet of the tanks. If the level of water in the Standpipe Tank drops below 536 feet during periods of peak use, increase pumping.

4. Retrofit each fire hydrant in Summit Station with a flow control or security device that would prevent unauthorized use and hydrant flows in excess of 500 gpm.

Funding for these improvements has not been determined as part of this report. A variety of funding options may be considered by the District, including the creation of an assessment district. Funding may require customer approval. If the District and/or its customers do not approve the improvements listed above, the booster pump and service line upgrade rebate program should be implemented.

If the implementation of the individual booster pump and service line upgrade rebate program is selected to meet the needs of those customers needing increased pressure, the following is recommended for Summit Station as an alternative to the improvements listed above and those described in Section 11:

1. Implement the booster pump and service line upgrade rebate program as follows:

   a. **Identify eligible participants**. It is recommended that all services with house pads at or above an elevation of 425 feet be given consideration (**see Figure 7**). Those with service connections at or above 449 feet should be given first priority. There are approximately 22 active services at or above 449 feet and 49 customers with house pads at or above 425 feet. All of those with meters at or above 449 feet have house pads at or above 425 feet.

   b. **Determine the value of the rebate**. The anticipated maximum rebate amount is $5,000 dollars per customer. This amount should cover most of the equipment cost and installation cost of an individual booster pump. The District should also consider allowing a participant to apply the rebate to other improvements, including abandoning wells and removing backflow prevention devices, or upgrading service piping. Previous studies indicate that abandoning wells, removing backflow prevention devices, and upgrading service piping can decrease the pressure lost between the meter and the house as much as 20-psi.

c. **Provide an application for the rebate to all eligible participants**. The application should help the District track the installation of on-site improvements. The application should require details regarding on customer's on-site water service, including service size and location, status of on-site wells, backflow prevention, domestic usage practices and irrigation practices.

d. **Provide assistance in determining needed improvements.** Review the customer's application to determine the possible benefit of abandoning a well or upgrading a service line rather than installing a booster pump. Provide a recommendation to the customer regarding the improvements including the pump size and model, where to install the pump, and/or other on-site improvements.

e. **Provide assistance with the installation of booster pumps and other upgrades and optional assistance with maintenance for the first 30 days**. Assistance should include some instruction regarding the maintenance of the booster pump.

2. Continue monitoring service pressures in the Summit Station at the strip charts located on Summit Station Road and Dale Avenue.

3. Evaluate the system and install the necessary controls on the wells and Standpipe Tank to minimize the fluctuations in pressure that occur due to system operations.

4. Continue to operate the system within the top 12 feet of the tanks. If the level of water in the Standpipe Tank drops below 536 feet during periods of peak use, increase pumping.

5. Retrofit each fire hydrant in Summit Station with a flow control or security device that would prevent unauthorized use and hydrant flows in excess of the required 500-gpm fire flow.

6. Execute an agreement with each new customer to address pressure issues.

This supplemental information will help NCSD to make a decision to pursue a solution that will be cost effective and improve service to its customers.

References

1. *1998 California Fire Code, Volume 1*,1998, State of California, California Building Standards Commission.

2. *Distribution Network Analysis for Water Utilities*, AWWA Manual M32, Volume 1, 1989, American Water Works Association.

3. *Sanitary Sewer Feasibility Study Montecito Verde II,* 2001, Engineering Development Associates.

4. *The Land Use and Circulation Elements of the San Luis Obispo County General Plan*, May 1999, San Luis Obispo County Department of Planning and Building.

5. *Woodlands Specific Plan Baseline Environmental Assessment and Constraints Analysis*, 1996, Environmental Science Associates.

6. *Water and Sewer Replacement Study*, Draft, Revised October 1999, Boyle Engineering Corporation.

7. *Water and Sewer System Master Plan, Final Report*, 1995, Boyle Engineering Corporation.

8. *Draft Evaluation of Water Supply Alternatives*, July 2001, Kennedy/Jenks Consultants.

Appendix A

Water Consumption and Production

1995 – 2000

SUMMARY OF WATER PRODUCTION DATA
NIPOMO CSD MASTER PLAN UPDATE
David Rice - January, 2000

NCSD TOWN (Excluding Black Lake) in Acre-ft

1995	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
WELLS													
Eureka	31.98	51.93	30.61	58.61	50.27	75.39	95.18	100.33	99.09	91.31	78.99	52.08	815.78
Bevington	5.33	0.19	34.99	40.20	51.09	50.01	49.69	49.67	45.10	49.81	24.08	29.60	429.75
Omiya	2.10	0.00	3.91	9.33	9.00	8.59	13.10	11.27	10.49	6.14	1.80	1.79	77.52
Olympic	14.71	16.99	5.50	13.10	10.52	11.46	11.99	14.61	5.39	5.85	0.67	4.73	115.51
Savage	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	0.00
Church	3.74	0.00	0.00	1.43	1.31	5.31	5.26	0.48	5.16	1.14	0.15	0.44	24.41
Via Concha	4.02	0.10	0.03	0.04	4.43	1.68	15.21	10.49	6.38	0.00	6.03	0.01	48.41
Sundale	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	61.88	69.21	75.04	122.72	126.61	152.45	190.42	186.85	171.60	154.24	111.70	88.65	1511.37

1996	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
WELLS													
Eureka	20.21	0.95	3.60	56.78	32.86	124.73	121.33	126.20	122.88	122.25	62.41	14.84	809.03
Bevington	46.32	49.85	45.19	29.25	47.69	40.86	43.89	38.45	25.14	9.44	15.61	6.47	398.18
Omiya	9.38	5.66	7.55	7.16	12.27	9.55	7.30	0.48	1.36	3.59	0.00	0.00	64.31
Olympic	6.78	6.40	10.79	11.02	13.86	16.01	4.78	2.61	1.24	1.32	0.84	6.50	82.12
Savage	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	0.00
Church	0.01	0.01	0.76	3.96	6.34	0.36	1.63	1.08	0.00	0.07	0.00	0.07	14.31
Via Concha	0.23	0.08	0.90	32.25	72.89	3.31	20.78	24.58	17.31	16.24	16.98	47.16	252.69
Sundale	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	82.92	62.96	68.78	140.41	185.91	194.81	199.71	193.40	167.94	152.92	95.84	75.03	1620.63

1997	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
WELLS													
Eureka	26.32	39.29	87.79	64.59	90.86	103.42	110.60	103.23	104.58	113.51	34.12	0.00	878.32
Bevington	3.14	20.52	27.46	44.71	44.19	37.61	35.61	36.37	37.36	38.32	13.35	2.49	341.10
Omiya	1.86	1.90	0.09	3.16	2.19	7.03	4.01	2.67	2.77	6.39	0.00	17.58	49.65
Olympic	8.96	7.49	0.11	3.99	13.47	12.05	9.35	8.67	8.22	5.84	6.21	2.66	87.02
Savage	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	0.00
Church	1.63	1.08	0.00	0.07	0.00	0.07	2.52	1.44	0.63	0.33	0.46	1.96	10.19
Via Concha	20.78	24.58	17.31	16.24	16.98	47.16	28.64	25.81	20.16	16.84	26.63	61.46	322.59
Sundale	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	62.69	94.86	132.76	132.77	167.69	207.34	190.72	178.17	173.74	181.23	80.77	86.16	1688.89

1998	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
WELLS													
Eureka	0.00	18.57	16.47	21.29	34.22	6.31	32.00	77.35	98.88	96.58	54.89	52.85	509.42
Bevington	28.51	3.84	28.71	56.34	56.34	53.93	53.93	56.30	58.18	54.10	57.34	8.89	516.41
Omiya	0.02	0.00	0.00	0.57	1.22	7.37	2.69	0.01	0.00	0.02	0.00	0.02	11.93
Olympic	0.86	6.11	1.09	1.92	2.68	12.62	8.07	6.35	1.11	0.97	0.00	1.22	43.00
Savage	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	0.00
Church	1.56	1.62	3.85	5.84	2.78	10.46	9.04	5.11	0.52	6.76	0.02	0.19	47.74
Via Concha	37.43	46.21	14.04	21.03	29.03	79.48	90.31	62.83	27.82	18.68	0.69	34.85	462.40
Sundale	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	68.38	76.34	64.16	107.00	126.27	170.18	196.04	207.95	186.51	177.12	112.93	98.01	1590.90

1999	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
WELLS													
Eureka	13.95	0.00	0.00	0.00	34.63	44.73	44.31	90.09	77.21	88.51	63.97	120.23	577.63
Bevington	56.94	51.60	58.13	53.49	53.03	51.79	58.67	57.14	58.67	26.92	18.59	5.17	550.16
Omiya	0.50	0.03	0.02	0.00	0.00	0.01	0.79	0.87	0.02	0.00	0.00	0.00	2.25
Olympic	5.03	1.95	0.40	2.87	3.26	2.45	1.86	4.78	0.27	0.00	0.84	3.84	27.57
Savage	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	0.00
Church	0.13	0.97	0.06	0.39	0.25	0.12	0.90	3.21	0.06	0.00	0.26	0.00	6.35
Via Concha	32.17	30.31	37.67	57.20	71.59	21.55	2.22	8.44	0.12	0.00	16.78	0.00	278.04
Sundale	0.00	0.00	0.00	0.00	48.92	76.25	107.51	58.11	58.68	65.31	21.36	0.00	436.15
TOTAL	108.72	84.86	96.28	113.95	211.68	196.92	216.27	222.63	195.04	180.75	121.80	129.25	1878.14

2000	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
WELLS													
Eureka	83.82	71.00	32.38	83.91	55.92	60.61	71.45	6.90	12.73	38.63	52.26	39.72	609.33
Bevington	8.98	0.75	21.90	52.70	0.41	9.43	21.33	38.01	0.00	0.03	0.00	0.02	153.55
Omiya	0.00	0.00	0.00	0.02	0.00	0.01	4.16	0.91	0.00	3.93	0.00	1.01	10.04
Olympic	0.77	0.04	2.36	2.32	0.91	1.07	4.77	0.23	0.78	0.84	1.07	1.57	16.72
Savage	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	0.00
Church	0.00	0.00	0.22	0.44	0.21	0.10	1.06	0.38	0.00	0.14	0.12	0.13	2.81
Via Concha	12.42	0.00	0.00	3.99	96.26	94.71	90.41	97.19	78.39	0.88	10.83	94.06	579.15
Sundale	3.34	0.00	66.06	23.04	57.12	55.24	47.80	88.93	108.91	110.42	71.03	0.74	632.63
TOTAL	109.34	71.79	122.92	166.42	210.83	221.16	240.97	232.56	200.81	154.86	135.32	137.24	2004.22

AVERAGE TOTAL	82.32	76.67	93.32	130.54	171.50	190.48	205.69	203.59	182.61	166.85	109.73	102.39	1715.69
% YEARLY AVERAGE	57.6%	53.6%	65.3%	91.3%	120.0%	133.2%	143.9%	142.4%	127.7%	116.7%	76.7%	71.6%	

Source: NCSD Table of Gross Monthly Well Production

SUMMARY OF WATER CONSUMPTION DATA
NIPOMO CSD MASTER PLAN UPDATE
David Rice - January, 2000

NCSD TOWN (Excluding Black Lake) In Acre-ft

1995	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	# Connections
Single Family Res.	61.28	46.43	55.14	64.53	95.65	110.69	141.07	191.24	106.64	51.74	181.18	60.39	**1165.98**	2027
Multi-Family Res.													**0.00**	158
Commercial/Inst.	7.36	4.91	3.04	3.99	3.99	4.30	5.22	5.52	3.38	2.61	6.44	3.38	**54.13**	54
Industrial													**0.00**	
Landscape Irrigation	0.46	0.06	0.37	0.46	3.68	0.15	7.36	6.44	6.44	0.00	6.59	8.59	**42.62**	18
Other													**0.00**	19
SUBTOTAL	**69.11**	**51.40**	**58.55**	**68.98**	**103.32**	**115.14**	**153.65**	**203.21**	**116.46**	**54.35**	**196.21**	**72.36**	**1262.73**	**2276**
Agricultural Irrigation													**0.00**	5
Wholesale (to others)													**0.00**	
TOTAL	**69.11**	**51.40**	**58.55**	**68.98**	**103.32**	**115.14**	**153.65**	**203.21**	**116.46**	**54.35**	**196.21**	**72.36**	**1262.73**	**2281**

1996	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	# Connections
Single Family Res.	38.11	62.81	37.39	115.67	62.97	187.51	79.29	219.44	73.25	162.66	54.97	77.81	**1171.88**	2078
Multi-Family Res.	2.88	6.72	3.02	9.07	3.54	11.66	3.99	12.68	4.15	11.25	3.65	6.85	**79.46**	160
Commercial/Inst.	3.02	3.33	2.62	5.17	3.02	6.36	3.52	9.05	3.45	6.22	3.67	3.51	**52.94**	53
Industrial													**0.00**	
Landscape Irrigation	0.17	2.26	0.07	8.05	0.53	18.08	0.46	22.78	0.49	17.00	0.49	4.73	**75.11**	17
Other	0.86	7.87	0.56	3.32	4.33	6.35	5.23	0.79	1.31	0.75	1.01	0.08	**32.46**	13
SUBTOTAL	**45.04**	**82.99**	**43.66**	**141.28**	**74.39**	**229.98**	**92.49**	**264.74**	**82.65**	**197.88**	**63.79**	**92.98**	**1411.85**	**2321**
Agricultural Irrigation	0.00	2.69	0.00	6.19	0.00	6.65	0.00	6.56	0.00	5.21	0.00	2.51	**29.81**	4
Wholesale (to others)													**0.00**	
TOTAL	**45.04**	**85.68**	**43.66**	**147.47**	**74.39**	**236.81**	**92.49**	**271.3**	**82.65**	**203.09**	**63.79**	**95.49**	**1441.66**	**2325**

1997	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	# Connections
Single Family Res.	37.99	72.19	50.64	158.57	79.91	215.51	82.94	215.51	78.70	189.04	59.28	72.81	**1313.09**	2140
Multi-Family Res.	3.42	7.44	4.12	17.76	4.40	12.42	4.62	12.79	4.58	11.98	4.54	8.09	**96.16**	169
Commercial/Inst.	3.16	4.17	4.17	5.89	5.38	7.64	5.32	7.54	4.58	6.62	3.81	4.13	**62.41**	62
Industrial													**0.00**	
Landscape Irrigation	0.03	3.84	0.20	11.95	0.33	18.75	0.20	22.51	0.24	17.67	0.28	2.60	**78.60**	19
Other	0.62	0.27	13.31	11.95	2.09	1.53	9.17	6.00	2.13	1.57	0.83	0.05	**49.52**	3
SUBTOTAL	**45.22**	**87.91**	**72.44**	**206.12**	**92.11**	**255.85**	**102.25**	**264.35**	**90.23**	**226.88**	**68.74**	**87.68**	**1599.78**	**2393**
Agricultural Irrigation	0.00	2.79	0.00	4.61	0.00	5.42	0.00	4.47	0.00	4.67	0.00	2.73	**24.69**	3
Wholesale (to others)													**0.00**	
TOTAL	**45.22**	**90.7**	**72.44**	**210.73**	**92.11**	**261.27**	**102.25**	**268.82**	**90.23**	**231.55**	**68.74**	**90.41**	**1624.47**	**2396**

1998	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	# Connections
Single Family Res.	36.43	54.04	36.61	92.63	45.69	152.40	84.64	228.74	77.57	170.68	55.54	108.54	**1143.51**	2272
Multi-Family Res.	3.51	7.41	3.04	8.58	3.49	9.89	5.27	15.18	5.44	12.61	4.17	9.80	**88.39**	168
Commercial/Inst.	2.64	2.88	2.73	3.93	3.20	6.30	4.56	8.97	4.61	6.78	3.66	6.22	**56.48**	61
Industrial													**0.00**	
Landscape Irrigation	0.25	1.84	0.16	4.52	0.50	13.46	0.76	19.45	0.74	13.73	0.58	3.96	**59.95**	19
Other	0.43	2.03	2.75	0.44	1.39	0.63	1.24	0.99	24.98	15.68	1.76	1.64	**53.96**	3
SUBTOTAL	**43.26**	**68.20**	**45.29**	**110.10**	**54.27**	**182.68**	**96.47**	**273.33**	**113.34**	**219.48**	**65.71**	**130.16**	**1402.29**	**2523**
Agricultural Irrigation	0.00	1.84	0.00	3.55	0.00	4.42	0.00	4.27	0.00	3.36	0.00	2.39	**19.83**	2
Wholesale (to others)													**0.00**	
TOTAL	**43.26**	**70.04**	**45.29**	**113.65**	**54.27**	**187.1**	**96.47**	**277.6**	**113.34**	**222.84**	**65.71**	**132.55**	**1422.12**	**2525**

1999	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	# Connections
Single Family Res.	26.84	94.28	34.47	109.21	46.18	252.64	67.34	232.89	62.81	204.50	53.27	150.31	**1334.74**	2359
Multi-Family Res.	5.15	4.77	8.21	4.42	8.21	7.44	11.24	6.81	10.88	6.23	10.19	4.92	**88.47**	166
Commercial/Inst.	3.13	5.05	3.71	5.28	3.87	7.68	5.39	7.12	6.23	5.25	5.19	3.78	**61.68**	64
Industrial													**0.00**	
Landscape Irrigation	0.71	4.73	0.50	3.91	1.06	17.73	1.49	16.12	1.72	13.66	1.57	7.59	**70.79**	19
Other	6.66	1.17	5.17	9.56	0.74	1.01	1.38	2.07	24.69	0.50	12.69	3.38	**69.02**	4
SUBTOTAL	**42.49**	**110.00**	**52.06**	**132.38**	**60.06**	**286.50**	**86.84**	**265.01**	**106.33**	**230.14**	**82.91**	**169.98**	**1624.70**	**2612**
Agricultural Irrigation	0.00	2.12	0.00	2.68	0.00	4.04	0.00	3.74	0.00	3.79	0.00	2.81	19.18	2
Wholesale (to others)													0.00	
TOTAL	**42.49**	**112.12**	**52.06**	**135.06**	**60.06**	**290.54**	**86.84**	**268.75**	**106.33**	**233.93**	**82.91**	**172.79**	**1643.88**	**2614**

2000	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	# Connections
Single Family Res.	39.24	87.71	38.19	157.49	55.34	248.14	48.95	266.06	76.97	218.50	48.31	164.49	**1449.39**	2479
Multi-Family Res.	7.47	3.74	8.59	4.21	9.12	6.17	9.53	7.23	12.00	7.73	10.02	5.92	**91.73**	174
Commercial/Inst.	4.37	3.37	4.48	4.32	4.89	5.15	5.45	6.01	7.46	6.50	5.55	4.82	**62.37**	70
Industrial													**0.00**	
Landscape Irrigation	0.98	3.18	4.23	9.20	1.09	15.25	1.39	16.30	1.71	16.24	1.39	9.72	**80.68**	19
Other	7.94	1.00	0.92	18.41	3.88	4.27	4.97	0.83	3.35	0.23	6.29	0.00	**52.09**	
SUBTOTAL	**60.00**	**99.00**	**56.41**	**193.63**	**74.32**	**278.98**	**70.29**	**296.43**	**101.49**	**249.20**	**71.56**	**184.95**	**1736.26**	**2742**
Agricultural Irrigation	0.00	1.99	0.00	3.80	0.00	3.99	0.00	4.20	0.00	3.67	0.00	2.51	**20.16**	2
Wholesale (to others)													**0.00**	
TOTAL	**60.00**	**100.99**	**56.41**	**197.43**	**74.32**	**282.97**	**70.29**	**300.63**	**101.49**	**252.87**	**71.56**	**187.46**	**1756.42**	**2744**
TO BLACK LAKE	0	0	0	1.63	9.29	10.31	12.19	0.42	0	0	0	0	**33.84**	
TOTAL	**60.00**	**100.99**	**56.41**	**199.06**	**83.61**	**293.28**	**82.48**	**301.05**	**101.49**	**252.87**	**71.56**	**187.46**	**1790.26**	

Source: NCSD Monthly Report

Appendix B

Southland Sewage Treatment Plant Flows

1995 – 2000

NIPOMO COMMUNITY SERVICES DISTRICT
WASTEWATER TREATMENT PLANT
MONTHLY FLOWS
(gallons)

	1995	1996	1997	1998	1999	2000
JANUARY	8,998,000	9,735,000	12,004,000	10,996,000	9,503,000	12,862,000
FEBRUARY	7,946,000	9,779,000	11,097,000	14,333,000	8,518,000	*11,316,000*
MARCH	9,751,000	9,553,000	12,352,000	14,855,000	9,435,000	*12,214,000*
APRIL	9,159,000	9,605,000	11,634,000	14,284,000	8,941,000	11,960,000
MAY	9,620,000	10,106,000	12,107,000	14,884,000	8,817,000	12,251,000
JUNE	9,409,000	10,233,000	11,256,000	12,482,000	10,027,000	13,071,000
JULY	10,073,000	10,124,000	11,746,000	12,723,000	8,795,000	13,794,000
AUGUST	9,827,000	10,747,000	11,289,000	12,679,000	12,713,000	11,743,000
SEPTEMBER	10,059,000	10,889,000	11,652,000	11,767,000	13,003,000	12,111,000
OCTOBER	10,195,000	10,704,000	12,193,000	13,009,000	13,902,000	12,366,000
NOVEMBER	9,519,000	10,548,000	11,580,000	12,390,000	12,250,000	11,967,000
DECEMBER	9,757,000	10,553,000	11,505,000	10,796,000	14,138,000	11,320,000
TOTAL	**114,313,000**	**122,576,000**	**140,415,000**	**155,198,000**	**130,042,000**	**146,975,000**
AVERAGE	**9,526,083**	**10,214,667**	**11,701,250**	**12,933,167**	**10,836,833**	**12,247,917**
AVERAGE (gpd)	**313186**	**334907**	**384699**	**425200**	**356279**	401571

Ave. w/out Feb. and Mar. 404,738

Not Actual Data, value=average of previous 3 years.

NIPOMO MASTER PLAN UPDATE
INDEX OF WATER MODEL RUNS

FILE NAME	DESCRIPTION
NCAL0	Calibration - No Fire Flow
NCAL1	Calibration - Fire Flow at Mesa and Chorro
NCAL2	Calibration - Fire Flow at Callmex and Pomeroy
NCAL3	Calibration - Fire Flow at Grande and Jasper
NCAL4	Calibration - Fire Flow at Frisco Way
NCAL5	Calibration - Fire Flow at Summit Sta. And Futura
NCAL6	Calibration - Fire Flow at Dale Ave.
2001-00	Existing - ADD - No Wells - Tanks Full
2001-01	Existing - PHD - All Wells On - Tanks Low
2001-02	Existing - ADD+3000 gpm FF @ Division and Orchard
2001-03	Existing - ADD+500 gpm FF @ Summit Sta. And Futura
2001-04	Existing - ADD+1500 gpm FF @ Vons
2001-05	Existing - ADD+1500 gpm FF near the High School
2001-06	Existing - ADD+3000 gpm FF @ Tefft and Oak Glen
2001-07	Existing - ADD+500 gpm FF @ End of Poppy
2001-10	Existing - ADD - No Wells - Tanks Full - With Improvements[1]
2001-11	Existing - PHD - All Wells On - Tanks Low - With Improvements[1]
2001-11A	Existing - PHD - All Wells On - Tanks Low - With Improvements[1] - No HP Pump Station - Pomeroy Added
2001-12	Existing - ADD+3000 gpm FF @ Division and Orchard - With Improvements[1]
2001-13	Existing - ADD+500 gpm FF @ Summit Sta. And Futura - With Improvements[1]
2001-14	Existing - ADD+1500 gpm FF @ Vons - With Improvements[1]
2001-15	Existing - ADD+1500 gpm FF near the High School - With Improvements[1]
2001-16	Existing - ADD+3000 gpm FF @ Tefft and Oak Glen - With Improvements[1]
2001-17	Existing - ADD+500 gpm FF @ End of Poppy - With Improvements[1]
2001-20	Buildout - ADD - No Wells - Tanks Full - With Improvements[2]
2001-21	Buildout - PHD - All Wells On - Tanks Low - With Improvements[2]
2001-21A	Buildout - PHD - All Wells On - Tanks Low - With Improvements[2] (State Water From South)
2001-22	Buildout - ADD+3000 gpm FF @ Division and Orchard - With Improvements[2]
2001-22A	Buildout - ADD+3000 gpm FF @ Division and Orchard - With Improvements[2] (State Water From South)
2001-23	Buildout - ADD+500 gpm FF @ Summit Sta. And Futura - With Improvements[2]
2001-24	Buildout - ADD+1500 gpm FF @ Vons - With Improvements[2]
2001-25	Buildout - ADD+1500 gpm FF near the High School - With Improvements[2]
2001-26	Buildout - ADD+3000 gpm FF @ Tefft and Oak Glen - With Improvements[2]
2001-27	Buildout - ADD+500 gpm FF @ End of Poppy - With Improvements[2]
2001-28	Buildout - ADD+1500 gpm FF at the Woodlands - With Improvements[2]
2001-31	Buildout - PHD - All Wells On - Tanks Low - With Improvements[2] - no State Water
2001-31A	Buildout - PHD - All Wells On - Tanks Low - With Improvements[2A] - no State Water
2001-31B	Buildout - PHD - All Wells On - Tanks Low - With Improvements[2B] - no State Water
2001-31C	Buildout - PHD - All Wells On - Tanks Low - With Improvements[2C] - no State Water
2001-32	Buildout - ADD+3000 gpm FF @ Division and Orchard - With Improvements[2] - no State Water
2001-32A	Buildout - ADD+3000 gpm FF @ Division and Orchard - With Improvements[2A] - no State Water
2001-32B	Buildout - ADD+3000 gpm FF @ Division and Orchard - With Improvements[2B] - no State Water
2001-32C	Buildout - ADD+3000 gpm FF @ Division and Orchard - With Improvements[2C] - no State Water
2001-33	Buildout - ADD+500 gpm FF @ Summit Sta. And Futura - With Improvements[2] - no State Water
2001-34	Buildout - ADD+1500 gpm FF @ Vons - With Improvements[2] - no State Water
2001-35	Buildout - ADD+1500 gpm FF near the High School - With Improvements[2] - no State Water
2001-36	Buildout - ADD+3000 gpm FF @ Tefft and Oak Glen - With Improvements[2] - no State Water
2001-37	Buildout - ADD+500 gpm FF @ End of Poppy - With Improvements[2] - no State Water

2001-40	Buildout - ADD - No Wells - Tanks Full - With Improvements[2] - No HP P.S.
2001-41	Buildout - PHD - All Wells On - Tanks Low - With Improvements[2] - No HP P.S.
2001-42	Buildout - ADD+3000 gpm FF @ Division and Orchard - With Improvements[2] - No HP P.S.
2001-43	Buildout - ADD+500 gpm FF @ Summit Sta. And Futura - With Improvements[2] - No HP P.S.
2001-47	Buildout - ADD+500 gpm FF @ End of Poppy - With Improvements[2] - No HP P.S.
2001-50	Buildout - ADD (Ex. ADD - Summit Station) - No Wells - Tanks Full - With Improvements[2] - No HP P.S.
2001-51	Buildout - PHD (Ex. PHD - Summit Station) - All Wells On - Tanks Low - With Improvements[2] - No HP P.S.
2001-52	Buildout - ADD (Ex. ADD - Summit Station) +3000 gpm FF @ Division and Orchard - With Improvements[2] - No HP P.S.
2001-53	Buildout - ADD (Ex. ADD - Summit Station) +500 gpm FF @ Summit Sta. And Futura - With Improvements[2] - No HP P.S.
2001-57	Buildout - ADD (Ex. ADD - Summit Station) +500 gpm FF @ End of Poppy - With Improvements[2] - No HP P.S.
2001-60	Buildout - ADD - No Wells - Tanks Full - With Improvements[2] - HP P.S. replaced by Alt Booster P.S.
2001-61	Buildout - PHD - All Wells On - Tanks Low - With Improvements[2] - HP P.S. replaced by Alt Booster P.S.
2001-62	Buildout - ADD+3000 gpm FF @ Division and Orchard - With Improvements[2] - HP P.S. replaced by Alt Booster P.S.
2001-63	Buildout - ADD+500 gpm FF @ Summit Sta. And Futura - With Improvements[2] - HP P.S. replaced by Alt Booster P.S.
2001-67	Buildout - ADD+500 gpm FF @ End of Poppy - With Improvements[2] - HP P.S. replaced by Alt Booster P.S.
2001-71	Buildout - PHD - All Wells On - Tanks Low - With Improvements[2] - No HP P.S. - No Pomeroy
2001-77	Buildout - ADD+500 gpm FF @ End of Poppy - With Improvements[2] - No HP P.S. - No Pomeroy

Improvements	1-Existing	2-Future	(2A)	(2B)	(2C)
Parallel Tefft - Thompson to 101	10"	12"	10"	12"	16"
Parallel Tefft - 101 Crossing	10"	12"	10"	12"	12"
Parallel Tefft - 101 to Pomeroy	10"	12"	10"	12"	16"
Parallel Tefft - Pomeroy to Dana Elem.	8"	10"	8"	10"	12"
W. Side of Dana Elem.	12"	12"	"	"	"
HP Booster - Summit Station	560 gpm	560 gpm	"	"	"
Summit Station Piping & Valves	8"	8"	"	"	"
Pomeroy		10"	"	"	"
Frontage - Summit Sta. To Standpipe		14"	"	"	"
Frontage - Standpipe to Willow		14"	"	"	"
Frontage - Willow to Sandydale		14"	"	"	"
Standpipe to Frontage		12"	"	"	"
Willow to Frontage		8"	"	"	"
S from Tefft, W of 101		10"	"	"	"
Parallel Grande - Blume to Orchard		8"	"	"	"
Dana Wells to Mesa Rd		8"	"	"	"
Camino Caballo - Connect off Frontage		8"	"	"	"
Inga Rd - Connect off Frontage		6"	"	"	"
Parallel Orchard, Tefft to Grande		8"	"	"	"
Hill, close loop		8"	"	"	"
Parallel Tefft - Thompson to Twin Tanks		14"	"	"	"
Sun Dale Rd		12"	"	"	"
Parallel Hetrick, Live Oak Ridge to Standpipe		10"	"	"	"
Los Berros Tank		2 MG	"	"	"
Connection to Los Berros Tank		14"	"	"	"
New Twin Tank		1 MG	"	"	"
STATE WATER*		3000 AF/yr	"	"	"
Pipe From Thompson and Sea to State Water		12"	"	"	"

TABLE 19
SUMMIT STATION - PROBABLE COSTS OF ALTERNATIVE IMPROVEMENTS

IMPROVEMENTS	Diam. (in)	Unit	Amount	Unit Price[2]	Estimated Capital Cost
PRIVATE BOOSTER PUMPS/ON-SITE IMPROVEMENTS					
Provide rebate for private booster pump or other on-site improvements[1]		EA	49	$ 5,000	$ 245,000
Retrofit fire hydrants to prevent hydrant flows >500 gpm		EA	63	$ 400	$ 25,000
SUBTOTAL					**$ 270,000**
BOOSTER PUMP STATION WITH SEPARATE PRESSURE ZONE (All of Summit Station)					
Booster Pump Station, with emergency generator and check valve bypass (1 duty, 1 standby - each approximately 300-gpm at 42 feet)		LS	1	$ 475,000	$ 475,000
Pressure Regulators on Homes Below 410'		EA	31	$ 500	$ 16,000
Closed Gate Valves on Dale, Ewing, and Summit Station	8	LS	3	$ 1,700	$ 5,000
Retrofit fire hydrants to prevent hydrant flows >500 gpm		EA	63	$ 400	$ 25,000
SUBTOTAL					**$ 521,000**

NOTE: Installation of a booster pump and pressure zone, as shown in Figure 8, will eliminate the benefit the recommended piping in Pomeroy Road, unless development occurs along Pomeroy Road. However, this pipeline was recommended in Section 11 as a development driven improvement, and so it is anticipated that the cost ($689,000) would be payed by development, regardless of which improvement alternative is chosen for Summit Station.

1-THE ACTUAL NUMBER OF PARTICIPANTS WILL BE DETERMINED BY THE DISTRICT. THERE ARE APPROXIMATELY 49 CUSTOMERS WITH HOUSE PADS AT OR ABOVE 425 FEET. UNIT PRICE FOR BOOSTER PUMP REBATE PROGRAM TO BE DETERMINED BY REBATE VALUE SET BY DISTRICT. THE ESTIMATED MAGNITUDE OF COST ($5,000) INCLUDES BOOSTER PUMP PURCHASE, INSTALLATION, INITIAL MAINTENANCE AND OTHER REQUIRED UPGRADES.

2-ESTIMATES INCLUDE COST OF MATERIALS AND CONSTRUCTION + 45% FOR ENGINEERING, PERMITTING, ADMINISTRATION, AND CONTINGENCY. APRIL 2001 ENR COST INDEX WAS USED TO GENERATE UNIT COSTS. DOES NOT INCLUDE COST OF LAND.

TABLE 20
SUMMIT STATION IMPROVEMENT ALTERNATIVES - COST-BENEFIT COMPARISON

Alternative	A - Hydropneumatic Pump Station and Pressure Zone (as shown in Plate 1)	B - Individual Booster Pumps and On-site Improvements (as shown in Figure 7)	C - Booster Pump Station and Pressure Zone (as shown in Figure 8)
Description of Improvements Required	- Hydropneumatic Pump Station (Pumps - 1 duty, 1 standby 300 gpm @ 70') - 2 Pressure Reducing Stations - 4 Closed Gate Valves - Parallel Piping	- Individual Booster Pumps - Other On-site Improvements, where possible, including: Abandoning Wells Service Piping Upgrades	- Booster Pump Station (Pumps - 1 duty, 1 standby 300 gpm @ 42') - 3 Closed Gate Valves - Individual Pressure Regulators at homes below 410'
Estimated Cost	$ 1,212,000	$ 270,000	$ 521,000
Pressure **- Meets current Title 22 (20 psi-minimum) under existing and buildout conditions?**	Yes	Yes	Yes
- Meets current Master Plan Criteria under existing and buildout conditions?	Yes	No	Yes
Who Benefits?	Pressure Zone would primarily serve customers with house pads above 425 feet (approximately 50 existing customers).	Eligible participants would be determined by the District. Recommended eligible participants would include: - Those with services at or above 449 feet (to be given first prioirty - approximately 22 customers) - Those with house pads at or above 425 feet also should be considered (approximately 49 customers)	Pressure Zone would serve all of Summit Station. Low area along Frontage Road could be valved off and served by 548-foot zone once Los Berros Tank is installed.
Advantages	- Pressure fluctuations minimized - System Pressure is raised - Summit Station pressure would be less influenced by the Standpipe	- Low cost - Pressure improved at point of use - Improvements handled on case by case basis with customer	- Pressure fluctuations minimized - System Pressure is raised - Summit Station pressure would be less influenced by the Standpipe
Disadvantages	- High cost - Adds O&M costs to overall water system operation - Pipelines and valves needed to define the new Pressure zone	- Does not meet Master Plan criteria - Does not address pressure fluctuation issue in Summit Station - Will require District's participation on customer's side of meter - Pumps will have to be maintained/replaced	- Moderate cost - Adds O&M costs to overall water system operation - High Pressures will require pressure reducers on the customer side of meters lower than 410'
Other Considerations	- Funding, allocation of costs - Does not address pressure drop from meter to house - Operations and Maintenance	- Funding -Operations and Maintenance	- Funding, allocation of costs - Does not address pressure drop from meter to house - Operations and Maintenance

Appendix C

Input Files for Water and Sewer System Models

```
NEW
OUTPUT 2001-01.out
TITLE
2001 MP UPDATE
EXISTING SYSTEM - EXISTING DEMANDS - PHD - Wells On - Tanks Low
PEAKING VALUES INCREASED FROM MP RECCOMENDATION TO ALLOW FOR
UNACCOUNTED FOR WATER

UNITS  0  0  0  0  0  0  0

LIMITS 50  1.000000  1.  5.  0.  15.  30.  80.  1918.  50.
FACTORS 5.92  1.00000
LINES 80
UNKNOWNS
 101  536.4  0  0 * TWIN TANKS
 199  536.4  0  0 * STANDPIPE
 178  -15.0  1  0 * EUREKA WELL PUMP
 181  -10.2  2  0 * BEVINGTON WELL PUMP
 185   23.0  3  0 * OMIYA WELL PUMP
 169  -65.0  5  0 * VIA CONCHA WELL PUMP
 244  222.0  4  0 * CHURCH WELL PUMP
 927 -100.0  7  0 * SUNDALE WELL
CHECK VALVES
BOOSTER VALVES
PRV
PUMP CURVES
 1  0  990  400  910  650  840  850  740  1020  680  0  0  0  0
0  0
 2  0  875  200  875  300  830  416  677  450  600  0  0  0  0
0  0
 3  0  952  40  924  80  826  100  749  120  630  0  0  0  0  0
0
 4  0  774  100  608  200  440  225  391  250  340  0  0  0  0
0  0
 5  0  936  200  888  400  856  700  696  800  576  0  0  0  0
0  0
 7  0 1040  500  820  750  720 1000  605 1250  410  0  0  0  0
0  0
PIPE
101  101  102  5610  10  125  0
102  102  103  1560  10  125  0
103  103  104  510  10  125  0
104  104  105  520  10  125  0
105  105  106  350  10  125  0
106  106  107  430  10  125  0
107  107  108  500  10  125  0
108  108  109  830  10  125  0
109  109  110  860  10  125  0
110  110  111  1080  10  125  0
111  111  112  1030  10  125  0
112  112  113  830  10  125  0
113  113  114  320  10  125  0
114  114  115  200  10  125  0
115  115  116  60  10  125  0
116  116  117  250  10  125  0
117  117  120  360  10  125  0
118  120  121  30  10  125  0
119  121  122  260  10  125  0
120  122  123  340  10  125  0
121  123  124  25  10  125  0
122  124  125  440  10  125  0
123  125  126  10  10  125  0
124  126  127  320  10  125  0
125  127  130  190  10  125  0
126  130  131  30  10  125  0
127  131  701  330  10  125  0
128  118  700  200  10  125  0
129  701  132  120  10  125  0
130  118  134  700  10  125  0
131  134  135  1150  10  125  0
132  135  136  870  10  125  0
133  136  702  420  10  125  0
134  137  138  800  8  125  0
135  138  139  710  10  125  0
136  139  140  710  10  125  0
137  109  903  1340  10  125  0
138  141  142  490  10  125  0
139  142  143  620  10  125  0
140  143  144  530  10  125  0
141  144  145  270  10  125  0
142  145  146  510  10  125  0
143  146  147  340  10  125  0
144  147  150  250  10  125  0
145  150  151  470  10  125  0
146  151  140  440  10  125  0
147  140  152  760  10  125  0
148  152  153  700  10  125  0
149  153  154  540  10  125  0
150  154  155  160  10  125  0
151  155  168  700  10  125  0
152  156  157  650  10  125  0
153  157  158  630  10  125  0
154  158  159  25  10  125  0
155  159  160  650  10  125  0
156  160  161  40  10  125  0
157  161  162  510  10  125  0
158  162  163  80  10  125  0
159  163  164  370  10  125  0
160  164  165  240  10  125  0
161  165  166  150  10  125  0
162  166  167  510  10  125  0
163  167  170  370  10  125  0
164  170  171  2160  16  125  0
165  171  928  3100  16  125  0
166  172  173  1800  16  125  0
167  173  169  1700  12  125  0
168  174  175  900  10  125  0
169  174  176  900  10  125  0
170  178  177  198  10  125  0
171  177  176  5974  10  125  0
```

172	176	175	10	10	125	0	
173	175	179	1130	10	125	0	
174	181	180	335	8	125	0	
175	180	179	200	10	125	0	
176	179	182	5110	10	125	0	
177	185	184	357	8	125	0	
178	184	183	250	8	125	0	
179	183	182	10	8	125	0	
180	182	187	1260	8	125	0	
181	183	186	1260	8	125	0	
182	393	395	1350	8	125	0	
183	190	191	40	8	125	0	
184	191	192	870	8	125	0	
185	192	193	1130	10	125	0	
186	193	198	3516	10	125	0	
187	194	195	3480	8	125	0	
188	194	196	950	10	125	0	
189	196	197	500	10	125	0	
190	200	201	500	10	125	0	
191	201	203	1800	10	125	0	
192	202	203	540	10	125	0	
193	203	204	650	10	125	0	
194	204	205	330	8	125	0	
195	205	206	60	8	125	0	
196	206	207	900	8	125	0	
197	207	208	20	8	125	0	
198	208	209	810	8	125	0	
199	209	210	80	8	125	0	
200	210	211	370	8	125	0	
201	211	212	330	8	125	0	
202	212	213	1470	8	125	0	
203	213	214	1450	8	125	0	
204	214	215	1070	8	125	0	
205	215	216	960	8	125	0	
206	216	217	130	8	125	0	
207	217	196	1400	8	125	0	
208	202	220	150	10	125	0	
209	220	221	910	10	125	0	
210	221	154	100	10	125	0	
211	107	222	440	8	125	0	
212	222	223	20	6	125	0	
213	222	1020	670	6	125	0	
214	223	230	430	6	125	0	
215	223	224	430	6	125	0	
216	224	225	430	6	125	0	
217	224	231	440	6	125	0	
218	225	226	450	6	125	0	
219	225	232	440	6	125	0	
220	226	227	520	6	125	0	
221	226	234	370	8	135	0	*UPGRADETO SUPPORT
222	227	228	520	6	125	0	
223	227	235	370	6	125	0	
224	228	229	370	6	125	0	
225	229	240	370	6	125	0	
226	230	231	430	6	125	0	
227	231	241	270	6	125	0	
228	231	232	430	6	125	0	
229	232	242	270	6	125	0	
230	232	233	450	6	125	0	
231	233	247	290	8	135	0	*""
232	234	233	70	8	135	0	*""
233	234	235	520	6	125	0	
234	235	236	550	6	125	0	
235	236	237	70	6	125	0	
236	237	255	200	6	125	0	
237	255	256	600	6	125	0	
238	255	257	150	6	125	0	
239	257	258	520	8	125	0	
240	240	258	370	8	125	0	
241	258	250	370	8	125	0	
242	241	242	420	6	125	0	
243	242	218	150	6	125	0	
244	244	243	89	8	125	0	
245	243	218	750	8	125	0	
246	242	245	380	6	125	0	
247	247	246	80	8	135	0	*""
248	247	249	880	8	125	0	
249	246	248	280	8	135	0	*""
250	248	249	520	8	125	0	
251	249	219	650	8	125	0	
252	219	250	500	8	125	0	
253	250	254	350	8	125	0	
254	248	251	360	8	135	0	*""
255	251	252	490	8	125	0	
256	252	253	590	8	125	0	
257	253	254	460	8	125	0	
258	102	259	1320	6	125	0	
259	259	265	370	6	125	0	
260	259	265	370	6	125	0	
261	260	103	370	6	125	0	
262	260	261	300	6	125	0	
263	261	262	200	6	125	0	
264	104	262	370	8	135	0	*UPGRADETO SUPPORT
265	262	270	370	8	135	0	*UPGRADETO SUPPORT
266	262	263	450	6	125	0	
267	263	271	370	6	125	0	
268	263	264	430	6	125	0	
269	264	272	370	6	125	0	
270	265	266	520	6	125	0	
271	265	267	480	6	125	0	
272	267	270	620	6	125	0	
273	270	273	480	8	135	0	*UPGRADETO SUPPORT
274	270	271	450	6	125	0	
275	271	274	480	6	125	0	
276	271	272	430	6	125	0	
277	272	275	480	6	125	0	
278	273	276	470	6	125	0	
279	273	274	450	6	135	0	*UPGRADETO SUPPORT
280	274	277	470	6	125	0	
281	274	275	430	6	135	0	*UPGRADETO SUPPORT

282	275	278	470	6	125	0	
283	276	279	480	8	125	0	
284	276	277	450	6	125	0	
285	277	278	430	6	125	0	
286	278	281	480	6	125	0	
287	279	283	450	8	125	0	
288	279	280	450	6	125	0	
289	280	282	480	6	125	0	
290	280	281	430	6	125	0	
291	281	282	910	6	125	0	
292	113	1000	600	6	125	0	
293	284	285	580	6	125	0	
294	284	268	340	6	125	0	
295	268	285	240	6	125	0	
296	285	286	300	6	125	0	
297	286	287	110	6	125	0	
298	287	908	1100	6	125	0	
299	290	291	250	6	125	0	
300	291	292	530	6	125	0	
301	292	293	360	6	125	0	
302	293	294	200	6	125	0	
303	294	295	510	6	125	0	
304	295	296	530	6	125	0	
305	296	297	860	6	125	0	
306	297	298	1000	6	125	0	
307	298	299	200	6	125	0	
308	299	300	300	8	125	0	
309	300	301	540	8	125	0	
310	301	118	480	8	125	0	
311	299	302	770	6	125	0	
312	302	303	560	6	125	0	
313	303	304	400	6	125	0	
314	303	269	450	6	125	0	
315	269	304	830	6	125	0	
316	304	305	380	6	125	0	
317	305	306	780	6	125	0	
318	307	112	200	8	135	0	*NEW "12" ACROSS 101
319	307	308	500	8	125	0	
320	306	310	520	6	125	0	
321	310	309	300	6	125	0	
322	309	116	570	6	125	0	
323	121	311	520	6	125	0	
324	311	312	670	6	125	0	
325	312	122	200	6	125	0	
326	123	313	300	6	125	0	
327	313	314	630	6	125	0	
328	126	314	540	6	125	0	
329	127	315	590	6	125	0	
330	131	315	340	6	125	0	
331	315	316	160	6	125	0	
332	316	317	675	6	125	0	
333	316	320	760	6	125	0	
334	317	320	180	6	125	0	
335	320	133	398	6	125	0	
336	320	301	500	6	125	0	

337	135	1019	320	6	135	0	*GRANDE AVE UPGRADE
338	321	322	160	6	135	0	*""
339	323	322	150	6	135	0	*UPGRADEON BLACK HA
340	323	324	260	8	125	0	
341	324	326	430	8	125	0	
342	323	325	440	8	125	0	
343	325	326	260	8	125	0	
344	325	327	210	8	125	0	
345	327	132	930	8	125	0	
346	327	130	980	8	125	0	
347	322	328	470	6	135	0	*""
348	328	329	360	6	135	0	*""
349	329	330	360	6	135	0	*""
350	330	331	1020	8	125	0	
351	331	332	360	8	125	0	
352	332	333	210	8	125	0	
353	332	318	800	6	125	0	
354	318	115	550	6	125	0	
355	333	319	200	6	135	0	*CONCEPCST. UPGR
356	319	114	900	6	135	0	*""
357	138	342	660	8	125	0	
358	342	343	330	8	125	0	
359	343	344	1220	8	125	0	
360	344	345	820	8	135	0	
*361	345	346	890	8	135	0	*UPGRADEALONG HILL
362	346	347	900	6	125	0	
363	346	338	420	8	125	0	
364	338	347	600	8	125	0	
365	347	330	1970	8	125	0	
366	152	348	520	6	125	0	
367	348	349	170	6	125	0	
368	349	350	270	6	125	0	
369	349	351	600	6	125	0	
370	350	351	410	6	125	0	
371	351	352	560	6	125	0	
372	350	352	220	6	125	0	
373	352	151	130	6	125	0	
374	348	353	860	6	125	0	
375	353	354	200	6	125	0	
376	354	357	950	6	125	0	
377	354	355	150	6	125	0	
378	355	356	600	6	125	0	
379	355	360	260	6	125	0	
380	360	361	400	6	125	0	
381	360	362	260	6	125	0	
382	362	363	400	6	125	0	
383	362	364	660	6	125	0	
384	357	356	260	6	125	0	
385	356	361	280	6	125	0	
386	361	363	260	6	125	0	
387	363	364	260	6	125	0	
388	150	357	150	6	125	0	
389	145	364	150	6	125	0	
390	353	369	680	6	125	0	
391	144	365	140	6	125	0	

392	365	367	640	6	125	0	
393	365	366	260	6	125	0	
394	366	367	370	6	125	0	
395	366	368	260	6	125	0	
396	367	703	450	6	125	0	
397	143	368	140	6	125	0	
398	153	370	1800	6	125	0	
399	369	370	380	6	125	0	
400	221	371	570	6	125	0	
401	371	372	1000	8	125	0	
402	372	373	1620	8	125	0	
403	373	374	280	8	125	0	
404	374	375	310	8	125	0	
405	375	376	650	8	125	0	
406	374	377	650	8	125	0	
407	376	377	230	8	125	0	
408	376	339	800	10	125	0	
409	339	1017	820	6	135	0	*UPGRADEON FRONTAGE
410	155	380	850	6	125	0	
411	220	380	390	6	125	0	
412	380	381	940	6	125	0	
413	381	157	760	6	125	0	
414	381	203	750	6	125	0	
415	381	382	640	6	125	0	
416	382	158	770	6	125	0	
417	382	383	370	6	125	0	
418	383	204	380	6	125	0	
419	383	206	780	6	125	0	
420	163	384	450	6	125	0	
421	384	385	320	6	125	0	
422	385	386	600	6	125	0	
423	386	208	170	6	125	0	
424	165	378	590	6	125	0	
425	378	387	210	8	125	0	
426	387	388	600	8	125	0	
427	388	210	350	8	125	0	
428	170	389	180	8	125	0	
429	389	390	430	8	125	0	
430	390	391	590	8	125	0	
431	391	212	310	8	125	0	
432	160	392	720	6	125	0	
433	163	393	780	8	125	0	
434	165	394	620	8	125	0	
435	394	395	550	8	125	0	
436	209	397	1210	6	125	0	
437	397	400	600	8	125	0	
438	400	207	980	6	125	0	
439	400	401	910	8	125	0	
440	401	205	980	6	125	0	
441	401	201	510	10	125	0	
442	397	402	420	10	125	0	
443	402	217	470	8	125	0	
444	402	200	1660	10	125	0	
445	190	403	2530	8	125	0	
446	403	404	1230	8	125	0	

447	404	407	2150	8	125	0	
448	404	405	1020	8	125	0	
449	405	406	390	8	125	0	
450	406	407	1270	8	125	0	
451	406	408	1100	8	125	0	
452	405	410	3700	8	125	0	
*453	408	704	500	8	125	0	
454	192	411	1630	8	125	0	
455	411	410	80	8	125	0	
456	410	409	1600	8	125	0	
457	411	412	950	8	125	0	
458	412	413	350	8	125	0	
459	412	430	1030	8	125	0	
460	414	193	1730	8	125	0	
461	191	421	1120	8	125	0	
462	403	422	560	8	125	0	
463	407	423	670	8	125	0	
464	408	424	1000	8	135	0	*POPPEY LANE UPGRADE
465	414	425	480	8	125	0	
466	147	420	590	6	125	0	
467	420	419	380	6	125	0	
468	419	139	570	6	125	0	
469	146	416	640	8	125	0	
470	416	417	40	6	125	0	
471	417	418	330	6	125	0	
472	418	419	300	6	125	0	
473	417	415	220	6	125	0	
474	415	343	470	6	125	0	
475	418	342	690	8	125	0	
476	125	334	180	6	125	0	
477	334	335	440	6	125	0	
478	334	336	250	6	125	0	
479	336	337	700	6	125	0	
480	124	335	150	6	125	0	
481	335	427	290	6	125	0	
482	427	337	230	6	125	0	
483	337	426	440	6	125	0	
484	427	428	440	6	125	0	
485	426	428	220	6	125	0	
486	428	122	400	6	125	0	
487	426	340	240	6	125	0	
488	340	120	570	6	125	0	
489	340	341	580	6	125	0	
490	341	117	290	6	125	0	
491	399	398	348	8	125	0	
492	398	385	200	8	125	0	
493	169	174	333	8	125	0	
500	700	133	230	10	125	0	
501	133	132	400	10	125	0	
502	702	137	200	10	125	0	
503	703	368	190	10	125	0	
*504	704	409	2760	10	125	0	
505	913	168	200	10	125	0	
506	156	168	450	10	125	0	
507	194	198	2084	10	125	0	

```
508  198  199  2049  16  125  0
509  159  924  400  6  125  0
510  104  226  410  8  135  0  *UPGRADETO  SUPPORT
511  103  227  410  6  125  0
512  106  224  410  6  125  0
513  409  430  1100  8  125  0  *DALE  AVE
514  430  930  600  8  125  0  *FRISCO  WAY
*515  275  141  1760  10  135  0  *CREEK  &  HWY  101XIN
*516  251  307  3660  10  135  0  *CREEK  XING  SOUTH  OF
517  990  991  500  12  135  0  *TEFFT  ST.  HWY  101C
519  101  102  5610  12.4  135  0  *TWIN  TANK  TEFFT  ST.
520  102  103  1560  12.4  135  0  *""
521  103  104  510  12.4  135  0  *""
522  109  990  340  6  135  0  *TEFFT OAKGLEN TO FWY
523  991  345  350  8  135  0  *REPLACE PIPE 361
524  991  346  450  8  135  0  *REPLACE PIPE 361
525  991  346  450  10  135  0  *CORRECTION ON FRONTAGE
*527  187  190  5300  10  135  0  *LOOP  ALONG  POMEROY
*528  247  256  700  8  135  0  *LOOP  TO  INCLUDE  NIP
*529  326  134  800  8  135  0  *LOOP-BOHOMES  T
575  710  414  1890  8  125  0  *SUMMIT  STATION  RD
*713  710  800  3650  10  135  0  *FRONTAGRD  SO  OF  S
*801  199  800  2500  10  135  0  *TIE  FROM  STANDPIPE
900  900  901  1365  8  135  0  *MARY  ST  NEW  PIPELIN
901  901  345  155  8  135  0  *CONTINUON  W.  TEFF
902  142  900  105  8  135  0  *JUNIPERST  POSSIBLE
906  104  276  1690  10  135  0  *NEW  LINE  ALONG  THOMPSON
907  276  278  880  10  135  0  *NEW  LINE  ALONG  SEA  STREET
908  106  264  370  8  135  0  *LINE  IN  MALLAGH
909  278  902  1750  12  135  0  *CROSSINTO  OAKGLENN
910  902  903  320  12  135  0  *ALONG  OAKGLENN
911  303  295  1640  8  135  0  *HONEY  GROVE  LANE
912  905  906  1850  8  135  0  *ALONG  FRONTAGETO  SOUTHLAND
913  907  908  530  6  135  0  *S  CRYSTAL  GROVE  TO
SOUTHLAND
914  908  290  880  6  135  0  *BRANCH  OFF  CRYSTAL  GROVE
915  290  907  540  6  135  0  *SOUTHLAND
916  907  906  500  6  135  0  *SOUTHLAND
917  903  904  235  10  135  0  *PIONEER
918  904  141  235  10  135  0  *PIONEER
919  909  910  2100  8  135  0  *NEW  AREA  AT  WEST  END  OF
TEFT
920  910  911  1100  8  135  0
921  910  912  915  8  135  0
922  911  912  1310  8  135  0
923  913  914  770  10  135  0  *NEW  SUBDIVISAT  OSAGE  RD
924  914  915  1040  10  135  0
925  915  916  380  10  135  0
926  916  917  375  10  135  0
927  917  918  320  10  135  0
928  918  919  1010  10  135  0
929  919  920  430  8  135  0
930  920  921  1400  8  135  0
931  921  915  980  8  135  0
932  917  922  970  8  135  0
933  916  922  980  8  135  0
934  922  920  550  8  135  0
935  921  926  550  8  135  0
936  923  926  280  8  135  0
937  926  925  770  8  135  0
938  924  925  1250  8  135  0
939  925  914  560  8  135  0
940  927  928  200  8  135  0  *SUNDALE WELL
941  923  924  400  6  135  0  *RED  GUM  LANE
942  392  923  680  6  125  0
943  156  913  310  10  125  0
944  928  172  550  16  125  0  *CAMINO  CABALLO
945  137  909  510  8  135  0  *WEST END OF TEFT
946  408  929 1080  8  135  0  *DALE AVE
947  929  409 2180  8  135  0  *DALE AVE
948  930  710 1970  8  125  0  *FRISCO WAY
962  197  200  100  10  125 0  *CORRECTION TO HETRICK
963  186  187   10  12  125 0  *CORRECTION TO POMEROY AND
WILLOW
964  214  186  700  12  125 0  *CORRECTION TO POMEROY AND
WILLOW
1000 1017 141  420  10  135 0  *PIPE REPLACED IN FRONTAGE
1001  912 135 2380   8  135 0  *WEST GRANDE
1002  138 1003 150   8  135 0  *BERNITA
1003 1003 1004 200   8  135 0  *BERNITA
1004 1004 1006 420   8  135 0  *BERNITA
1005 1003 1005 420   8  135 0  *ALIMA
1006 1005 1006 200   8  135 0  *ALIMA
1007 1006 1007 300   8  135 0  *TAMIS
1008 1007 1008 320   8  135 0  *TAMIS
1009 1008 1009 220   8  135 0  *CHATA
1010 1010 1011 220   8  135 0  *PONDEROSA
1011 1011 1012 220   8  135 0  *PONDEROSA
1012 1012 1013 520   8  135 0  *PONDEROSA
1013 1013 1014 220   8  135 0  *BRISTLECONE
1014 1014 1015 220   8  135 0  *CHATA
1015 1015 1016 360   8  135 0  *CHATA
1016 1016 1019 210   8  135 0  *JASPER
1017 1011 1014 520   8  135 0  *PINECREST
1018 1010 1015 520   8  135 0  *BUCKHORN
1019 1015  322 220   8  135 0  *BLACK HAWK
1020 1009  136 520   6  125 0  *THEODORA
1021 1019  321 240   6  125 0  *GRANDE
1022 1001  369 1080  6  125 0  *CAMINO CABALLO
1023 1001  377 1260  8  135 0  *CAMINO CABALLO/INGA
1024  114 1000  550  6  135 0  *ADIMA/MARGIE
1025  333  114 1060  8  135 0  *FRONTAGE
1026 1000  284  180  6  135 0  *FRONTAGE
1027  230 1020  160  6  125 0  *PRICE
1028 1020  108  980  6  135 0  *PRICE
1029 1015  328  280  6  135 0  *PONDEROSA
1030  109  904 1550  8  135 0  *KENT

NODE
101     0       523.8   0
```

102	0	360	0
103	-2.43	342	0
104	-0.73	336	0
105	-0.73	329	0
106	-3.83	324	0
107	-11.66	316	0
108	-0.65	320	0
109	-9.97	328	0
110	-13.16	334	0
111	-18.15	331	0
112	-0.38	310	0
113	-7.07	333	0
114	-3.63	343	0
115	-3.63	350	0
116	0	351	0
117	-0.28	357	0
118	-4.68	329	0
120	0	356	0
121	0	355	0
122	0	343	0
123	0	337	0
124	0	337	0
125	0	333	0
126	0	333	0
127	0	327	0
130	0	326	0
131	-2.83	326	0
132	0	343	0
133	-1.13	338	0
134	-7.08	349	0
135	-15.02	368	0
136	-14.17	389	0
137	-2.83	395	0
138	-16.83	362	0
139	-3.4	358	0
140	-14.77	365	0
141	-3.27	346	0
142	0	357	0
143	0	370	0
144	-2.55	367	0
145	-1.91	372	0
146	-1.53	373	0
147	0	356	0
150	-1.13	353	0
151	-1.13	360	0
152	-3.83	374	0
153	0	347	0
154	0	365	0
155	0	361	0
156	-3.06	343	0
157	-1.15	322	0
158	0	330	0
159	-1.15	330	0
160	-2.3	340	0
161	-3.83	340	0

162	-1.15	340	0	
163	-4.21	340	0	
164	0	340	0	
165	-1.15	335	0	
166	-1.15	330	0	
167	-3.06	315	0	
168	0	340	0	
169	0	-65.6	0	*VIA CONCHA WELL
170	-1.53	306.4	0	
171	-0.38	305	0	
172	0	225	0	
173	0	254	0	
174	0	267	0	*VIA CONCHA WELL DISCHARGE
175	-1.53	283	0	
176	0	283	0	
177	0	183	0	*EUREKA WELL DISCHARGE
178	0	-15	0	*EUREKA WELL
179	-1.53	322	0	
180	0	325	0	*BEVINGTON WELL DISCHARGE
181	0	-10.2	0	*BEVINGTON WELL
182	0	394	0	
183	0	394	0	
184	0	380	0	*OMIYA WELL DISCHARGE
185	0	23	0	*OMIYA WELL
186	0	362	0	
187	-2.3	362	0	
190	-2.68	410	0	
191	-1.53	410	0	
192	0	430	0	
193	-1.91	428	0	
194	-0.77	404	0	
195	0	410	0	
196	0	380	0	
197	0	367	0	
198	0	400	0	
199	0	459.6	0	*STANDPIPE TANK
200	-2.68	370	0	
201	0	357	0	
202	0	357	0	
203	-7.27	350	0	
204	-2.3	340	0	
205	0	347	0	
206	-2.3	347	0	
207	-1.53	345	0	
208	0	345	0	
209	-2.3	330	0	
210	-0.77	328	0	
211	-3.06	327	0	
212	0	325	0	
213	0	336	0	
214	-4.21	361	0	
215	-1.91	370	0	
216	0	359	0	
217	-4.21	359	0	
218	0	313	0	

219	-6.23	350	0	
220	0	360	0	
221	-0.38	368	0	
222	-9.18	317	0	
223	-1.5	317	0	
224	-0.11	317	0	
225	-0.48	319	0	
226	-1.3	325	0	
227	-1.13	331	0	
228	-3.12	337	0	
229	-8.78	347	0	
230	-8.22	307	0	
231	-8.44	311	0	
232	-3.68	315	0	
233	0	321	0	
234	-1.01	321	0	
235	-3.12	327	0	
236	-3.12	337	0	
237	0	338	0	
240	-5.38	361	0	
241	0	308	0	
242	-3.68	313	0	
243	0	311	0	*CHURCH WELL DISCHARGE
244	-4.53	222	0	*CHURCH WELL
245	0	316	0	
246	0	318	0	
247	0	318	0	
248	-0.38	315	0	
249	-9.07	320	0	
250	-6.52	379	0	
251	0	316	0	
252	0	323	0	
253	-3.6	335	0	
254	-3.12	370	0	
255	-0.85	361	0	
256	-3.68	338	0	
257	-0.85	361	0	
258	-5.67	377	0	
259	-3.4	336	0	
260	0	331	0	
261	0	329	0	
262	-5.21	328	0	
263	0	324	0	
264	-1.98	321	0	
265	0	353	0	
266	0	362	0	
267	-0.85	345	0	
268	-3.68	313	0	
269	-3.45	285	0	
270	-0.49	334	0	
271	-2.27	328	0	
272	-1.98	320	0	
273	0	336	0	
274	-1.98	330	0	
275	-1.42	323	0	

276	-1.7	338	0
277	-5.38	332	0
278	-1.7	325	0
279	-1.13	337	0
280	-1.42	335	0
281	-3.12	330	0
282	-3.4	339	0
283	-2.27	346	0
284	0	316	0
285	-3.68	313	0
286	-2.83	313	0
287	0	312	0
290	0	317	0
291	0	319	0
292	-16.08	319	0
293	-5.36	320	0
294	0	318	0
295	0	320	0
296	-7.81	320	0
297	-1.53	320	0
298	0	319	0
299	0	319	0
300	0	318	0
301	-4.53	319	0
302	-6.89	310	0
303	-6.13	302	0
304	-3.06	305	0
305	0	304	0
306	0	306	0
307	0	318	0
308	0	322	0
309	-6.8	314	0
310	-7.08	309	0
311	-4.53	328	0
312	-4.53	335	0
313	-4.25	324	0
314	-17	306	0
315	-7.08	312	0
316	-7.65	312	0
317	-7.93	314	0
318	-8.98	359	0
319	0	348	0
320	-2.27	310	0
321	-2.83	376	0
322	-2.83	398	0
323	-1.13	404	0
324	-5.67	397	0
325	-6.28	398	0
326	-1.7	399	0
327	-3.4	362	0
328	-15.31	397	0
329	-9.63	358	0
330	-31.93	354	0
331	-4.53	344	0
332	-5.89	340	0

333	-9.29	337	0
334	-4.25	337	0
335	-4.53	340	0
336	-6.8	347	0
337	-7.08	350	0
338	-2.43	342	0
339	-7.4	360	0
340	-5.38	374	0
341	-11.1	364	0
342	-1.91	326	0
343	-6.01	320	0
344	-2.43	350	0
345	-7.88	360	0
346	-2.78	360	0
347	0	353	0
348	-7.04	372	0
349	-2.3	371	0
350	-2.68	362	0
351	-7.65	342	0
352	-1.7	361	0
353	-5.16	361	0
354	-1.42	370	0
355	-2.83	387	0
356	-4.25	360	0
357	0	360	0
360	-3.12	401	0
361	-2.83	374	0
362	-2.83	408	0
363	-4.25	372	0
364	-0.57	370	0
365	-2.83	370	0
366	-2.83	370	0
367	-9.63	400	0
368	-2.27	381	0
369	-11.1	348	0
370	-3.45	358	0
371	-3.83	380	0
372	-10.34	389	0
373	-8.04	360	0
374	-6.51	360	0
375	-1.34	360	0
376	0	360	0
377	-2.27	360	0
378	-1.91	380	0
380	-5.36	380	0
381	-3.83	360	0
382	-1.53	369	0
383	-1.53	360	0
384	-3.45	340	0
385	-4.21	359	0
386	-1.15	320	0
387	-2.3	342	0
388	-3.06	317	0
389	-1.15	317	0
390	-5.74	339	0

391	-5.74	316	0	
392	-3.45	317	0	
393	-1.53	311	0	
394	-1.91	322	0	
395	-1.15	303	0	
397	-4.98	347	0	
398	0	362	0	*OLYMPIC WELL DISCHARGE
399	0	14	145	*OLYMPIC WELL
400	-2.3	343	0	
401	-4.59	360	0	
402	-3.45	370	0	
403	-0.77	372	0	
404	-0.38	357	0	
405	-0.77	398	0	
406	-0.38	390	0	
407	-0.77	350	0	
408	-2.68	430	0	
409	-0.77	365	0	
410	-1.91	445	0	
411	0	444	0	
412	0	425	0	
413	-1.91	440	0	
414	-6.73	458	0	
415	-1.42	350	0	
416	0	358	0	
417	-2.68	358	0	
418	-4.19	357	0	
419	-2.3	356	0	
420	-4.98	357	0	
421	0	407	0	
422	-0.38	380	0	
423	0	330	0	
424	-0.77	459	0	
425	-1.91	455	0	
426	-3.68	377	0	
427	-1.13	354	0	
428	-7.37	360	0	
430	-2.3	340	0	
700	0	332.2	0	
701	0	330.4	0	
702	0	396.4	0	
703	0	380	0	
*704	0	432.3	0	
710	-5.74	405	0	
*800	0	381	0	
900	0	360	0	
901	0	357	0	
902	0	342	0	
903	-3.42	340	0	
904	-3.12	342	0	
905	0	310	0	
906	-1.72	315	0	
907	-11.05	319	0	
908	0	319	0	
909	-6.99	385	0	

```
910     -4.39   355     0
911     -0.85   350     0
912     0       330     0
913     -2.68   330     0
914     -1.91   355     0
915     -1.91   382     0
916     -1.91   360     0
917     -1.91   350     0
918     -1.91   345     0
919     -1.91   340     0
920     -1.91   340     0
921     -1.91   325     0
922     -1.91   345     0
923     -1.91   315     0
924     -1.91   320     0
925     -1.91   330     0
926     -1.91   320     0
927     0      260      0 *SUNDALE WELL
928     0       250     0 *SUNDALE WELL DISCHARGE
929     0       443     0 *HYDRANT TESTED ON DALE
930     0       375     0 *HYDRANT TESTED ON FRISCO
990   0      350   0
991   0      360   0
1000  0 316   0
1001  0 360   0
1003  0 390   0
1004  0 402   0
1005  0 400   0
1006  -7.37     404   0
1007  0 405   0
1008  -6.52     404   0
1009  0 402   0
1010  -9.92     402   0
1011  0 403   0
1012  0 401   0
1013  0 400   0
1014  0 400   0
1015  0 398   0
1016  0 386   0
1017  0 348   0
1019  0 380   0
1020  0 300   0

RUN
ENDFILE
```

```
NEW
OUTPUT 2001-11.out
TITLE
2001 MP UPDATE
IMPROVED SYSTEM - EXISTING DEMANDS - PHD - Wells On -
Tanks Low
Improvements - Behind Dana Elem.,Teft
Paralled//PEAKING VALUES INCREASED FROM MP
RECCOMENDATION TO ALLOW FOR UNACCOUNTED FOR WATER

UNITS  0  0  0  0  0  0  0

LIMITS 50  1.000000  1.  5.  0.  15.  30.  80.  1918.
50.
FACTORS 5.92  1.00000
LINES 80
UNKNOWNS
 101  536.4  0  0 * TWIN TANKS
 199  536.4  0  0 * STANDPIPE
 178  -15.0  1  0 * EUREKA WELL PUMP
 181  -10.2  2  0 * BEVINGTON WELL PUMP
 185   23.0  3  0 * OMIYA WELL PUMP
 169  -65.0  5  0 * VIA CONCHA WELL PUMP
 244  222.0  4  0 * CHURCH WELL PUMP
 927 -100.0  7  0 * SUNDALE WELL
CHECK VALVES
BOOSTER VALVES
PRV
PUMP CURVES
 1  0  990  400  910  650  840  850  740  1020  680  0
0  0  0  0  0
 2  0  875  200  875  300  830  416  677  450  600  0
0  0  0  0  0
 3  0  952  40  924  80  826  100  749  120  630  0  0
0  0  0  0
 4  0  774  100  608  200  440  225  391  250  340  0
0  0  0  0  0
 5  0  936  200  888  400  856  700  696  800  576  0
0  0  0  0  0
 6  0   77  200   72  400  0    0    0    0    0    0
0  0  0  0  0
 7  0 1040  500  820  750  720 1000  605 1250  410  0
0  0  0  0  0
PIPE
101  101  102  5610  10  125  0
102  102  103  1560  10  125  0
103  103  104  510  10  125  0
104  104  105  520  10  125  0
105  105  106  350  10  125  0
106  106  107  430  10  125  0
107  107  108  500  10  125  0
108  108  109  830  10  125  0
109  109  110  860  10  125  0
110  110  111  1080  10  125  0
111  111  112  1030  10  125  0
112  112  113  830  10  125  0
113  113  114  320  10  125  0
114  114  115  200  10  125  0
115  115  116  60  10  125  0
116  116  117  250  10  125  0
117  117  120  360  10  125  0
118  120  121  30  10  125  0
119  121  122  260  10  125  0
120  122  123  340  10  125  0
121  123  124  25  10  125  0
122  124  125  440  10  125  0
123  125  126  10  10  125  0
124  126  127  320  10  125  0
125  127  130  190  10  125  0
126  130  131  30  10  125  0
127  131  701  330  10  125  0
128  118  700  200  10  125  0
129  701  132  120  10  125  0
130  118  134  700  10  125  0
131  134  135  1150  10  125  0
132  135  136  870  10  125  0
133  136  702  420  10  125  0
134  137  138  800  8  125  0
135  138  139  710  10  125  0
136  139  140  710  10  125  0
137  109  903  1340  10  125  0
138  141  142  490  10  125  0
```

5

139	142	143	620	10	125	0
140	143	144	530	10	125	0
141	144	145	270	10	125	0
142	145	146	510	10	125	0
143	146	147	340	10	125	0
144	147	150	250	10	125	0
145	150	151	470	10	125	0
146	151	140	440	10	125	0
147	140	152	760	10	125	0
148	152	153	700	10	125	0
149	153	154	540	10	125	0
150	154	155	160	10	125	0
151	155	168	700	10	125	0
152	156	157	650	10	125	0
153	157	158	630	10	125	0
154	158	159	25	10	125	0
155	159	160	650	10	125	0
156	160	161	40	10	125	0
157	161	162	510	10	125	0
158	162	163	80	10	125	0
159	163	164	370	10	125	0
160	164	165	240	10	125	0
161	165	166	150	10	125	0
162	166	167	510	10	125	0
163	167	170	370	10	125	0
164	170	171	2160	16	125	0
165	171	928	3100	16	125	0
166	172	173	1800	16	125	0
167	173	169	1700	12	125	0
168	174	175	900	10	125	0
169	174	176	900	10	125	0
170	178	177	198	10	125	0
171	177	176	5974	10	125	0
172	176	175	10	10	125	0
173	175	179	1130	10	125	0
174	181	180	335	8	125	0
175	180	179	200	10	125	0
176	179	182	5110	10	125	0
177	185	184	357	8	125	0
178	184	183	250	8	125	0
179	183	182	10	8	125	0

180	182	187	1260	8	125	0
181	183	186	1260	8	125	0
182	393	395	1350	8	125	0
183	190	191	40	8	125	0
184	191	192	870	8	125	0
185	192	193	1130	10	125	0
186	193	198	3516	10	125	0
187	194	195	3480	8	125	0
188	194	196	950	10	125	0
189	196	197	500	10	125	0
190	200	201	500	10	125	0
191	201	203	1800	10	125	0
192	202	203	540	10	125	0
193	203	204	650	10	125	0
194	204	205	330	8	125	0
195	205	206	60	8	125	0
196	206	207	900	8	125	0
197	207	208	20	8	125	0
198	208	209	810	8	125	0
199	209	210	80	8	125	0
200	210	211	370	8	125	0
201	211	212	330	8	125	0
202	212	213	1470	8	125	0
203	213	214	1450	8	125	0
204	214	215	1070	8	125	0
205	215	216	960	8	125	0
206	216	217	130	8	125	0
207	217	196	1400	8	125	0
208	202	220	150	10	125	0
209	220	221	910	10	125	0
210	221	154	100	10	125	0
211	107	222	440	8	125	0
212	222	223	20	6	125	0
213	222	1020	670	6	125	0
214	223	230	430	6	125	0
215	223	224	430	6	125	0
216	224	225	430	6	125	0
217	224	231	440	6	125	0
218	225	226	450	6	125	0
219	225	232	440	6	125	0
220	226	227	520	6	125	0

221	226	234	370	8	135	0	*UPGRADETO	SUPPORT
222	227	228	520	6	125	0		
223	227	235	370	6	125	0		
224	228	229	370	6	125	0		
225	229	240	370	6	125	0		
226	230	231	430	6	125	0		
227	231	241	270	6	125	0		
228	231	232	430	6	125	0		
229	232	242	270	6	125	0		
230	232	233	450	6	125	0		
231	233	247	290	8	135	0	*""	
232	234	233	70	8	135	0	*""	
233	234	235	520	6	125	0		
234	235	236	550	6	125	0		
235	236	237	70	6	125	0		
236	237	255	200	6	125	0		
237	255	256	600	6	125	0		
238	255	257	150	6	125	0		
239	257	258	520	8	125	0		
240	240	258	370	8	125	0		
241	258	250	370	8	125	0		
242	241	242	420	6	125	0		
243	242	218	150	6	125	0		
244	244	243	89	8	125	0		
245	243	218	750	8	125	0		
246	242	245	380	6	125	0		
247	247	246	80	8	135	0	*""	
248	247	249	880	8	125	0		
249	246	248	280	8	135	0	*""	
250	248	249	520	8	125	0		
251	249	219	650	8	125	0		
252	219	250	500	8	125	0		
253	250	254	350	8	125	0		
254	248	251	360	8	135	0	*""	
255	251	252	490	8	125	0		
256	252	253	590	8	125	0		
257	253	254	460	8	125	0		
258	102	259	1320	6	125	0		
259	259	265	370	6	125	0		
260	259	265	370	6	125	0		
261	260	103	370	6	125	0		

262	260	261	300	6	125	0		
263	261	262	200	6	125	0		
264	104	262	370	8	135	0	*UPGRADETO	SUPPORT
265	262	270	370	8	135	0	*UPGRADETO	SUPPORT
266	262	263	450	6	125	0		
267	263	271	370	6	125	0		
268	263	264	430	6	125	0		
269	264	272	370	6	125	0		
270	265	266	520	6	125	0		
271	265	267	480	6	125	0		
272	267	270	620	6	125	0		
273	270	273	480	8	135	0	*UPGRADETO	SUPPORT
274	270	271	450	6	125	0		
275	271	274	480	6	125	0		
276	271	272	430	6	125	0		
277	272	275	480	6	125	0		
278	273	276	470	6	125	0		
279	273	274	450	6	135	0	*UPGRADETO	SUPPORT
280	274	277	470	6	125	0		
281	274	275	430	6	135	0	*UPGRADETO	SUPPORT
282	275	278	470	6	125	0		
283	276	279	480	8	125	0		
284	276	277	450	6	125	0		
285	277	278	430	6	125	0		
286	278	281	480	6	125	0		
287	279	283	450	8	125	0		
288	279	280	450	6	125	0		
289	280	282	480	6	125	0		
290	280	281	430	6	125	0		
291	281	282	910	6	125	0		
292	113	1000	600	6	125	0		
293	284	285	580	6	125	0		
294	284	268	340	6	125	0		
295	268	285	240	6	125	0		
296	285	286	300	6	125	0		
297	286	287	110	6	125	0		
298	287	908	1100	6	125	0		
299	290	291	250	6	125	0		
300	291	292	530	6	125	0		
301	292	293	360	6	125	0		
302	293	294	200	6	125	0		

303	294	295	510	6	125	0	
304	295	296	530	6	125	0	
305	296	297	860	6	125	0	
306	297	298	1000	6	125	0	
307	298	299	200	6	125	0	
308	299	300	300	8	125	0	
309	300	301	540	8	125	0	
310	301	118	480	8	125	0	
311	299	302	770	6	125	0	
312	302	303	560	6	125	0	
313	303	304	400	6	125	0	
314	303	269	450	6	125	0	
315	269	304	830	6	125	0	
316	304	305	380	6	125	0	
317	305	306	780	6	125	0	
318	307	112	200	8	135	0	*NEW "12" ACROSS 101
319	307	308	500	8	125	0	
320	306	310	520	6	125	0	
321	310	309	300	6	125	0	
322	309	116	570	6	125	0	
323	121	311	520	6	125	0	
324	311	312	670	6	125	0	
325	312	122	200	6	125	0	
326	123	313	300	6	125	0	
327	313	314	630	6	125	0	
328	126	314	540	6	125	0	
329	127	315	590	6	125	0	
330	131	315	340	6	125	0	
331	315	316	160	6	125	0	
332	316	317	675	6	125	0	
333	316	320	760	6	125	0	
334	317	320	180	6	125	0	
335	320	133	398	6	125	0	
336	320	301	500	6	125	0	
337	135	1019	320	6	135	0	*GRANDE AVE UPGRADE
338	321	322	160	6	135	0	*""
339	323	322	150	8	135	0	*UPGRADE ON BLACK HAWK
340	323	324	260	8	125	0	
341	324	326	430	8	125	0	
342	323	325	440	8	125	0	

343	325	326	260	8	125	0	
344	325	327	210	8	125	0	
345	327	132	930	8	125	0	
346	327	130	980	8	125	0	
347	322	328	470	6	135	0	*""
348	328	329	360	6	135	0	*""
349	329	330	360	6	135	0	*""
350	330	331	1020	8	125	0	
351	331	332	360	8	125	0	
352	332	333	210	8	125	0	
353	332	318	800	6	125	0	
354	318	115	550	6	125	0	
355	333	319	200	6	135	0	*CONCEPCST. UPGR
356	319	114	900	6	135	0	*""
357	138	342	660	8	125	0	
358	342	343	330	8	125	0	
359	343	344	1220	8	125	0	
360	344	345	820	8	135	0	
*361	345	346	890	8	135	0	*UPGRADEALONG HILL
362	346	347	900	6	125	0	
363	346	338	420	8	125	0	
364	338	347	600	8	125	0	
*365	347	330	1970	8	125	0	
366	152	348	520	6	125	0	
367	348	349	170	6	125	0	
368	349	350	270	6	125	0	
369	349	351	600	6	125	0	
370	350	351	410	6	125	0	
371	351	352	560	6	125	0	
372	350	352	220	6	125	0	
373	352	151	130	6	125	0	
374	348	353	860	6	125	0	
375	353	354	200	6	125	0	
376	354	357	950	6	125	0	
377	354	355	150	6	125	0	
378	355	356	600	6	125	0	
379	355	360	260	6	125	0	
380	360	361	400	6	125	0	
381	360	362	260	6	125	0	
382	362	363	400	6	125	0	
383	362	364	660	6	125	0	

384	357	356	260	6	125	0	
385	356	361	280	6	125	0	
386	361	363	260	6	125	0	
387	363	364	260	6	125	0	
388	150	357	150	6	125	0	
389	145	364	150	6	125	0	
390	353	369	680	6	125	0	
391	144	365	140	6	125	0	
392	365	367	640	6	125	0	
393	365	366	260	6	125	0	
394	366	367	370	6	125	0	
395	366	368	260	6	125	0	
396	367	703	450	6	125	0	
397	143	368	140	6	125	0	
398	153	370	1800	6	125	0	
399	369	370	380	6	125	0	
400	221	371	570	6	125	0	
401	371	372	1000	8	125	0	
402	372	373	1620	8	125	0	
403	373	374	280	8	125	0	
404	374	375	310	8	125	0	
405	375	376	650	8	125	0	
406	374	377	650	8	125	0	
407	376	377	230	8	125	0	
408	376	339	800	10	125	0	
409	339	1017	820	6	135	0	*UPGRADEON FRONTAGE
410	155	380	850	6	125	0	
411	220	380	390	6	125	0	
412	380	381	940	6	125	0	
413	381	157	760	6	125	0	
414	381	203	750	6	125	0	
415	381	382	640	6	125	0	
416	382	158	770	6	125	0	
417	382	383	370	6	125	0	
418	383	204	380	6	125	0	
419	383	206	780	6	125	0	
420	163	384	450	6	125	0	
421	384	385	320	6	125	0	
422	385	386	600	6	125	0	
423	386	208	170	6	125	0	
424	165	378	590	6	125	0	

425	378	387	210	8	125	0	
426	387	388	600	8	125	0	
427	388	210	350	8	125	0	
428	170	389	180	8	125	0	
429	389	390	430	8	125	0	
430	390	391	590	8	125	0	
431	391	212	310	8	125	0	
432	160	392	720	6	125	0	
433	163	393	780	8	125	0	
434	165	394	620	8	125	0	
435	394	395	550	8	125	0	
436	209	397	1210	6	125	0	
437	397	400	600	8	125	0	
438	400	207	980	6	125	0	
439	400	401	910	8	125	0	
440	401	205	980	6	125	0	
441	401	201	510	10	125	0	
442	397	402	420	10	125	0	
443	402	217	470	8	125	0	
444	402	200	1660	10	125	0	
445	190	403	2530	8	125	0	
446	403	404	1230	8	125	0	
447	404	407	2150	8	125	0	
448	404	405	1020	8	125	0	
449	405	406	390	8	125	0	
450	406	407	1270	8	125	0	
451	406	408	1100	8	125	0	
452	405	410	3700	8	125	0	
*453	408	704	500	8	125	0	
454	192	411	1630	8	125	0	
455	411	410	80	8	125	0	
456	410	409	1600	8	125	0	
457	411	412	950	8	125	0	
458	412	413	350	8	125	0	
459	412	430	1030	8	125	0	
460	414	193	1730	8	125	0	
461	191	421	1120	8	125	0	
462	403	422	560	8	125	0	
463	407	423	670	8	125	0	
464	408	424	1000	8	135	0	*POPPEY LANE UPGRADE
465	414	425	480	8	125	0	

466	147	420	590	6	125	0	
467	420	419	380	6	125	0	
468	419	139	570	6	125	0	
469	146	416	640	8	125	0	
470	416	417	40	6	125	0	
471	417	418	330	6	125	0	
472	418	419	300	6	125	0	
473	417	415	220	6	125	0	
474	415	343	470	6	125	0	
475	418	342	690	8	125	0	
476	125	334	180	6	125	0	
477	334	335	440	6	125	0	
478	334	336	250	6	125	0	
479	336	337	700	6	125	0	
480	124	335	150	6	125	0	
481	335	427	290	6	125	0	
482	427	337	230	6	125	0	
483	337	426	440	6	125	0	
484	427	428	440	6	125	0	
485	426	428	220	6	125	0	
486	428	122	400	6	125	0	
487	426	340	240	6	125	0	
488	340	120	570	6	125	0	
489	340	341	580	6	125	0	
490	341	117	290	6	125	0	
491	399	398	348	8	125	0	
492	398	385	200	8	125	0	
493	169	174	333	8	125	0	
500	700	133	230	10	125	0	
501	133	132	400	10	125	0	
502	702	137	200	10	125	0	
503	703	368	190	10	125	0	
*504	704	409	2760	10	125	0	
505	913	168	200	10	125	0	
506	156	168	450	10	125	0	
507	194	198	2084	10	125	0	
508	198	199	2049	16	125	0	
509	159	924	400	6	125	0	
510	104	226	410	8	135	0	*UPGRADETO SUPPORT
511	103	227	410	6	125	0	
512	106	224	410	6	125	0	
513	409	430	1100	8	125	0	*DALE AVE
514	430	930	600	8	125	0	*FRISCO WAY
*516	251	307	3660	10	135	0	*CREEK XING SOUTH OF
517	990	991	500	12	135	0	*TEFFT ST. HWY 101C
519	101	102	5610	12.4	135	0	*TWIN TANK TEFFT ST.
520	102	103	1560	12.4	135	0	*""
521	103	104	510	12.4	135	0	*""
522	109	990	340	6	135	0	*TEFFT OAKGLEN TO FWY
523	991	345	350	8	135	0	*REPLACE PIPE 361
524	991	346	450	8	135	0	*REPLACE PIPE 361
525	991	346	450	10	135	0	*CORRECTION ON FRONTAGE
*527	187	190	5300	10	135	0	*LOOP ALONG POMEROY//
528	247	256	700	8	135	0	*LOOP TO INCLUDE NIP
*529	326	134	800	8	135	0	*LOOP-BOHOMES//
575	710	414	1890	8	125	0	*SUMMIT STATION RD
*713	710	800	3650	10	135	0	*FRONTAGRD SO OF SUMMIT ST
*801	199	800	2500	10	135	0	*TIE FROM STANDPIPE//
900	900	901	1365	8	135	0	*MARY ST NEW PIPELIN
901	901	345	155	8	135	0	*CONTINUON W. TEFF
902	142	900	105	8	135	0	*JUNIPERST POSSIBLE
906	104	276	1690	10	135	0	*NEW LINE ALONG THOMPSON
907	276	278	880	10	135	0	*NEW LINE ALONG SEA STREET
908	106	264	370	8	135	0	*LINE IN MALLAGH
909	278	902	1750	12	135	0	*CROSSINTO OAKGLENN
910	902	903	320	12	135	0	*ALONG OAKGLENN
911	303	295	1640	8	135	0	*HONEY GROVE LANE
912	905	906	1850	8	135	0	*ALONG FRONTAGETO SOUTHLAND
913	907	908	530	6	135	0	*S CRYSTAL GROVE TO SOUTHLAND
914	908	290	880	6	135	0	*BRANCH OFF CRYSTAL GROVE

915 290 907 540 6 135 0 *SOUTHLAND
916 907 906 500 6 135 0 *SOUTHLAND
917 903 904 235 10 135 0 *PIONEER
918 904 141 235 10 135 0 *PIONEER
919 909 910 2100 8 135 0 *NEW AREA AT WEST END OF TEFT
920 910 911 1100 8 135 0
921 910 912 915 8 135 0
922 911 912 1310 8 135 0
923 913 914 770 10 135 0 *NEW SUBDIVISAT OSAGE RD
924 914 915 1040 10 135 0
925 915 916 380 10 135 0
926 916 917 375 10 135 0
927 917 918 320 10 135 0
928 918 919 1010 10 135 0
929 919 920 430 8 135 0
930 920 921 1400 8 135 0
931 921 915 980 8 135 0
932 917 922 970 8 135 0
933 916 922 980 8 135 0
934 922 920 550 8 135 0
935 921 926 550 8 135 0
936 923 926 280 8 135 0
937 926 925 770 8 135 0
938 924 925 1250 8 135 0
939 925 914 560 8 135 0
940 927 928 200 8 135 0 *SUNDALE WELL
941 923 924 400 6 135 0 *RED GUM LANE
942 392 923 680 6 125 0
943 156 913 310 10 125 0
944 928 172 550 16 125 0 *CAMINO CABALLO
945 137 909 510 8 135 0 *WEST END OF TEFT
946 408 929 1080 8 135 0 *DALE AVE
947 929 409 2180 8 135 0 *DALE AVE
948 930 710 1970 8 125 0 *FRISCO WAY
949 346 932 500 6 125 0 *MODIFIED PIPE 362
950 932 347 400 6 125 0 *MODIFIED PIPE 362
*951 932 345 450 10 135 0 *EXTENSION NORTH TO TEFT (MP)//

*955 135 322 720 8 135 0 *PARALLEL GRANDE (MP)//
*956 322 329 830 8 135 0 *""//
*957 329 330 360 8 135 0 *""//
962 197 200 100 10 125 0 *CORRECTION TO HETRICK
963 186 187 10 12 125 0 *CORRECTION TO POMEROY AND WILLOW
964 214 186 700 12 125 0 *CORRECTION TO POMEROY AND WILLOW
965 915 909 3050 12 135 0 *NEW PIPE BEHIND DANA ELEM (DR-5/00)//
*966 160 170 2270 10 135 0 *PARALLEL CAMINO CABALLO (DR-5/00)//
967 109 345 1190 10 135 0 *PARALLEL ALONG TEFT AT FWY XING//
970 104 109 2630 10 135 0 *PARALLEL ALONG TEFT (DR-5/00)//
971 345 138 3030 10 135 0 *PARALLEL ALONG TEFT (DR-5/00)//
972 138 137 800 8 135 0 *PARALLEL ALONG TEFT (DR-5/00)//
973 909 137 510 8 135 0 *PARALLEL ALONG TEFT (DR-5/00)//
*974 913 152 980 8 135 0 *PIPE ACROSS PARK (DR-5/00)//
*975 170 919 5300 8 135 0 *DANA WELLS TO MESA RD (DR-5/00)//
*976 339 1001 400 8 135 0 *CAMINO CABALLO AND FRONTAGE (FMP)//
*977 1001 369 1700 6 135 0 *CAMINO CABALLO EXISTING//
*978 370 377 1600 6 135 0 *INGA RD.(FMP)//
*979 375 935 3010 10 135 0 *FRONTAGE N OF SANDYDALE (FMP)//
*980 195 935 1000 8 135 0 *CONNECTION OFF FRONTAGE (FMP)//
*981 935 800 3900 10 135 0 *FRONTAGE RD. TO STANDPIPE (FMP)//
*982 137 135 1490 8 135 0 *PARALLEL ORCHARD//
*983 1007 1010 350 8 135 0 *LOOP SUBDIV.//
984 347 936 580 8 135 0 *DIVIDE PIPE 365

```
985   936  330  990  8 135  0  *DIVIDE PIPE 365
*986  936  1007 1500  8  135 0  *CLOSE LOOP, HILL//
1000 1017 141  420  10  135 0  *PIPE REPLACED IN
FRONTAGE
1001  912 135 2380   8  135 0  *WEST GRANDE
1002  138 1003 150   8  135 0  *BERNITA
1003 1003 1004 200   8  135 0  *BERNITA
1004 1004 1006 420   8  135 0  *BERNITA
1005 1003 1005 420   8  135 0  *ALIMA
1006 1005 1006 200   8  135 0  *ALIMA
1007 1006 1007 300   8  135 0  *TAMIS
1008 1007 1008 320   8  135 0  *TAMIS
1009 1008 1009 220   8  135 0  *CHATA
1010 1010 1011 220   8  135 0  *PONDEROSA
1011 1011 1012 220   8  135 0  *PONDEROSA
1012 1012 1013 520   8  135 0  *PONDEROSA
1013 1013 1014 220   8  135 0  *BRISTLECONE
1014 1014 1015 220   8  135 0  *CHATA
1015 1015 1016 360   8  135 0  *CHATA
1016 1016 1019 210   8  135 0  *JASPER
1017 1011 1014 520   8  135 0  *PINECREST
1018 1010 1015 520   8  135 0  *BUCKHORN
1019 1015  322 220   8  135 0  *BLACK HAWK
1020 1009  136 520   6  125 0  *THEODORA
1021 1019  321 240   6  125 0  *GRANDE
1022 1001  369 1080  6  125 0  *CAMINO CABALLO
1023 1001  377 1260  8  135 0  *CAMINO CABALLO/INGA
1024  114 1000  550  6  135 0  *ADIMA/MARGIE
1025  333  114 1060  8  135 0  *FRONTAGE
1026 1000  284  180  6  135 0  *FRONTAGE
1027  230 1020  160  6  125 0  *PRICE
1028 1020  108  980  6  135 0  *PRICE
1029 1015  328  280  6  135 0  *PONDEROSA
1030  109  904 1550  8  135 0  *KENT

NODE
101   0      523.8 0
102   0      360   0
103   -2.43 342    0
104   -0.73 336    0
105   -0.73 329    0
106   -3.83 324    0
107   -11.66 316   0
108   -0.65 320    0
109   -9.97 328    0
110   -13.16 334   0
111   -18.15 331   0
112   -0.38 310    0
113   -7.07 333    0
114   -3.63 343    0
115   -3.63 350    0
116   0      351   0
117   -0.28 357    0
118   -4.68 329    0
120   0      356   0
121   0      355   0
122   0      343   0
123   0      337   0
124   0      337   0
125   0      333   0
126   0      333   0
127   0      327   0
130   0      326   0
131   -2.83 326    0
132   0      343   0
133   -1.13 338    0
134   -7.08 349    0
135   -15.02 368   0
136   -14.17 389   0
137   -2.83 395    0
138   -16.83 362   0
139   -3.4  358    0
140   -14.77 365   0
141   -3.27 346    0
142   0      357   0
143   0      370   0
144   -2.55 367    0
145   -1.91 372    0
146   -1.53 373    0
147   0      356   0
150   -1.13 353    0
151   -1.13 360    0
```

152	-3.83	374	0	
153	0	347	0	
154	0	365	0	
155	0	361	0	
156	-3.06	343	0	
157	-1.15	322	0	
158	0	330	0	
159	-1.15	330	0	
160	-2.3	340	0	
161	-3.83	340	0	
162	-1.15	340	0	
163	-4.21	340	0	
164	0	340	0	
165	-1.15	335	0	
166	-1.15	330	0	
167	-3.06	315	0	
168	0	340	0	
169	0	-65.6	0	*VIA CONCHA WELL
170	-1.53	306.4	0	
171	-0.38	305	0	
172	0	225	0	
173	0	254	0	
174	0	267	0	*VIA CONCHA WELL DISCHARGE
175	-1.53	283	0	
176	0	283	0	
177	0	183	0	*EUREKA WELL DISCHARGE
178	0	-15	0	*EUREKA WELL
179	-1.53	322	0	
180	0	325	0	*BEVINGTON WELL DISCHARGE
181	0	-10.2	0	*BEVINGTON WELL
182	0	394	0	
183	0	394	0	
184	0	380	0	*OMIYA WELL DISCHARGE
185	0	23	0	*OMIYA WELL
186	0	362	0	
187	-2.3	362	0	
190	-2.68	410	0	
191	-1.53	410	0	
192	0	430	0	
193	-1.91	428	0	
194	-0.77	404	0	
195	0	410	0	
196	0	380	0	
197	0	367	0	
198	0	400	0	
199	0	459.6	0	*STANDPIPE TANK
200	-2.68	370	0	
201	0	357	0	
202	0	357	0	
203	-7.27	350	0	
204	-2.3	340	0	
205	0	347	0	
206	-2.3	347	0	
207	-1.53	345	0	
208	0	345	0	
209	-2.3	330	0	
210	-0.77	328	0	
211	-3.06	327	0	
212	0	325	0	
213	0	336	0	
214	-4.21	361	0	
215	-1.91	370	0	
216	0	359	0	
217	-4.21	359	0	
218	0	313	0	
219	-6.23	350	0	
220	0	360	0	
221	-0.38	368	0	
222	-9.18	317	0	
223	-1.5	317	0	
224	-0.11	317	0	
225	-0.48	319	0	
226	-1.3	325	0	
227	-1.13	331	0	
228	-3.12	337	0	
229	-8.78	347	0	
230	-8.22	307	0	
231	-8.44	311	0	
232	-3.68	315	0	
233	0	321	0	
234	-1.01	321	0	
235	-3.12	327	0	

236	-3.12	337	0	
237	0	338	0	
240	-5.38	361	0	
241	0	308	0	
242	-3.68	313	0	
243	0	311	0	*CHURCH WELL DISCHARGE
244	-4.53	222	0	*CHURCH WELL
245	0	316	0	
246	0	318	0	
247	0	318	0	
248	-0.38	315	0	
249	-9.07	320	0	
250	-6.52	379	0	
251	0	316	0	
252	0	323	0	
253	-3.6	335	0	
254	-3.12	370	0	
255	-0.85	361	0	
256	-3.68	338	0	
257	-0.85	361	0	
258	-5.67	377	0	
259	-3.4	336	0	
260	0	331	0	
261	0	329	0	
262	-5.21	328	0	
263	0	324	0	
264	-1.98	321	0	
265	0	353	0	
266	0	362	0	
267	-0.85	345	0	
268	-3.68	313	0	
269	-3.45	285	0	
270	-0.49	334	0	
271	-2.27	328	0	
272	-1.98	320	0	
273	0	336	0	
274	-1.98	330	0	
275	-1.42	323	0	
276	-1.7	338	0	
277	-5.38	332	0	
278	-1.7	325	0	

279	-1.13	337	0
280	-1.42	335	0
281	-3.12	330	0
282	-3.4	339	0
283	-2.27	346	0
284	0	316	0
285	-3.68	313	0
286	-2.83	313	0
287	0	312	0
290	0	317	0
291	0	319	0
292	-16.08	319	0
293	-5.36	320	0
294	0	318	0
295	0	320	0
296	-7.81	320	0
297	-1.53	320	0
298	0	319	0
299	0	319	0
300	0	318	0
301	-4.53	319	0
302	-6.89	310	0
303	-6.13	302	0
304	-3.06	305	0
305	0	304	0
306	0	306	0
307	0	318	0
308	0	322	0
309	-6.8	314	0
310	-7.08	309	0
311	-4.53	328	0
312	-4.53	335	0
313	-4.25	324	0
314	-17	306	0
315	-7.08	312	0
316	-7.65	312	0
317	-7.93	314	0
318	-8.98	359	0
319	0	348	0
320	-2.27	310	0
321	-2.83	376	0

322	-2.83	398	0
323	-1.13	404	0
324	-5.67	397	0
325	-6.28	398	0
326	-1.7	399	0
327	-3.4	362	0
328	-15.31	397	0
329	-9.63	358	0
330	-31.93	354	0
331	-4.53	344	0
332	-5.89	340	0
333	-9.29	337	0
334	-4.25	337	0
335	-4.53	340	0
336	-6.8	347	0
337	-7.08	350	0
338	-2.43	342	0
339	-7.4	360	0
340	-5.38	374	0
341	-11.1	364	0
342	-1.91	326	0
343	-6.01	320	0
344	-2.43	350	0
345	-7.88	360	0
346	-2.78	360	0
347	0	353	0
348	-7.04	372	0
349	-2.3	371	0
350	-2.68	362	0
351	-7.65	342	0
352	-1.7	361	0
353	-5.16	361	0
354	-1.42	370	0
355	-2.83	387	0
356	-4.25	360	0
357	0	360	0
360	-3.12	401	0
361	-2.83	374	0
362	-2.83	408	0
363	-4.25	372	0
364	-0.57	370	0

365	-2.83	370	0	
366	-2.83	370	0	
367	-9.63	400	0	
368	-2.27	381	0	
369	-11.1	348	0	
370	-3.45	358	0	
371	-3.83	380	0	
372	-10.34	389	0	
373	-8.04	360	0	
374	-6.51	360	0	
375	-1.34	360	0	
376	0	360	0	
377	-2.27	360	0	
378	-1.91	380	0	
380	-5.36	380	0	
381	-3.83	360	0	
382	-1.53	369	0	
383	-1.53	360	0	
384	-3.45	340	0	
385	-4.21	359	0	
386	-1.15	320	0	
387	-2.3	342	0	
388	-3.06	317	0	
389	-1.15	317	0	
390	-5.74	339	0	
391	-5.74	316	0	
392	-3.45	317	0	
393	-1.53	311	0	
394	-1.91	322	0	
395	-1.15	303	0	
397	-4.98	347	0	
398	0	362	0	*OLYMPIC WELL DISCHARGE
399	0	14	145	*OLYMPIC WELL
400	-2.3	343	0	
401	-4.59	360	0	
402	-3.45	370	0	
403	-0.77	372	0	
404	-0.38	357	0	
405	-0.77	398	0	
406	-0.38	390	0	
407	-0.77	350	0	

5

408	-2.68	430	0
409	-0.77	365	0
410	-1.91	445	0
411	0	444	0
412	0	425	0
413	-1.91	440	0
414	-6.73	458	0
415	-1.42	350	0
416	0	358	0
417	-2.68	358	0
418	-4.19	357	0
419	-2.3	356	0
420	-4.98	357	0
421	0	407	0
422	-0.38	380	0
423	0	330	0
424	-0.77	459	0
425	-1.91	455	0
426	-3.68	377	0
427	-1.13	354	0
428	-7.37	360	0
430	-2.3	340	0
700	0	332.2	0
701	0	330.4	0
702	0	396.4	0
703	0	380	0
*704	0	432.3	0
710	-5.74	405	0
*800	0	381	0
900	0	360	0
901	0	357	0
902	0	342	0
903	-3.42	340	0
904	-3.12	342	0
905	0	310	0
906	-1.72	315	0
907	-11.05	319	0
908	0	319	0
909	-6.99	385	0
910	-4.39	355	0
911	-0.85	350	0

912	0	330	0	
913	-2.68	330	0	
914	-1.91	355	0	
915	-1.91	382	0	
916	-1.91	360	0	
917	-1.91	350	0	
918	-1.91	345	0	
919	-1.91	340	0	
920	-1.91	340	0	
921	-1.91	325	0	
922	-1.91	345	0	
923	-1.91	315	0	
924	-1.91	320	0	
925	-1.91	330	0	
926	-1.91	320	0	
927	0	260	0	*SUNDALE WELL
928	0	250	0	*SUNDALE WELL DISCHARGE
929	0	443	0	*HYDRANT TESTED ON DALE
930	0	375	0	*HYDRANT TESTED ON FRISCO
*931	0	350	0	*NODE ADDED AT ORCHARD AND FIR
932	0	360	0	*NODE ADDED AT BEND BELOW TEFT
*935	0	385	0	*FRONTAGE RD
936	0	375	0	*HILL
990	0	350	0	
991	0	360	0	
1000	0	316	0	
1001	0	360	0	
1003	0	390	0	
1004	0	402	0	
1005	0	400	0	
1006	-7.37	404	0	
1007	0	405	0	
1008	-6.52	404	0	
1009	0	402	0	
1010	-9.92	402	0	
1011	0	403	0	
1012	0	401	0	
1013	0	400	0	
1014	0	400	0	
1015	0	398	0	
1016	0	386	0	

```
1017  0     348   0
1019  0     380   0
1020  0     300   0
MODIFY
DELETE PIPES 186 451 452 454 456 459 460 575 947
PIPES
6191  6192   411  1690   8  125 *HETRICK
6192  6193  6192  1130   8  135 *HETRICK, HIGH
PRESSURE PARALLEL
6193  6198  6193   850   8  135 *HETRICK, NEW P.S.
6194  6193   414  1730   8  125 *SUMMIT STATION
6198   198  6198  2676   8  125 *HETRICK
6199  6198   193   840   8  125 *HETRICK
6409   410  6409  1000   8  125 *HETRICK
6412   412  6412   650   8  125 *EWING
6430  6412  6430     2   8  125 *PRV
6431  6430   430   378   8  125 *EWING
6929  6409  6929  2500   8  135 *HETRICK/DALE
6930  6929   929   300   8  125 *DALE
NODES
6192  -0.75  430  0
6193  -0.75  428  0
6198      0  405  0
6409      0  418  0
6412      0  370  0
6929      0  460  0
6430      0  370  0
PRV
6430 548
BOOSTER PUMPS
6193 6
RUN
ENDFILE
```

```
NEW
OUTPUT 2001-21.out
TITLE
2001 MP UPDATE PEAKING VALUES INCREASED FROM MP
RECCOMENDATION TO ALLOW FOR UNACCOUNTED FOR WATER
IMPROVED SYSTEM - FUTURE DEMANDS - PHD - Wells On -
Tanks Low - State Water near high school
Improvements - Behind Dana Elem, Parallel Tefft, New
Twin Tank With Connection, New Los Berros Tank With
Connection,Dana Wells to Mesa, SunDale Rd, Frontage
Rd, Loops Connected in Town, Hetrick Paralleled Below
StandpipeOrchard Parallel, HP Pressure Zone - SS, All
With //
UNITS  0  0  0  0  0  0  0

LIMITS 50  1.000000  1.  5.  0.  15.  35.  80.  1918.
50.
FACTORS 5.92    1.00000
LINES 80
UNKNOWNS
 101  536.40   0 * TWIN TANKS
 199  546.40   0 * STANDPIPE
 178   -15.0  1   0 * EUREKA WELL PUMP
 181   -10.2  2   0 * BEVINGTON WELL PUMP
 185    23.0  3   0 * OMIYA WELL PUMP
 169   -65.0  5   0 * VIA CONCHA WELL PUMP
 244   222.0  4   0 * CHURCH WELL PUMP
 927 -100.0  7   0 * SUNDALE WELL
 944    86.0  9   0 * NEW DANA ELEM. WELL
CHECK VALVES
BOOSTER VALVES
PRV
PUMP CURVES
 1  0  990  400  910  650  840  850  740  1020  680  0
0  0  0  0  0
 2  0  875  200  875  300  830  416  677  450  600  0
0  0  0  0  0
 3  0  952  40  924  80  826  100  749  120  630  0  0
0  0  0  0
 4  0  774  100  608  200  440  225  391  250  340  0
0  0  0  0  0
 5  0  936  200  888  400  856  700  696  800  576  0
0  0  0  0  0
 6  0   77  300   72  600  0   0   0   0   0   0
0  0  0  0  0
 7  0 1040  500  820  750  720 1000  605 1250  410  0
0  0  0  0  0
 9  0  790   60  620  110  450  130  385  145  335
0  0  0  0  0  0  0 *NEW DANA ELEM. WELL
PIPE
101  101  102  5610  10  125  0
102  102  103  1560  10  125  0
103  103  104  510  10  125  0
104  104  105  520  10  125  0
105  105  106  350  10  125  0
106  106  107  430  10  125  0
107  107  108  500  10  125  0
108  108  109  830  10  125  0
109  109  110  860  10  125  0
110  110  111  1080  10  125  0
111  111  112  1030  10  125  0
112  112  113  830  10  125  0
113  113  114  320  10  125  0
114  114  115  200  10  125  0
115  115  116  60  10  125  0
116  116  117  250  10  125  0
117  117  120  360  10  125  0
118  120  121  30  10  125  0
119  121  122  260  10  125  0
120  122  123  340  10  125  0
121  123  124  25  10  125  0
122  124  125  440  10  125  0
123  125  126  10  10  125  0
124  126  127  320  10  125  0
125  127  130  190  10  125  0
126  130  131  30  10  125  0
127  131  701  330  10  125  0
128  118  700  200  10  125  0
129  701  132  120  10  125  0
130  118  134  700  10  125  0
131  134  135  1150  10  125  0
132  135  136  870  10  125  0
```

133	136	702	420	10	125	0
134	137	138	800	8	125	0
135	138	139	710	10	125	0
136	139	140	710	10	125	0
137	109	903	1340	10	125	0
138	141	142	490	10	125	0
139	142	143	620	10	125	0
140	143	144	530	10	125	0
141	144	145	270	10	125	0
142	145	146	510	10	125	0
143	146	147	340	10	125	0
144	147	150	250	10	125	0
145	150	151	470	10	125	0
146	151	140	440	10	125	0
147	140	152	760	10	125	0
148	152	153	700	10	125	0
149	153	154	540	10	125	0
150	154	155	160	10	125	0
151	155	168	700	10	125	0
152	156	157	650	10	125	0
153	157	158	630	10	125	0
154	158	159	25	10	125	0
155	159	160	650	10	125	0
156	160	161	40	10	125	0
157	161	162	510	10	125	0
158	162	163	80	10	125	0
159	163	164	370	10	125	0
160	164	165	240	10	125	0
161	165	166	150	10	125	0
162	166	167	510	10	125	0
163	167	170	370	10	125	0
164	170	171	2160	16	125	0
165	171	928	3100	16	125	0
166	172	173	1800	16	125	0
167	173	169	1700	12	125	0
168	174	175	900	10	125	0
169	174	176	900	10	125	0
170	178	177	198	10	125	0
171	177	176	5974	10	125	0
172	176	175	10	10	125	0
173	175	179	1130	10	125	0
174	181	180	335	8	125	0
175	180	179	200	10	125	0
176	179	182	5110	10	125	0
177	185	184	357	8	125	0
178	184	183	250	8	125	0
179	183	182	10	8	125	0
180	182	187	1260	8	125	0
181	183	186	1260	8	125	0
182	393	395	1350	8	125	0
183	190	191	40	8	125	0
184	191	192	870	8	125	0
185	192	193	1130	10	125	0
186	193	198	3516	10	125	0
187	194	195	3480	8	125	0
188	194	196	950	10	125	0
189	196	197	500	10	125	0
190	200	201	500	10	125	0
191	201	203	1800	10	125	0
192	202	203	540	10	125	0
193	203	204	650	10	125	0
194	204	205	330	8	125	0
195	205	206	60	8	125	0
196	206	207	900	8	125	0
197	207	208	20	8	125	0
198	208	209	810	8	125	0
199	209	210	80	8	125	0
200	210	211	370	8	125	0
201	211	212	330	8	125	0
202	212	213	1470	8	125	0
203	213	214	1450	8	125	0
204	214	215	1070	8	125	0
205	215	216	960	8	125	0
206	216	217	130	8	125	0
207	217	196	1400	8	125	0
208	202	220	150	10	125	0
209	220	221	910	10	125	0
210	221	154	100	10	125	0
211	107	222	440	8	125	0
212	222	223	20	6	125	0
213	222	1020	670	6	125	0
214	223	230	430	6	125	0

215	223	224	430	6	125	0	
216	224	225	430	6	125	0	
217	224	231	440	6	125	0	
218	225	226	450	6	125	0	
219	225	232	440	6	125	0	
220	226	227	520	6	125	0	
221	226	234	370	8	135	0	*UPGRADETO SUPPORT
222	227	228	520	6	125	0	
223	227	235	370	6	125	0	
224	228	229	370	6	125	0	
225	229	240	370	6	125	0	
226	230	231	430	6	125	0	
227	231	241	270	6	125	0	
228	231	232	430	6	125	0	
229	232	242	270	6	125	0	
230	232	233	450	6	125	0	
231	233	247	290	8	135	0	*""
232	234	233	70	8	135	0	*""
233	234	235	520	6	125	0	
234	235	236	550	6	125	0	
235	236	237	70	6	125	0	
236	237	255	200	6	125	0	
237	255	256	600	6	125	0	
238	255	257	150	6	125	0	
239	257	258	520	8	125	0	
240	240	258	370	8	125	0	
241	258	250	370	8	125	0	
242	241	242	420	6	125	0	
243	242	218	150	6	125	0	
244	244	243	89	8	125	0	
245	243	218	750	8	125	0	
246	242	245	380	6	125	0	
247	247	246	80	8	135	0	*""
248	247	249	880	8	125	0	
249	246	248	280	8	135	0	*""
250	248	249	520	8	125	0	
251	249	219	650	8	125	0	
252	219	250	500	8	125	0	
253	250	254	350	8	125	0	
254	248	251	360	8	135	0	*""
255	251	252	490	8	125	0	

256	252	253	590	8	125	0	
257	253	254	460	8	125	0	
258	102	259	1320	6	125	0	
259	259	265	370	6	125	0	
260	259	265	370	6	125	0	
261	260	103	370	6	125	0	
262	260	261	300	6	125	0	
263	261	262	200	6	125	0	
264	104	262	370	8	135	0	*UPGRADETO SUPPORT
265	262	270	370	8	135	0	*UPGRADETO SUPPORT
266	262	263	450	6	125	0	
267	263	271	370	6	125	0	
268	263	264	430	6	125	0	
269	264	272	370	6	125	0	
270	265	266	520	6	125	0	
271	265	267	480	6	125	0	
272	267	270	620	6	125	0	
273	270	273	480	8	135	0	*UPGRADETO SUPPORT
274	270	271	450	6	125	0	
275	271	274	480	6	125	0	
276	271	272	430	6	125	0	
277	272	275	480	6	125	0	
278	273	276	470	6	125	0	
279	273	274	450	6	135	0	*UPGRADETO SUPPORT
280	274	277	470	6	125	0	
281	274	275	430	6	135	0	*UPGRADETO SUPPORT
282	275	278	470	6	125	0	
283	276	279	480	8	125	0	
284	276	277	450	6	125	0	
285	277	278	430	6	125	0	
286	278	281	480	6	125	0	
287	279	283	450	8	125	0	
288	279	280	450	6	125	0	
289	280	282	480	6	125	0	
290	280	281	430	6	125	0	
291	281	282	910	6	125	0	
292	113	1000	600	6	125	0	
293	284	285	580	6	125	0	
294	284	268	340	6	125	0	
295	268	285	240	6	125	0	
296	285	286	300	6	125	0	

297	286	287	110	6	125	0	
298	287	908	1100	6	125	0	
299	290	291	250	6	125	0	
300	291	292	530	6	125	0	
301	292	293	360	6	125	0	
302	293	294	200	6	125	0	
303	294	295	510	6	125	0	
304	295	296	530	6	125	0	
305	296	297	860	6	125	0	
306	297	298	1000	6	125	0	
307	298	299	200	6	125	0	
308	299	300	300	8	125	0	
309	300	301	540	8	125	0	
310	301	118	480	8	125	0	
311	299	302	770	6	125	0	
312	302	303	560	6	125	0	
313	303	304	400	6	125	0	
314	303	269	450	6	125	0	
315	269	304	830	6	125	0	
316	304	305	380	6	125	0	
317	305	306	780	6	125	0	
318	307	112	200	8	135	0	*NEW "12" ACROSS 101
319	307	308	500	8	125	0	
320	306	310	520	6	125	0	
321	310	309	300	6	125	0	
322	309	116	570	6	125	0	
323	121	311	520	6	125	0	
324	311	312	670	6	125	0	
325	312	122	200	6	125	0	
326	123	313	300	6	125	0	
327	313	314	630	6	125	0	
328	126	314	540	6	125	0	
329	127	315	590	6	125	0	
330	131	315	340	6	125	0	
331	315	316	160	6	125	0	
332	316	317	675	6	125	0	
333	316	320	760	6	125	0	
334	317	320	180	6	125	0	
335	320	133	398	6	125	0	
336	320	301	500	6	125	0	
337	135	1019	320	6	135	0	*GRANDE AVE UPGRADE
338	321	322	160	6	135	0	*""
339	323	322	150	8	135	0	*UPGRADE ON BLACK HAWK
340	323	324	260	8	125	0	
341	324	326	430	8	125	0	
342	323	325	440	8	125	0	
343	325	326	260	8	125	0	
344	325	327	210	8	125	0	
345	327	132	930	8	125	0	
346	327	130	980	8	125	0	
347	322	328	470	6	135	0	*""
348	328	329	360	6	135	0	*""
349	329	330	360	6	135	0	*""
350	330	331	1020	8	125	0	
351	331	332	360	8	125	0	
352	332	333	210	8	125	0	
353	332	318	800	6	125	0	
354	318	115	550	6	125	0	
355	333	319	200	6	135	0	*CONCEPCST. UPGR
356	319	114	900	6	135	0	*""
357	138	342	660	8	125	0	
358	342	343	330	8	125	0	
359	343	344	1220	8	125	0	
360	344	345	820	8	135	0	
*361	345	346	890	8	135	0	*UPGRADEALONG HILL
362	346	347	900	6	125	0	
363	346	338	420	8	125	0	
364	338	347	600	8	125	0	
*365	347	330	1970	8	125	0	
366	152	348	520	6	125	0	
367	348	349	170	6	125	0	
368	349	350	270	6	125	0	
369	349	351	600	6	125	0	
370	350	351	410	6	125	0	
371	351	352	560	6	125	0	
372	350	352	220	6	125	0	
373	352	151	130	6	125	0	
374	348	353	860	6	125	0	
375	353	354	200	6	125	0	
376	354	357	950	6	125	0	
377	354	355	150	6	125	0	

378	355	356	600	6	125	0	
379	355	360	260	6	125	0	
380	360	361	400	6	125	0	
381	360	362	260	6	125	0	
382	362	363	400	6	125	0	
383	362	364	660	6	125	0	
384	357	356	260	6	125	0	
385	356	361	280	6	125	0	
386	361	363	260	6	125	0	
387	363	364	260	6	125	0	
388	150	357	150	6	125	0	
389	145	364	150	6	125	0	
390	353	369	680	6	125	0	
391	144	365	140	6	125	0	
392	365	367	640	6	125	0	
393	365	366	260	6	125	0	
394	366	367	370	6	125	0	
395	366	368	260	6	125	0	
396	367	703	450	6	125	0	
397	143	368	140	6	125	0	
398	153	370	1800	6	125	0	
399	369	370	380	6	125	0	
400	221	371	570	6	125	0	
401	371	372	1000	8	125	0	
402	372	373	1620	8	125	0	
403	373	374	280	8	125	0	
404	374	375	310	8	125	0	
405	375	376	650	8	125	0	
406	374	377	650	8	125	0	
407	376	377	230	8	125	0	
408	376	339	800	10	125	0	
409	339	1017	820	6	135	0	*UPGRADEON FRONTAGE
410	155	380	850	6	125	0	
411	220	380	390	6	125	0	
412	380	381	940	6	125	0	
413	381	157	760	6	125	0	
414	381	203	750	6	125	0	
415	381	382	640	6	125	0	
416	382	158	770	6	125	0	
417	382	383	370	6	125	0	
418	383	204	380	6	125	0	

419	383	206	780	6	125	0
420	163	384	450	6	125	0
421	384	385	320	6	125	0
422	385	386	600	6	125	0
423	386	208	170	6	125	0
424	165	378	590	6	125	0
425	378	387	210	8	125	0
426	387	388	600	8	125	0
427	388	210	350	8	125	0
428	170	389	180	8	125	0
429	389	390	430	8	125	0
430	390	391	590	8	125	0
431	391	212	310	8	125	0
432	160	392	720	6	125	0
433	163	393	780	8	125	0
434	165	394	620	8	125	0
435	394	395	550	8	125	0
436	209	397	1210	6	125	0
437	397	400	600	8	125	0
438	400	207	980	6	125	0
439	400	401	910	8	125	0
440	401	205	980	6	125	0
441	401	201	510	10	125	0
442	397	402	420	10	125	0
443	402	217	470	8	125	0
444	402	200	1660	10	125	0
445	190	403	2530	8	125	0
446	403	404	1230	8	125	0
447	404	407	2150	8	125	0
448	404	405	1020	8	125	0
449	405	406	390	8	125	0
450	406	407	1270	8	125	0
451	406	408	1100	8	125	0
452	405	410	3700	8	125	0
*453	408	704	500	8	125	0
454	192	411	1630	8	125	0
455	411	410	80	8	125	0
456	410	409	1600	8	125	0
457	411	412	950	8	125	0
458	412	413	350	8	125	0
459	412	430	1030	8	125	0

31

460 414 193 1730 8 125 0
461 191 421 1120 8 125 0
462 403 422 560 8 125 0
463 407 423 670 8 125 0
464 408 424 1000 8 135 0 *POPPEY LANE UPGRADE
465 414 425 480 8 125 0
466 147 420 590 6 125 0
467 420 419 380 6 125 0
468 419 139 570 6 125 0
469 146 416 640 8 125 0
470 416 417 40 6 125 0
471 417 418 330 6 125 0
472 418 419 300 6 125 0
473 417 415 220 6 125 0
474 415 343 470 6 125 0
475 418 342 690 8 125 0
476 125 334 180 6 125 0
477 334 335 440 6 125 0
478 334 336 250 6 125 0
479 336 337 700 6 125 0
480 124 335 150 6 125 0
481 335 427 290 6 125 0
482 427 337 230 6 125 0
483 337 426 440 6 125 0
484 427 428 440 6 125 0
485 426 428 220 6 125 0
486 428 122 400 6 125 0
487 426 340 240 6 125 0
488 340 120 570 6 125 0
489 340 341 580 6 125 0
490 341 117 290 6 125 0
491 399 398 348 8 125 0
492 398 385 200 8 125 0
493 169 174 333 8 125 0
500 700 133 230 10 125 0
501 133 132 400 10 125 0
502 702 137 200 10 125 0
503 703 368 190 10 125 0
*504 704 409 2760 10 125 0
505 913 168 200 10 125 0
506 156 168 450 10 125 0
507 194 198 2084 10 125 0
508 198 199 2049 16 125 0
509 159 924 400 6 125 0
510 104 226 410 8 135 0 *UPGRADETO SUPPORT
511 103 227 410 6 125 0
512 106 224 410 6 125 0
513 409 430 1100 8 125 0 *DALE AVE
514 430 930 600 8 125 0 *FRISCO WAY
*516 251 307 3660 10 135 0 *CREEK XING SOUTH
OF
517 990 991 500 12 135 0 *TEFFT ST. HWY 101C
519 101 102 5610 12.4 135 0 *TWIN TANK TEFFT
ST.
520 102 103 1560 12.4 135 0 *""
521 103 104 510 12.4 135 0 *""
522 109 990 340 6 135 0 *TEFFT OAKGLEN TO FWY
523 991 345 350 8 135 0 *REPLACE PIPE 361
524 991 346 450 8 135 0 *REPLACE PIPE 361
525 991 346 450 10 135 0 *CORRECTION ON
FRONTAGE
527 187 190 5300 10 135 0 *LOOP ALONG
POMEROY//
528 247 256 700 8 135 0 *LOOP TO INCLUDE NIP
*529 326 134 800 8 135 0 *LOOP-BOHOMES//
575 710 414 1890 8 125 0 *SUMMIT STATION RD
713 710 800 3650 14 135 0 *FRONTAGRD SO OF
SUMMIT ST
801 199 800 2500 12 135 0 *TIE FROM
STANDPIPE//
900 900 901 1365 8 135 0 *MARY ST NEW
PIPELIN
901 901 345 155 8 135 0 *CONTINUON W. TEFF
902 142 900 105 8 135 0 *JUNIPERST POSSIBLE
906 104 276 1690 10 135 0 *NEW LINE ALONG
THOMPSON
907 276 278 880 10 135 0 *NEW LINE ALONG SEA
STREET
908 106 264 370 8 135 0 *LINE IN MALLAGH
909 278 902 1750 12 135 0 *CROSSINTO OAKGLENN
910 902 903 320 12 135 0 *ALONG OAKGLENN
911 303 295 1640 8 135 0 *HONEY GROVE LANE

912 905 906 1850 8 135 0 *ALONG FRONTAGETO
SOUTHLAND
913 907 908 530 6 135 0 *S CRYSTAL GROVE TO
SOUTHLAND
914 908 290 880 6 135 0 *BRANCH OFF CRYSTAL
GROVE
915 290 907 540 6 135 0 *SOUTHLAND
916 907 906 500 6 135 0 *SOUTHLAND
917 903 904 235 10 135 0 *PIONEER
918 904 141 235 10 135 0 *PIONEER
919 909 910 2100 8 135 0 *NEW AREA AT WEST
END OF TEFT
920 910 911 1100 8 135 0
921 910 912 915 8 135 0
922 911 912 1310 8 135 0
923 913 914 770 10 135 0 *NEW SUBDIVISAT
OSAGE RD
924 914 915 1040 10 135 0
925 915 916 380 10 135 0
926 916 917 375 10 135 0
927 917 918 320 10 135 0
928 918 919 1010 10 135 0
929 919 920 430 8 135 0
930 920 921 1400 8 135 0
931 921 915 980 8 135 0
932 917 922 970 8 135 0
933 916 922 980 8 135 0
934 922 920 550 8 135 0
935 921 926 550 8 135 0
936 923 926 280 8 135 0
937 926 925 770 8 135 0
938 924 925 1250 8 135 0
939 925 914 560 8 135 0
940 927 928 200 12 135 0 *SUNDALE WELL
941 923 924 400 6 135 0 *RED GUM LANE
942 392 923 680 6 125 0
943 156 913 310 10 125 0
944 928 172 550 16 125 0 *CAMINO CABALLO
945 137 909 510 8 135 0 *WEST END OF TEFT
946 408 929 1080 8 135 0 *DALE AVE
947 929 409 2180 8 135 0 *DALE AVE

948 930 710 1970 8 125 0 *FRISCO WAY
949 346 932 500 6 125 0 *MODIFIED PIPE 362
950 932 347 400 6 125 0 *MODIFIED PIPE 362
951 932 345 450 10 135 0 *EXTENSION NORTH TO
TEFT (MP)//
955 135 322 720 8 135 0 *PARALLEL GRANDE (MP)//
956 322 329 830 8 135 0 *""//
957 329 330 360 8 135 0 *""//
962 197 200 100 10 125 0 *CORRECTION TO HETRICK
963 186 187 10 12 125 0 *CORRECTION TO POMEROY
AND WILLOW
964 214 186 700 12 125 0 *CORRECTION TO POMEROY
AND WILLOW
965 915 909 3050 12 135 0 *NEW PIPE BEHIND DANA
ELEM (DR-5/00)//
*966 160 170 2270 10 135 0 *PARALLEL CAMINO
CABALLO (DR-5/00)//
967 109 345 1190 12 135 0 *PARALLEL ALONG TEFT AT
FWY XING//
970 104 109 2630 12 135 0 *PARALLEL ALONG TEFT
(DR-5/00)//
971 345 138 3030 12 135 0 *PARALLEL ALONG TEFT
(DR-5/00)//
972 138 137 800 10 135 0 *PARALLEL ALONG TEFT
(DR-5/00)//
973 909 137 510 10 135 0 *PARALLEL ALONG TEFT
(DR-5/00)//
*974 913 152 980 8 135 0 *PIPE ACROSS PARK (DR-
5/00)//
975 170 919 5300 8 135 0 *DANA WELLS TO MESA RD
(DR-5/00)//
976 339 1001 400 8 135 0 *CAMINO CABALLO AND
FRONTAGE (FMP)//
977 1001 369 1700 6 135 0 *CAMINO CABALLO
EXISTING//
978 370 377 1600 6 135 0 *INGA RD.(FMP)//
979 375 935 3010 14 135 0 *FRONTAGE N OF
SANDYDALE (FMP)//
980 195 935 1000 8 135 0 *CONNECTION OFF
FRONTAGE (FMP)//

```
981  935  800 3900 14  135  0  *FRONTAGE RD. TO
STANDPIPE (FMP)//
982  137  135  1490  8  135  0  *PARALLEL ORCHARD//
983  1007  1010  350  8 135  0  *LOOP SUBDIV.//
984  347  936  580  8 135  0  *DIVIDE PIPE 365
985  936  330  990  8 135  0  *DIVIDE PIPE 365
986  936  1007 1500  8  135 0  *CLOSE LOOP, HILL//
1000 1017 141  420  10  135 0  *PIPE REPLACED IN
FRONTAGE
1001  912 135 2380   8  135 0  *WEST GRANDE
1002  138 1003 150   8  135 0  *BERNITA
1003 1003 1004 200   8  135 0  *BERNITA
1004 1004 1006 420   8  135 0  *BERNITA
1005 1003 1005 420   8  135 0  *ALIMA
1006 1005 1006 200   8  135 0  *ALIMA
1007 1006 1007 300   8  135 0  *TAMIS
1008 1007 1008 320   8  135 0  *TAMIS
1009 1008 1009 220   8  135 0  *CHATA
1010 1010 1011 220   8  135 0  *PONDEROSA
1011 1011 1012 220   8  135 0  *PONDEROSA
1012 1012 1013 520   8  135 0  *PONDEROSA
1013 1013 1014 220   8  135 0  *BRISTLECONE
1014 1014 1015 220   8  135 0  *CHATA
1015 1015 1016 360   8  135 0  *CHATA
1016 1016 1019 210   8  135 0  *JASPER
1017 1011 1014 520   8  135 0  *PINECREST
1018 1010 1015 520   8  135 0  *BUCKHORN
1019 1015  322 220   8  135 0  *BLACK HAWK
1020 1009  136 520   6  125 0  *THEODORA
1021 1019  321 240   6  125 0  *GRANDE
1022 1001  369 1080  6  125 0  *CAMINO CABALLO
1023 1001  377 1260  8  135 0  *CAMINO CABALLO/INGA
1024  114 1000  550  6  135 0  *ADIMA/MARGIE
1025  333  114 1060  8  135 0  *FRONTAGE
1026 1000  284  180  6  135 0  *FRONTAGE
1027  230 1020  160  6  125 0  *PRICE
1028 1020  108  980  6  135 0  *PRICE
1029 1015  328  280  6  135 0  *PONDEROSA
1030  109  904 1550  8  135 0  *KENT
1031  928  992    10  16 135 0  *WOODLANDS - FUT
1032  992  993    10  16 135 0  *WOODLANDS - FUT
1033  283  940   800  10  135  0  *NEW NIPOMO HS - FUT
*1044  940  941  1050  10  135  0  *NEW NIPOMO HS -
FUT
1045  941  942   400  10  135  0  *NEW NIPOMO HS - FUT
1046  942  943   250  10  135  0  *NEW NIPOMO HS - FUT
1047  943  278  1360  10  135  0  *NEW NIPOMO HS - FUT
1048  944  909   200  10  135  0  *NEW DANA ELEM. WELL
- FUT
1051  101  102  5610  14  125  0  *PARALLEL TO TWIN
TANKS//
1052  102  103  1560  14  125  0  *PARALLEL TO TWIN
TANKS//
1053  103  104   510  14  125  0  *PARALLEL TO TWIN
TANKS//
1054  179  928  5000  12  125  0  *SUN DALE ROAD//
1055  194  196   950  10  125  0  *PARALLEL HETRICK//
1056  940  276  1730  12  135  0  *PARALLEL THOMPSON
TO STATE WATER//
1057  194  198  2084  10  125  0  *PARALLEL HETRICK
WILLOW TO STANDPIPE CONN.//
NODE
101   0.00  523.8 0
102   -1.70 360   0
103   -11.22 342  0
104   -2.98 336   0
105   -0.88 329   0
106   -2.19 324   0
107   -4.16 316   0
108   -1.17 320   0
109   -17.67 328  0
110   -21.37 334  0
111   -20.41 331  0
112   -4.21 310   0
113   -7.11 333   0
114   -3.63 343   0
115   -3.63 350   0
116   -2.83 351   0
117   -4.25 357   0
118   -14.64 329  0
120   -2.83 356   0
121   -2.83 355   0
```

122	-4.25	343	0
123	-2.83	337	0
124	-2.83	337	0
125	-2.83	333	0
126	-2.83	333	0
127	-3.40	327	0
130	-0.57	326	0
131	-2.83	326	0
132	-5.67	343	0
133	-3.16	338	0
134	-17.00	349	0
135	-31.17	368	0
136	-14.17	389	0
137	-8.50	395	0
138	-16.83	362	0
139	-3.40	358	0
140	-14.77	365	0
141	-4.67	346	0
142	-4.60	357	0
143	-2.96	370	0
144	-2.55	367	0
145	-1.70	372	0
146	-2.83	373	0
147	-2.83	356	0
150	-2.83	353	0
151	-4.25	360	0
152	-1.91	374	0
153	-5.36	347	0
154	-1.15	365	0
155	-2.68	361	0
156	-3.06	343	0
157	-1.15	322	0
158	-0.77	330	0
159	-1.91	330	0
160	-2.30	340	0
161	-3.45	340	0
162	-3.06	340	0
163	-5.36	340	0
164	0.00	340	0
165	-3.83	335	0
166	-1.53	330	0

167	-6.51	315	0	
168	0.00	340	0	
169	0	-65.6	0	*VIA CONCHA WELL
170	-1.53	306.4	0	
171	-3.83	305	0	
172	-7.66	225	0	
173	-7.66	254	0	
174	-3.83	267	0	*VIA CONCHA WELL DISCH
175	-7.66	283	0	
176	-9.51	283	0	
177	-7.66	183	0	*EUREKA WELL DISCHARGE
178	0.00	-15	0	*EUREKA WELL
179	-21.05	322	0	
180	0.00	325	0	*BEVINGTON WELL DISCHARGE
181	0.00	-10.2	0	*BEVINGTON WELL
182	0.00	394	0	
183	0.00	394	0	
184	0.00	380	0	*OMIYA WELL DISCHARGE
185	0.00	23	0	*OMIYA WELL
186	-3.83	362	0	
187	-2.30	362	0	
190	-4.21	410	0	
191	-1.91	410	0	
192	-2.59	430	0	
193	-3.74	428	0	
194	-5.36	404	0	
195	-3.83	410	0	
196	-4.98	380	0	
197	0.00	367	0	
198	-9.95	400	0	
199	0.00	459.6	0	*STANDPIPE TANK
200	-2.68	370	0	
201	-2.30	357	0	
202	-1.15	357	0	
203	-7.27	350	0	
204	-2.30	340	0	
205	-4.21	347	0	
206	-2.30	347	0	
207	-1.53	345	0	
208	-3.06	345	0	
209	-2.30	330	0	

210	-0.77	328	0
211	-3.06	327	0
212	-1.15	325	0
213	-1.91	336	0
214	-4.21	361	0
215	-1.91	370	0
216	0.00	359	0
217	-4.21	359	0
218	-1.42	313	0
219	-10.06	350	0
220	0.00	360	0
221	-0.77	368	0
222	-9.57	317	0
223	-3.58	317	0
224	-0.50	317	0
225	-0.50	319	0
226	-1.44	325	0
227	-3.23	331	0
228	-3.12	337	0
229	-8.78	347	0
230	-11.84	307	0
231	-10.71	311	0
232	-7.31	315	0
233	0.00	321	0
234	-1.16	321	0
235	-3.12	327	0
236	-3.12	337	0
237	0.00	338	0
240	-5.38	361	0
241	-4.25	308	0
242	-3.68	313	0
243	-5.67	311	0 *CHURCH WELL DISCHARGE
244	-4.53	222	0 *CHURCH WELL
245	0.00	316	0
246	-5.67	318	0
247	-2.55	318	0
248	-4.25	315	0
249	-9.07	320	0
250	-6.52	379	0
251	-5.67	316	0
252	-25.50	323	0

253	-24.08	335	0
254	-10.20	370	0
255	-1.20	361	0
256	-4.03	338	0
257	-1.20	361	0
258	-5.67	377	0
259	-3.40	336	0
260	0.00	331	0
261	0.00	329	0
262	-2.99	328	0
263	-0.43	324	0
264	-2.70	321	0
265	-6.00	353	0
266	-1.42	362	0
267	-1.70	345	0
268	-4.25	313	0
269	0.00	285	0
270	-4.00	334	0
271	-2.83	328	0
272	-2.83	320	0
273	-14.17	336	0
274	-5.67	330	0
275	-14.17	323	0
276	-12.75	338	0
277	-5.67	332	0
278	-17.00	325	0
279	-4.25	337	0
280	-4.25	335	0
281	-11.33	330	0
282	-2.83	339	0
283	-1.42	346	0
284	-2.83	316	0
285	-3.97	313	0
286	-4.25	313	0
287	-2.83	312	0
290	-6.13	317	0
291	-3.06	319	0
292	-12.10	319	0
293	-12.10	320	0
294	-11.33	318	0
295	-12.10	320	0

296	-13.78	320	0
297	-1.53	320	0
298	0.00	319	0
299	-1.53	319	0
300	-1.53	318	0
301	-4.82	319	0
302	-6.89	310	0
303	-17.46	302	0
304	-3.06	305	0
305	-4.74	304	0
306	-3.06	306	0
307	0.00	318	0
308	-34.00	322	0
309	-6.80	314	0
310	-7.08	309	0
311	-4.53	328	0
312	-4.53	335	0
313	-4.25	324	0
314	-17.38	306	0
315	-7.08	312	0
316	-8.56	312	0
317	-10.65	314	0
318	-7.17	359	0
319	-3.63	348	0
320	-5.26	310	0
321	-2.83	376	0
322	-2.83	398	0
323	-2.83	404	0
324	-5.67	397	0
325	-7.14	398	0
326	-2.83	399	0
327	-11.33	362	0
328	-11.33	397	0
329	-19.60	358	0
330	-37.03	354	0
331	-4.53	344	0
332	-5.89	340	0
333	-9.29	337	0
334	-4.25	337	0
335	-4.53	340	0
336	-7.08	347	0

337	-7.08	350	0
338	-2.92	342	0
339	-6.68	360	0
340	-5.67	374	0
341	-8.22	364	0
342	-5.67	326	0
343	-7.67	320	0
344	-3.50	350	0
345	-6.81	360	0
346	-2.92	360	0
347	-1.46	353	0
348	-3.16	372	0
349	-2.83	371	0
350	-2.83	362	0
351	-4.25	342	0
352	-4.25	361	0
353	-3.97	361	0
354	-4.25	370	0
355	-4.25	387	0
356	-4.25	360	0
357	-5.67	360	0
360	-5.67	401	0
361	-5.67	374	0
362	-4.25	408	0
363	-4.25	372	0
364	-4.25	370	0
365	-2.83	370	0
366	-2.83	370	0
367	-9.63	400	0
368	-2.27	381	0
369	-11.10	348	0
370	-3.45	358	0
371	-3.83	380	0
372	-8.04	389	0
373	-8.04	360	0
374	-6.51	360	0
375	-1.60	360	0
376	0.00	360	0
377	-2.27	360	0
378	-1.91	380	0
380	-5.36	380	0

21

381	-3.83	360	0
382	-1.53	369	0
383	-1.53	360	0
384	-3.45	340	0
385	-4.21	359	0
386	-1.15	320	0
387	-2.30	342	0
388	-3.06	317	0
389	-1.15	317	0
390	-5.74	339	0
391	-5.74	316	0
392	-3.45	317	0
393	-1.91	311	0
394	-1.91	322	0
395	-1.15	303	0
397	-4.98	347	0
398	0.00	362	145 *OLYMPIC WELL DISCHARGE
399	0.00	14	0 *OLYMPIC WELL
400	-2.68	343	0
401	-6.89	360	0
402	-3.45	370	0
403	-3.83	372	0
404	-3.83	357	0
405	-3.83	398	0
406	-3.83	390	0
407	-7.66	350	0
408	-5.74	430	0
409	-3.83	365	0
410	-4.59	445	0
411	-3.83	444	0
412	-7.66	425	0
413	-2.68	440	0
414	-17.23	458	0
415	-4.25	350	0
416	-2.83	358	0
417	-5.67	358	0
418	-6.46	357	0
419	-5.67	356	0
420	-4.25	357	0
421	-3.06	407	0
422	-1.53	380	0
423	-1.53	330	0
424	-1.53	459	0
425	-3.06	455	0
426	-3.68	377	0
427	-1.42	354	0
428	-7.37	360	0
430	-5.74	340	0
700	0.00	332.2	0
701	0.00	330.4	0
702	0.00	396.4	0
703	0.00	380	0
*704	0.00	432.3	0
710	-9.57	405	0
800	0.00	381	0
900	0.00	360	0
901	0.00	357	0
902	-16.73	342	0
903	-19.27	340	0
904	-9.37	342	0
905	0.00	310	0
906	-46.16	315	0
907	-1.07	319	0
908	0.00	319	0
909	-27.88	385	0
910	-8.50	355	0
911	-4.82	350	0
912	-11.05	330	0
913	-2.68	330	0
914	-1.91	355	0
915	-1.91	382	0
916	-1.91	360	0
917	-1.91	350	0
918	-1.91	345	0
919	-1.91	340	0
920	-1.91	340	0
921	-3.83	325	0
922	-1.91	345	0
923	-1.91	315	0
924	-1.91	320	0
925	-1.91	330	0
926	-1.91	320	0

```
927   0.00   260   0 *SUNDALE WELL
928   0.00   250   0 *SUNDALE WELL DISCHARGE
929   0.00   443   0 *HYDRANT TESTED ON DALE
930   -3.83  375   0 *HYDRANT TESTED ON FRISCO
*931  0.00   350   0 *NODE ADDED AT ORCHARD AND FIR
932   0.00   360   0 *NODE ADDED AT BEND BELOW TEFT
935   0.00   385   0 *FRONTAGE RD
936   0.00   375   0 *HILL
940  -25.00  345  1860  *NEW NIPOMO HS - FUT, TURNOUT
FOR STATE WATER//
941  -25.00  344  0  *NEW NIPOMO HS - FUT
942   0.00   342  0  *NEW NIPOMO HS - FUT
943   0.00   340  0  *NEW NIPOMO HS - FUT
944   0.00    70  0  *NEW DANA ELEM WELL - FUT
990   0.00   350  0
991   0.00   360  0
992   -761.00 350 0  *WOODLANDS DEMAND FUT
993   0.00   360  895.00 *WOODLANDS PRODUCTION FUT
1000  0.00   316  0
1001  0.00   360  0
1003  0.00   390  0
1004  0.00   402  0
1005  0.00   400  0
1006  -8.50 404   0
1007  0.00   405  0
1008  -9.92 404   0
1009  0.00   402  0
1010  -9.92 402   0
1011  0.00   403  0
1012  0.00   401  0
1013  0.00   400  0
1014  0.00   400  0
1015  0.00   398  0
1016  0.00   386  0
1017  0.00   348  0
1019  0.00   380  0
1020  0.00   300  0
MODIFY
DELETE PIPES 186 451 452 454 456 459 460 575 947 271
272 273 278
PIPES
```

```
2001   266  2001   200   6  135 *HERMWRECK-FUT
2002  2001  2002   500   6  135 *HERMWRECK-FUT
2003  2001  2003   260   6  135 *HERMWRECK-FUT
2004  2003  2004   500   6  135 *HERMWRECK-FUT
2005  2003  2005   260   6  135 *HERMWRECK-FUT
2006  2005  2006   500   6  135 *HERMWRECK-FUT
2007   265  2005   200   6  135 *HERMWRECK-FUT
2008  2007  2008   700   6  135 *HERMWRECK-FUT
2010  2009  2010   750   6  135 *HERMWRECK-FUT
2011  2008  2011   800   6  135 *HERMWRECK-FUT
2012  2006  2008   300   6  135 *HERMWRECK-FUT
2013  2004  2006   260   6  135 *HERMWRECK-FUT
2014  2002  2004   260   6  135 *HERMWRECK-FUT
2015   265  2007   300   6  125 *CHESTNUT MOD.
2016  2007   267   180   6  125 *CHESTNUT MOD.
2017   267  2009   120   6  125 *CHESTNUT MOD.
2018  2009   270   500   6  125 *CHESTNUT MOD.
2019   270  2010   280   8  125 *THOMPSON MOD.
2020  2010   273   200   8  125 *THOMPSON MOD.
2021   273  2011   240   8  125 *THOMPSON MOD.
2022  2011   276   230   8  125 *THOMPSON MOD.
6191  6192   411  1690   8  125 *HETRICK//
6192  6193  6192  1130   8  135 *HETRICK, HIGH
PRESSURE PARALLEL//
6193  6198  6193   850   8  135 *HETRICK, NEW P.S.//
6194  6193   414  1730   8  125 *SUMMIT STATION //
6198   198  6198  2676   8  125 *HETRICK//
6199  6198   193   840   8  125 *HETRICK//
6409   410  6409  1000   8  125 *HETRICK//
6412   412  6412   650   8  125 *EWING//
6431  6430   430   378   8  125 *EWING//
6929  6409  6929  2500   8  135 *HETRICK/DALE//
6710   710  6710  8500  14  135 *TO NEW LOS BERROS
RESERVOIR//
6801   414  6801  1890   8  125 *SUMMIT STA RD//
6930  6929   929   300   8  125 *DALE//
NODES
2001      0  360  0
2002  -3.00  358  0
2003      0  356  0
2004      0  357  0
```

```
2005       0  355  0
2006  -3.75  353  0
2007       0  349  0
2008  -6.50  347  200 *HERMWRECK WELL - FUT
2009       0  343  0
2010       0  335  0
2011       0  336  0
6192  -2.00  430  0
6193  -2.00  428  0
6198       0  405  0
6409       0  418  0
6412       0  370  0
6929       0  460  0
6430       0  370  0
6710       0  525  0 *LOS BERROS TANK
6801       0  410  0
BOOSTER PUMPS
6193 6
UNKNOWNS
6710  536.4  0 *LOS BERROS TANK
RUN
ENDFILE
```

3

```
*NIPOMO CSD SEWER MODEL OF EXISTING SYSTEM - BRACKEN LS AREA
*BRACKEN.DTA
DESIGN CRITERIA 0.9 15 0.9 21 0.9 999
ANALYSIS CRITERIA 0.9 15 0.9 21 0.9 999
PEAKING 3.0 1
OUTPUT BRACKEN.OUT
UNITS 0 0 1 0 0 0 0
GEOMETRY
335     333.5   10              330     333.8   0.011    8 *TO BRACKEN LIFT
STATION
330     333.8   150             331     336.51  0.011    8
331     336.51  60              332     337.6   0.011    8
332     337.6   230             333     339.46  0.011    8
332     337.6   80              334     339.24  0.011    8
SANITARY LOADING
330     1   0.53
331     1   1.46
332     1   0.40
333     1   1.07
334     1   0.00
ENDFILE
```

```
*NIPOMO CSD SEWER MODEL OF EXISTING SYSTEM - LA MIRADA LS AREA
*LAMIRADA.DTA
PAGESIZE 84
DESIGN CRITERIA 0.90 15 0.90 21  0.95  999
ANALYSIS CRITERIA 0.90 15 0.90 21 0.95 999
PEAKING 3.0 1.0
OUTPUT LAMIRADA.OUT
UNITS 0 0 1 0 0 0 0
GEOMETRY
500     325.26  440     501     327.13  0.011    8
501     327.13  100     502     332     0.011    6
501     327.13  250     503     329.1   0.011    8
503     329.1   200     504     334.5   0.011    8
503     329.1   470     505     348.7   0.011    8
505     348.7   170     506     349.8   0.011    8
500     325.26  280     507     336     0.011    8
507     336     290     508     350.86  0.011    8
507     336     230     509     338.62  0.011    8
509     338.62  120     510     339.99  0.011    8
509     338.62  250     525     354.96  0.011    8
555     326.70  100     500     327.13  0.011    8 *INTO LA MIRADA LS
SANITARY LOADING
500  1  1.07
501  1  2.13
502  1  0.00
503  1  0.53
504  1  0.93
505  1  1.86
506  1  1.07
507  1  0.40
508  1  1.07
509  1  0.93
510  1  1.33
525  1  1.07

ENDFILE
```

```
*NIPOMO CSD SEWER MODEL OF NEAR FUTURE SYSTEM - TEFFT ST LS AREA
*NFTEFFT.DTA
DESIGN CRITERIA 0.90 15 0.90 21 0.90 999
ANALYSIS CRITERIA 0.90 15 0.90 21 0.90 999
PEAKING 3.0 1.0
OUTPUT NFTEFFT.OUT
UNITS 0 0 1 0 0 0 0
GEOMETRY
100     293.7   300     101     300.58  0.011    8
555     291.41  100     100     293.7   0.011    8 *TO TEFFT LS
100     293.7   60      156     294.02  0.011    8
101     300.58  450     102     303.6   0.011    8
102     303.6   400     103     305.26  0.011    8
103     305.26  360     104     306.78  0.011    8
104     306.78  250     105     307.87  0.011    8
105     307.87  240     106     308.98  0.011    8
106     308.98  470     107     311.19  0.011    8
107     311.19  220     118     312.32  0.011    8
118     312.32  260     108     314.73  0.011    8
108     314.73  270     150     317.86  0.011    8
150     317.86  500     269     320.00  0.011    8 *//NIPOMO HIGH SCHOOL
108     314.73  430     151     319.54  0.011    8
151     319.54  400     152     330     0.011    8
151     319.54  200     153     320.35  0.011    8
153     320.35  260     154     325.62  0.011    8
154     325.62  460     155     335.08  0.011    8
102     303.6   400     109     309.41  0.011    8
109     309.41  160     110     310.81  0.011    8
110     310.81  310     111     321.09  0.011    8
111     321.09  280     112     322.39  0.011    8
111     321.09  250     113     322.11  0.011    8
111     321.09  175     114     322.96  0.011    8
114     322.96  320     115     325.06  0.011    8
115     325.06  260     116     326.44  0.011    8
115     325.06  375     117     331.99  0.011    8
117     331.99  300     120     338.48  0.011    8
120     338.48  230     121     339.97  0.011    8
121     339.97  175     122     344.11  0.011    8
122     344.11  410     123     362.87  0.011    8
104     306.78  220     140     309.84  0.011    8
140     309.84  200     141     312.89  0.011    8
141     312.89  260     142     316.24  0.011    8
103     305.26  430     124     316.44  0.011    8
124     316.44  460     125     319.18  0.011    8
125     319.18  400     126     327.42  0.011    8
126     327.42  410     127     332.43  0.011    8
127     332.43  400     128     338.23  0.011    8
128     338.23  370     129     342.43  0.011    8
125     319.18  370     130     320.72  0.011    8
130     320.72  250     131     322.09  0.011    8
131     322.09  230     132     334.82  0.011    8
132     334.82  350     133     344.1   0.011    8
133     344.1   260     134     345.18  0.011    8
134     345.18  330     135     346.64  0.011    8
135     346.64  250     136     357.1   0.011    8
136     357.1   330     137     367.96  0.011    8
106     308.98  430     143     311.76  0.011    8
```

143	311.76	190	144	314.93	0.011	8	
143	311.76	460	145	314.33	0.011	8	
145	318.37	110	146	319.36	0.011	8	
146	319.36	100	267	322.00	0.011	8	*//HERMRECK
267	322.00	400	260	325.00	0.011	8	*//HERMRECK
260	325.00	500	261	340.00	0.011	8	*//HERMRECK
261	340.00	300	271	345.00	0.011	8	*//HERMRECK
271	345.00	300	262	350.00	0.011	8	*//HERMRECK
262	350.00	400	264	375.00	0.011	8	*//HERMRECK
271	340.00	400	270	360.00	0.011	8	*//HERMRECK
261	340.00	400	263	360.00	0.011	8	*//HERMRECK
260	325.00	550	268	355.00	0.011	8	*//HERMRECK
145	318.37	150	266	320.00	0.011	8	*//HERMRECK
266	320.00	250	265	325.00	0.011	8	*//HERMRECK
107	311.19	420	147	315.62	0.011	8	
147	315.62	370	148	319.95	0.011	8	
147	315.62	340	149	319.21	0.011	8	
100	293.7	70	156	294.02	0.011	8	
156	294.2	370	157	305.66	0.011	8	
157	305.66	180	160	311.11	0.011	8	
160	311.11	80	161	311.67	0.011	8	
161	311.67	180	162	325.4	0.011	8	
100	293.7	330	200	299.4	0.011	8	
200	299.4	470	201	301.31	0.011	8	
201	301.31	190	202	302.5	0.011	8	
202	302.5	220	203	309.42	0.011	8	
202	302.5	430	204	305.2	0.011	8	
204	305.2	230	205	319.92	0.011	8	
204	305.2	270	206	306.59	0.011	8	
206	306.59	260	207	307.43	0.011	8	
206	306.59	420	208	317.78	0.011	8	
208	317.78	250	209	320	0.011	8	
204	305.2	430	210	316.63	0.011	8	
210	316.63	330	211	319	0.011	8	
210	316.63	380	212	319.9	0.011	8	
212	319.9	110	213	320.41	0.011	8	
213	320.41	440	214	325.67	0.011	8	
214	325.67	780	215	332.26	0.011	8	
215	332.26	390	216	343.45	0.011	8	
216	343.45	400	217	355.58	0.011	8	
200	299.4	250	220	306.55	0.011	8	
220	306.55	430	221	309.67	0.011	8	
221	309.67	430	222	314.72	0.011	8	
222	314.72	460	223	321.86	0.011	8	
223	321.86	420	224	323.79	0.011	8	
224	323.79	410	225	330.54	0.011	8	
225	330.54	400	226	336.66	0.011	8	
226	336.66	380	227	343.49	0.011	8	
213	320.41	360	230	321.02	0.011	8	
230	321.02	430	231	327	0.011	8	
230	321.02	580	232	322.97	0.011	8	
232	322.97	360	233	323.85	0.011	8	
233	323.85	400	234	326.56	0.011	8	
234	326.56	400	235	334.49	0.011	8	
235	334.49	400	236	341.76	0.011	8	
236	341.76	170	237	370.9	0.011	8	
232	322.97	400	238	325.61	0.011	8	

```
*NIPOMO CSD SEWER MODEL OF EXISTING SYSTEM - NORTH OAK GLEN LS AREA
*NOAKGLEN.DTA
DESIGN CRITERIA 0.9 15 0.9 21  0.9 999
ANALYSIS CRITERIA 0.9 15 0.9 21 0.9 999
PEAKING 3.0 1
OUTPUT NOAKGLEN.OUT
UNITS 0 0 1 0 0 0 0
GEOMETRY
1600     332.75   10            163     332.85  0.011    8 *TO N OAKGLEN LS
163      332.85  140            164     341.3   0.011    8
163      332.85  230            165     333.76  0.011    8
165      333.76  380            166     335.4   0.011    8
166      335.4   310            167     336.95  0.011    8
167      336.95  600            168     346.48  0.011    8
SANITARY LOADING
163   1   0.00
164   1   0.00
165   1   0.27
166   1   0.43
167   1   0.40
168   1   1.46

ENDFILE
```

```
*NIPOMO CSD SEWER MODEL OF EXISTING SYSTEM - TEFFT ST LS AREA
*TEFFT.DTA
DESIGN CRITERIA 0.90 15 0.90 21 0.90 999
ANALYSIS CRITERIA 0.90 15 0.90 21 0.90 999
PEAKING 3.0 1.0
OUTPUT TEFFT.OUT
UNITS 0 0 1 0 0 0 0
GEOMETRY
100     293.7   300     101     300.58  0.011    8
555     291.41  100     100     293.7   0.011    8 *TO TEFFT LS
100     293.7   60      156     294.02  0.011    8
101     300.58  450     102     303.6   0.011    8
102     303.6   400     103     305.26  0.011    8
103     305.26  360     104     306.78  0.011    8
104     306.78  250     105     307.87  0.011    8
105     307.87  240     106     308.98  0.011    8
106     308.98  470     107     311.19  0.011    8
107     311.19  220     118     312.32  0.011    8
118     312.32  260     108     314.73  0.011    8
108     314.73  270     150     317.86  0.011    8
108     314.73  430     151     319.54  0.011    8
151     319.54  400     152     330     0.011    8
151     319.54  200     153     320.35  0.011    8
153     320.35  260     154     325.62  0.011    8
154     325.62  460     155     335.08  0.011    8
102     303.6   400     109     309.41  0.011    8
109     309.41  160     110     310.81  0.011    8
110     310.81  310     111     321.09  0.011    8
111     321.09  280     112     322.39  0.011    8
111     321.09  250     113     322.11  0.011    8
111     321.09  175     114     322.96  0.011    8
114     322.96  320     115     325.06  0.011    8
115     325.06  260     116     326.44  0.011    8
115     325.06  375     117     331.99  0.011    8
117     331.99  300     120     338.48  0.011    8
120     338.48  230     121     339.97  0.011    8
121     339.97  175     122     344.11  0.011    8
122     344.11  410     123     362.87  0.011    8
104     306.78  220     140     309.84  0.011    8
140     309.84  200     141     312.89  0.011    8
141     312.89  260     142     316.24  0.011    8
103     305.26  430     124     316.44  0.011    8
124     316.44  460     125     319.18  0.011    8
125     319.18  400     126     327.42  0.011    8
126     327.42  410     127     332.43  0.011    8
127     332.43  400     128     338.23  0.011    8
128     338.23  370     129     342.43  0.011    8
125     319.18  370     130     320.72  0.011    8
130     320.72  250     131     322.09  0.011    8
131     322.09  230     132     334.82  0.011    8
132     334.82  350     133     344.1   0.011    8
133     344.1   260     134     345.18  0.011    8
134     345.18  330     135     346.64  0.011    8
135     346.64  250     136     357.1   0.011    8
136     357.1   330     137     367.96  0.011    8
106     308.98  430     143     311.76  0.011    8
143     311.76  190     144     314.93  0.011    8
```

411	1	0.00
412	1	0.00
413	1	0.00
414	1	0.00
415	1	0.00
416	1	0.00
417	1	1.20
420	1	1.33
421	1	0.00
422	1	0.80
423	1	1.20
424	1	0.93
425	1	1.20
426	1	0.00
427	1	0.00
428	1	0.00
429	1	0.00
430	1	0.00
431	1	1.33
432	1	0.00
433	1	1.86
434	1	0.80
435	1	1.07
436	1	1.33
437	1	0.80
438	1	1.86
450	1	0.00
460	1	1.07

ENDFILE

```
*NIPOMO CSD SEWER MODEL OF EXISTING SYSTEM - NIPOMO PALMS LS AREA
*NIPPALMS.DTA
DESIGN CRITERIA 0.9 15 0.9 21  0.9 999
ANALYSIS CRITERIA 0.9 15 0.9 21 0.9 999
PEAKING 3.0 1.0
OUTPUT NIPPALMS.OUT
UNITS 0 0 1 0 0 0 0
GEOMETRY
400     311     50      401     311.57  0.011    8 *TO NIPOMO PALMS LS
401     311.57  50      402     312.49  0.011    8
402     312.49  240     403     321.7   0.011    8
403     321.7   200     404     325.8   0.011    8
403     321.7   220     405     328.01  0.011    8
405     328.01  90      406     330.36  0.011    8
406     330.36  110     407     331.32  0.011    8
407     331.32  240     408     332.8   0.011    8
405     328.01  150     409     329.05  0.011    8
409     329.05  130     410     329.55  0.011    8
410     329.55  450     411     334.1   0.011    6
411     334.1   400     412     352.43  0.011    6
412     352.43  200     413     353.72  0.011    6
401     311.57  140     430     311.75  0.011    8
430     311.75  30      431     314     0.011    6
431     314     200     432     332     0.011    6
432     332     220     433     339.7   0.011    6
431     314     430     434     322.46  0.011    6
434     322.46  200     435     326.4   0.011    6
435     326.4   260     436     342     0.011    6
435     326.4   260     437     340.35  0.011    6
437     340.35  370     438     340.52  0.011    6
402     312.49  370     414     313.55  0.011    8
414     313.55  110     415     314.09  0.011    8
415     314.09  130     416     333     0.011    8
415     314.09  70      417     314.48  0.011    8
417     314.78  380     420     315.95  0.011    8
420     315.95  120     421     316.74  0.011    8
421     316.74  240     422     317.52  0.011    8
422     317.52  220     423     322.7   0.011    8
423     322.7   180     424     331     0.011    8
423     322.7   220     425     331     0.011    8
422     317.52  200     426     318.53  0.011    8
426     318.53  140     427     319.39  0.011    8
422     317.52  180     428     318.7   0.011    8
428     318.7   120     429     320.0   0.011    8
429     320.0   744     450     328.7   0.011    8
450     328.7  1351     460     352.5   0.011    8
SANITARY LOADING
401  1  0.00
402  1  0.80
403  1  1.07
404  1  0.93
405  1  0.67
406  1  0.00
407  1  0.67
408  1  0.00
409  1  0.67
410  1  0.00
```

```
157  1  0.00
160  1  0.00
161  1  0.00
162  1  0.00
200  1  0.00
201  1  1.02
202  1  1.60
204  1  2.56
206  1  0.93
207  1  0.80
208  1  0.93
209  1  0.93
210  1  2.00
211  1  0.00
213  1  0.23
214  1  1.46
215  1  1.20
216  1  0.53
217  1  2.13
220  1  0.16
221  1  0.19
222  1  0.29
223  1  0.73
224  1  2.16
225  1  2.13
226  1  1.20
227  1  1.86
231  1  3.07
232  1  0.53
233  1  0.27
234  1  0.93
235  1  0.93
236  1  0.00
237  1  1.46
238  1  1.86
239  1  2.40
240  1  0.53
241  1  2.40
242  1  0.53
243  1  2.13
260  1  2.66 *//HERMRECK
261  1  2.66 *//HERMRECK
262  1  2.66 *//HERMRECK
263  1  4.00 *//HERMRECK
264  1  4.00 *//HERMRECK
265  1  1.46 *//HERMRECK
266  1  0.00 *//HERMRECK
267  1  0.00 *//HERMRECK
268  1  2.66 *//HERMRECK
269  1  31.94 *//NIPOMO H.S. (46,000 GPD)

ENDFILE
```

238	325.61	400	239	333.14	0.011	8
239	333.14	400	240	355.65	0.011	8
240	355.65	170	241	379.43	0.011	8
240	355.65	370	242	358.93	0.011	8
242	358.93	430	243	383.5	0.011	8

SANITARY LOADING

100	1	0.00
101	1	0.58
102	1	0.40
103	1	0.00
106	1	0.67
107	1	2.03
108	1	0.53
109	1	0.24
110	1	0.00
111	1	1.17
112	1	0.38
113	1	0.00
114	1	0.00
115	1	1.14
116	1	0.00
117	1	0.40
118	1	0.40
120	1	2.13
121	1	1.07
122	1	0.13
123	1	0.13
124	1	0.93
125	1	1.20
126	1	1.36
127	1	2.00
128	1	0.67
129	1	0.00
130	1	0.00
131	1	0.00
132	1	0.00
133	1	0.00
134	1	0.00
135	1	0.00
136	1	0.67
137	1	0.67
141	1	1.73
142	1	0.00
143	1	0.67
144	1	0.00
145	1	0.00
146	1	0.00
147	1	0.40
148	1	1.07
149	1	0.53
150	1	0.53
151	1	1.07
152	1	1.33
154	1	0.13
155	1	0.53
156	1	0.63

143	311.76	460	145	314.33	0.011	8
145	318.37	110	146	319.36	0.011	8
107	311.19	420	147	315.62	0.011	8
147	315.62	370	148	319.95	0.011	8
147	315.62	340	149	319.21	0.011	8
100	293.7	70	156	294.02	0.011	8
156	294.2	370	157	305.66	0.011	8
157	305.66	180	160	311.11	0.011	8
160	311.11	80	161	311.67	0.011	8
161	311.67	180	162	325.4	0.011	8
100	293.7	330	200	299.4	0.011	8
200	299.4	470	201	301.31	0.011	8
201	301.31	190	202	302.5	0.011	8
202	302.5	220	203	309.42	0.011	8
202	302.5	430	204	305.2	0.011	8
204	305.2	230	205	319.92	0.011	8
204	305.2	270	206	306.59	0.011	8
206	306.59	260	207	307.43	0.011	8
206	306.59	420	208	317.78	0.011	8
208	317.78	250	209	320	0.011	8
204	305.2	430	210	316.63	0.011	8
210	316.63	330	211	319	0.011	8
210	316.63	380	212	319.9	0.011	8
212	319.9	110	213	320.41	0.011	8
213	320.41	440	214	325.67	0.011	8
214	325.67	780	215	332.26	0.011	8
215	332.26	390	216	343.45	0.011	8
216	343.45	400	217	355.58	0.011	8
200	299.4	250	220	306.55	0.011	8
220	306.55	430	221	309.67	0.011	8
221	309.67	430	222	314.72	0.011	8
222	314.72	460	223	321.86	0.011	8
223	321.86	420	224	323.79	0.011	8
224	323.79	410	225	330.54	0.011	8
225	330.54	400	226	336.66	0.011	8
226	336.66	380	227	343.49	0.011	8
213	320.41	360	230	321.02	0.011	8
230	321.02	430	231	327	0.011	8
230	321.02	580	232	322.97	0.011	8
232	322.97	360	233	323.85	0.011	8
233	323.85	400	234	326.56	0.011	8
234	326.56	400	235	334.49	0.011	8
235	334.49	400	236	341.76	0.011	8
236	341.76	170	237	370.9	0.011	8
232	322.97	400	238	325.61	0.011	8
238	325.61	400	239	333.14	0.011	8
239	333.14	400	240	355.65	0.011	8
240	355.65	170	241	379.43	0.011	8
240	355.65	370	242	358.93	0.011	8
242	358.93	430	243	383.5	0.011	8

SANITARY LOADING

100	1	0.00
101	1	0.58
102	1	0.40
103	1	0.00
106	1	0.67
107	1	2.03

108	1	0.53
109	1	0.24
110	1	0.00
111	1	1.17
112	1	0.38
113	1	0.00
114	1	0.00
115	1	1.14
116	1	0.00
117	1	0.40
118	1	0.40
120	1	2.13
121	1	1.07
122	1	0.13
123	1	0.13
124	1	0.93
125	1	1.20
126	1	1.36
127	1	2.00
128	1	0.67
129	1	0.00
130	1	0.00
131	1	0.00
132	1	0.00
133	1	0.00
134	1	0.00
135	1	0.00
136	1	0.67
137	1	0.67
141	1	1.73
142	1	0.00
143	1	0.67
144	1	0.00
145	1	0.00
146	1	0.00
147	1	0.40
148	1	1.07
149	1	0.53
150	1	0.53
151	1	1.07
152	1	1.33
154	1	0.13
155	1	0.53
156	1	0.63
157	1	0.00
160	1	0.00
161	1	0.00
162	1	0.00
200	1	0.00
201	1	1.02
202	1	1.60
204	1	2.56
206	1	0.93
207	1	0.80
208	1	0.93
209	1	0.93
210	1	2.00

211	1	0.00
213	1	0.23
214	1	1.46
215	1	1.20
216	1	0.53
217	1	2.13
220	1	0.16
221	1	0.19
222	1	0.29
223	1	0.73
224	1	2.16
225	1	2.13
226	1	1.20
227	1	1.86
231	1	3.07
232	1	0.53
233	1	0.27
234	1	0.93
235	1	0.93
236	1	0.00
237	1	1.46
238	1	1.86
239	1	2.40
240	1	0.53
241	1	2.40
242	1	0.53
243	1	2.13

ENDFILE

13

```
* NIPOMO CSD SEWER MODEL OF EXISTING SYSTEM - TEJAS LS AREA
* TEJAS.DTA
DESIGN CRITERIA 0.9 15 0.9 21 0.9 999
ANALYSIS CRITERIA 0.9 15 0.9 21 0.9 999
PEAKING 3.0 1
OUTPUT TEJAS.OUT
UNITS 0 0 1 0 0 0 0
GEOMETRY
1101   323.8    10  1102   323.9  0.011  8
1102   323.9   300  1114   325.1  0.011  8
1102   323.9   250  1104   324.9  0.011  8
1102   323.9   550  1106   326.7  0.011  8
1106   326.7   212  1108   327.5  0.011  8
1108   327.5   369  1110   329.0  0.011  8
1106   326.7   367  1112   346.1  0.011  8
SANITARY LOADING
1104   1     0.53
1106   1     1.07
1108   1     0.00
1110   1     0.00
1112   1     0.40
1114   1     0.00
ENDFILE
```

```
*NIPOMO CSD SEWER MODEL OF EXISTING SYSTEM - MAIN ZONE TO WWTP WITH NIP PALMS
BYPASS, MV II COLLECTOR
*WWTP1.DTA
DESIGN CRITERIA 0.9 15 0.9 21 0.9 999
ANALYSIS CRITERIA 0.9 15 0.9 21 0.9 999
PEAKING 3.0  1.0
OUTPUT WWTP1.OUT
UNITS 0 0 1 0 0 0 0
GEOMETRY
1005    289.57  50      1006    290.54  0.011   12 *TO WWTP
1006    290.54  290     1007    291.41  0.011   12
1007    291.41  400     1008    292.81  0.011   12
1008    292.81  420     1009    294.03  0.011   12
1009    294.03  1300    1010    302.14  0.011   12
1010    302.14  360     1011    305.1   0.011   12
1011    305.1   370     1012    313.33  0.011   12
1012    313.33  950     1013    315.72  0.011   12
1013    315.72  1060    1014    318.64  0.011   12
1014    318.64  1130    1015    336.22  0.011   10
1015    336.22  850     1016    338.61  0.011   10
1016    338.61  250     1017    339.09  0.011   10
1017    339.09  350     1020    339.99  0.011   10
1020    339.99  370     1021    340.88  0.011   10
1021    340.88  340     1022    341.79  0.011   10
1022    341.79  280     1023    342.96  0.011   8
1023    342.96  280     1024    344.14  0.011   8
1024    344.14  280     1025    351.13  0.011   8
1025    351.13  280     1026    357.33  0.011   8
1026    357.33  220     1027    359.83  0.011   8
1027    359.83  500     1028    368.47  0.011   8
1011    305.1   460     1029    306.16  0.011   12
1029    306.16  420     1030    307.19  0.011   12
1030    307.19  1320    1031    309.97  0.011   12
1031    309.97  340     1032    314.36  0.011   8
1032    314.36  300     1033    315.71  0.011   8
1031    309.97  25      1035    329.68  0.011   8
1035    329.68  130     1036    331.34  0.011   8
1035    329.68  520     1037    331.6   0.011   8
1031    309.97  784     1034    312.86  0.011   12
1034    312.86  304     1038    315.29  0.011   10
1038    315.29  400     1039    319.12  0.011   8
1038    315.29  750     1040    320.58  0.011   10
1040    320.58  969     1099    329.70  0.011   8
1040    320.58  330     1041    324.85  0.011   10
1041    324.85  252     1042    327.28  0.011   8
1041    324.85  585     1045    329.44  0.011   10
1045    329.44  309     1043    339.98  0.011   8
1043    339.98  227     1044    341.32  0.011   8
1043    339.98  380     1046    352.06  0.011   8
1011    305.1   380     1047    306.02  0.011   12
1047    306.02  110     1048    306.35  0.011   12
1048    306.35  770     1091    307.30  0.011   12 *//MONTECITO VERDE II
1091    307.30  630     1093    308.80  0.011   12 *//MONTECITO VERDE II
1093    308.80  100     1092    312.40  0.011   12 *//MONTECITO VERDE II
1093    308.80  1200    400     311.00  0.011   12 *//NIP PALMS/MV II BYPASS
1047    306.02  300     1049    311.83  0.011   8
1049    311.83  320     1050    314.99  0.011   8
```

1049	311.83	240	1051	312.98	0.011	8
1051	312.98	310	1052	314.8	0.011	8
1013	316.21	350	1053	331.75	0.011	8
1053	331.75	190	1054	333.34	0.011	8
1054	333.34	600	1055	334.99	0.011	8
1054	334.99	260	1056	335.51	0.011	8
1056	335.51	50	513	337.83	0.011	8
513	337.83	200	514	343.00	0.011	8
514	343.00	100	515	345.00	0.011	8
513	337.83	50	1057	340.16	0.011	8
1057	340.16	250	1060	342.55	0.011	8
1060	342.55	50	1061	342.69	0.011	8
1061	342.69	280	1062	346.8	0.011	8
1062	346.8	270	1063	364	0.011	8
1063	364	100	1064	366.86	0.011	8
1063	364	100	1065	364.5	0.011	8
1061	342.69	300	512	345.09	0.011	8
512	345.09	330	1066	348.5	0.011	8
1066	348.5	50	1067	349	0.011	8
1067	349	50	1068	349.5	0.011	8
512	345.09	645	511	358.40	0.011	8
511	358.40	50	526	359.40	0.011	8
511	358.40	50	527	364.86	0.011	8
1016	347.08	50	1069	347.42	0.011	8
1069	347.42	360	1070	348.89	0.011	8
1070	348.89	280	1071	351	0.011	8
1071	351	400	1072	356.67	0.011	8
1072	356.67	400	1073	359.5	0.011	8
1014	318.64	800	1080	325.49	0.011	12
1080	325.49	2200	1081	358.69	0.011	8
1081	358.69	602	1078	360.57	0.011	8
1009	294.03	403	1082	296.8	0.011	8
1082	296.8	561	1084	299.4	0.011	8
1084	299.4	945	1086	308.3	0.011	8
1086	308.3	668	1089	313.6	0.011	8
1089	313.6	623	1096	333.6	0.011	8
1082	296.8	672	1083	299.7	0.011	8
1084	299.4	300	1085	310.0	0.011	8
1086	308.3	237	1087	324.9	0.011	8
1089	313.6	149	1095	314.4	0.011	8
1096	333.6	353	1097	341.7	0.011	8

SANITARY LOADING

```
400  1  21.59 *//NIPOMO PALMS LOADING BY GRAVITY
400  0  0   450.0000#       *LOADING FROM CSA 1
511  1  2.66
514  1  2.66
515  1  0.93
1009  1  2.84
1011  1  0.00
1012  1  0.00
1013  1  4.40
1014  1  1.36
1015  1  0.00
1016  1  0.78
1017  1  0.00
1020  1  1.94
1021  1  0.00
```

```
1022  1  0.00
1023  1  1.19
1024  1  0.00
1025  1  0.00
1026  1  7.86
1027  1  0.13
1028  0  0   175.0000#       *LOADING JUNIPER LS
1028  0  0   110.0000#       *LOADING FROM BRACKEN LS
1030  1  0.00
1031  1  2.72
1032  1  0.00
1033  1  0.00
1034  1  2.72
1035  1  0.00
1037  1  0.80
1039  1  5.44
1040  1  0.00
1041  1  4.37
1042  1  2.80
1043  1  2.30
1043  0  0   315.0000#       *LOADING FROM TEFFT LS
1045  1  0.00
1046  1  0.67
1046  0  0   175.0000#       *LOADING FROM N. OAKGLEN LS
1048  1  0.00
1050  1  1.33
1051  1  2.13
1052  1  1.33
1054  1  6.66
1055  1  0.97
1056  1  0.00
1062  1  1.33
1063  1  1.33
*1066  0  0   175.0000#       *LOADING FROM NIPOMO PALMS LS
*1066  0  0   450.0000#       *LOADING FROM CSA 1
1067  1  1.33
1068  0  0   190.0000#       *LOADING FROM LA MIRADA LS
1069  1  0.97
1070  1  0.00
1071  1  1.94
1072  1  0.00
1073  1  0.00
1073  0  0   111.0000#       *LOADING FROM GARDENIA LS
1078  1  2.13
1073  0  0   111.0000#       *LOADING FROM TEJAS LS
1081  1  18.38
1082  1  0.00
1083  1  0.00
1084  1  0.00
1085  1  0.00
1086  1  0.00
1087  1  0.28
1089  1  0.00
1091  1  4.23 *//CRYSTAL AND STORY
1092  1  5.33 *//MV II
1095  1  1.93
1095  0  0   200.0000#       *LOADING FROM HONEY GROVE LS
```

```
1096  1  0.14
1097  1  0.00
ENDFILE
```

Appendix D

Hydrant Test Results

NIPOMO FIRE HYDRANT TEST

NODE # 407, 409

LOCATION:	F-40 Dale Ave #		DATE:	4-6-00
TEST PERFORMED BY: Doug Lee + Butch,	F-40 451	← Fire Hyd Number F-41 443	TIME:	12:45
			WEATHER:	Clear
STATIC PRESSURE:	38	41	DIST. BETWEEN F.H.	500' to F-41
RESIDUAL PRESSURE:		35	LOCATION ON MAP:	#6
PITOT READING: PSI	10-12		TYPE FIRE HYDRANT	Jones
OBSERVED FLOW GPM:	619			

WELL PUMP STATUS

WELL #	ON	OFF
B. LAKE 3		
B. LAKE 4		
BEVINGTON	✓	
CHURCH		
EUREKA	✓	
OLYMPIC		
OMIYA		
V. CONCHA		
SUNDALE		

SYSTEM TANK ELEVATIONS **

TWIN TANKS No. 1 (0.5 MG)
TANK WATER LEVEL: 13.18 535.4
TIME: NAME:

TWIN TANKS NO. 2 (0.5 MG)
TANK WATER LEVEL: 13.18 535.4
TIME: NAME:

TWIN TANKS NO. 3 (1 MG)
TANK WATER LEVEL: 13.18 535.4
TIME: NAME:

STANDPIPE
WATER LEVEL: 80.90 541.0
TIME: NAME:

* Indicate both hydrant and residual pressure location on map.
** List all tank elevations at time of hydrant testing.

EL 414 NODE 407 @ 620 PSI 63 → FF

NIPOMO FIRE HYDRANT TEST

NODE 710

LOCATION:	F-21 Frisco Way at [illegible]		DATE:	4-6-00
TEST PERFORMED BY: Doug Lee + Butch	F-22 380	F-23 375	TIME:	1:11
			WEATHER:	
STATIC PRESSURE:	71	71	DIST. BETWEEN F.H.	500'
RESIDUAL PRESSURE:		57-60	LOCATION ON MAP:	#4
PITOT READING: PSI	36-38		TYPE FIRE HYDRANT	Jones
OBSERVED FLOW GPM:	1135			

WELL PUMP STATUS

WELL #	ON	OFF
B. LAKE 3		
B. LAKE 4		
BEVINGTON	✓	
CHURCH		
EUREKA	✓	
OLYMPIC		
OMIYA		
V. CONCHA		
SUNDALE		

SYSTEM TANK ELEVATIONS **

TWIN TANKS No. 1 (0.5 MG)
TANK WATER LEVEL: 12.77 535.0
TIME: NAME:

TWIN TANKS NO. 2 (0.5 MG)
TANK WATER LEVEL: 12.77 535.0
TIME: NAME:

TWIN TANKS NO. 3 (1 MG)
TANK WATER LEVEL: 12.77 535.0
TIME: NAME:

STANDPIPE
WATER LEVEL: 81.80 541.1
TIME: NAME:

* Indicate both hydrant and residual pressure location on map.
** List all tank elevations at time of hydrant testing.

EL 370 NODE 450 65 → FF

(1)

NIPOMO FIRE HYDRANT TEST — NODE # 917

LOCATION:	Mesa & Charro (Mesa)		DATE:	4-6-00
			TIME:	2:10
TEST PERFORMED BY:	Mesa 340	Charro 343	WEATHER:	Clear
STATIC PRESSURE:	87	88	DIST. BETWEEN F.H.	100' to Charro FH
RESIDUAL PRESSURE:		75	LOCATION ON MAP:	# 1
PITOT READING:	50		TYPE FIRE HYDRANT	Jones
OBSERVED FLOW GPM:	1319			

WELL PUMP STATUS

WELL #	ON	OFF
B. LAKE 3		
B. LAKE 4		
BEVINGTON	✓	
CHURCH		
EUREKA	✓	
OLYMPIC		
OMIYA		
V. CONCHA		
SUNDALE		

SYSTEM TANK ELEVATIONS **

TWIN TANKS No. 1 (0.5 MG) TANK WATER LEVEL:	12.77 535.0	TIME:	NAME:	
TWIN TANKS NO. 2 (0.5 MG) TANK WATER LEVEL:	12.77 535.0	TIME:	NAME:	
TWIN TANKS NO. 3 (1 MG) TANK WATER LEVEL:	12.77 535.0	TIME:	NAME:	
STANDPIPE WATER LEVEL:	81.80 541.9	TIME:	NAME:	

* Indicate both hydrant and residual pressure location on map.
** List all tank elevations at time of hydrant testing.

ELE NODE 781 / 345 918 76

(3)

NIPOMO FIRE HYDRANT TEST — NODE # 155

LOCATION:	Grande at Jasper B-13		DATE:	4-6-00
			TIME:	2:25
TEST PERFORMED BY:	B-13 368	B-93 316	WEATHER:	
STATIC PRESSURE:	73	73	DIST. BETWEEN F.H.	200' to B-93
RESIDUAL PRESSURE:		62	LOCATION ON MAP:	# 3
PITOT READING:	32		TYPE FIRE HYDRANT	
OBSERVED FLOW GPM:	1055			

WELL PUMP STATUS

WELL #	ON	OFF
B. LAKE 3		
B. LAKE 4		
BEVINGTON	✓	
CHURCH		
EUREKA	✓	
OLYMPIC		
OMIYA		
V. CONCHA		
SUNDALE		

SYSTEM TANK ELEVATIONS **

TWIN TANKS No. 1 (0.5 MG) TANK WATER LEVEL:	12.77 535.0	TIME:	NAME:	
TWIN TANKS NO. 2 (0.5 MG) TANK WATER LEVEL:	12.77 535.0	TIME:	NAME:	
TWIN TANKS NO. 3 (1 MG) TANK WATER LEVEL:	12.77 535.0	TIME:	NAME:	
STANDPIPE WATER LEVEL:	81.80 541.9	TIME:	NAME:	

* Indicate both hydrant and residual pressure location on map.
** List all tank elevations at time of hydrant testing.

ELE NODE 155 / 389 136 57

5

NIPOMO FIRE HYDRANT TEST

NODE 414

LOCATION:	F-17 Summit Station & Futura Ln		DATE:	4-6-00
			TIME:	1:40
TEST PERFORMED BY:	F-17 458'	F-18 440'	WEATHER:	Clear
STATIC PRESSURE:	36	36	DIST. BETWEEN F.H.	500' to F-18
RESIDUAL PRESSURE:		30	LOCATION ON MAP:*	#5 Moved to Summit Sta & Futura
PITOT READING: PSI	16-18		TYPE FIRE HYDRANT	Jones
OBSERVED FLOW GPM:	770			

WELL PUMP STATUS

WELL #	ON	OFF
B. LAKE 3		
B. LAKE 4		
BEVINGTON	✓	
CHURCH		
EUREKA	✓	
OLYMPIC		
OMIYA		
V. CONCHA		
SUNDALE		

SYSTEM TANK ELEVATIONS **

TWIN TANKS No. 1 (0.5 MG)
TANK WATER LEVEL: 12.77 535.0
TIME: NAME:

TWIN TANKS NO. 2 (0.5 MG)
TANK WATER LEVEL: 12.77 535.0
TIME: NAME:

TWIN TANKS NO. 3 (1 MG)
TANK WATER LEVEL: 12.77 535.0
TIME: NAME:

STANDPIPE
WATER LEVEL: 81.80 541.9
TIME: NAME:

* Indicate both hydrant and residual pressure location on map.
** List all tank elevations at time of hydrant testing.

NODE 414 . 14 PSI → FF
EL 459 ; 1/2 —— ↑

NIPOMO FIRE HYDRANT TEST

NODE #805

LOCATION:	Calimex at Promroy D-63		DATE:	4-6-00
			TIME:	1:55
TEST PERFORMED BY:	D-63 350'	390' 832 Calimex Pl	WEATHER:	Clear
STATIC PRESSURE:	86	67	DIST. BETWEEN F.H.	500'
RESIDUAL PRESSURE:		61	LOCATION ON MAP:*	#2 Moved to Calimex Pl.
PITOT READING: PSI	46-48		TYPE FIRE HYDRANT	
OBSERVED FLOW GPM:	1280			

WELL PUMP STATUS

WELL #	ON	OFF
B. LAKE 3		
B. LAKE 4		
BEVINGTON	✓	
CHURCH		
EUREKA	✓	
OLYMPIC		
OMIYA		
V. CONCHA		
SUNDALE		

SYSTEM TANK ELEVATIONS **

TWIN TANKS No. 1 (0.5 MG)
TANK WATER LEVEL: 12.77 535.0
TIME: NAME:

TWIN TANKS NO. 2 (0.5 MG)
TANK WATER LEVEL: 12.77 535.0
TIME: NAME:

TWIN TANKS NO. 3 (1 MG)
TANK WATER LEVEL: 12.77 535.0
TIME: NAME:

STANDPIPE
WATER LEVEL: 81.80 541.9
TIME: NAME:

* Indicate both hydrant and residual pressure location on map.
** List all tank elevations at time of hydrant testing.

EL 357 NODE 805 96 PSI

Nipomo Fire Hydrant Test, F17, Summit Station and Futura. Time: 2:16 PM, June 13, 2000

Time (Seconds)	Flow Total (Gallons)	GPS	GPM	Flow Total (Incremental)	Time (Incremental)	GPS	GPM (Incremental)
0.00	0.00	0.00	0.00				
30.00	50.00	1.67	100.00	50.00	30.00	1.67	100.00
60.00	100.00	1.67	100.00	50.00	30.00	1.67	100.00
90.00	200.00	2.22	133.33	100.00	30.00	3.33	200.00
107.00	250.00	2.34	140.19	50.00	17.00	2.94	176.47
120.00	300.00	2.50	150.00	50.00	13.00	3.85	230.77
131.00	350.00	2.67	160.31	50.00	11.00	4.55	272.73
145.00	400.00	2.76	165.52	50.00	14.00	3.57	214.29
157.00	450.00	2.87	171.97	50.00	12.00	4.17	250.00
170.00	500.00	2.94	176.47	50.00	13.00	3.85	230.77

Beginning Pressure = 48 psi
Static Pressure during test = 38 psi

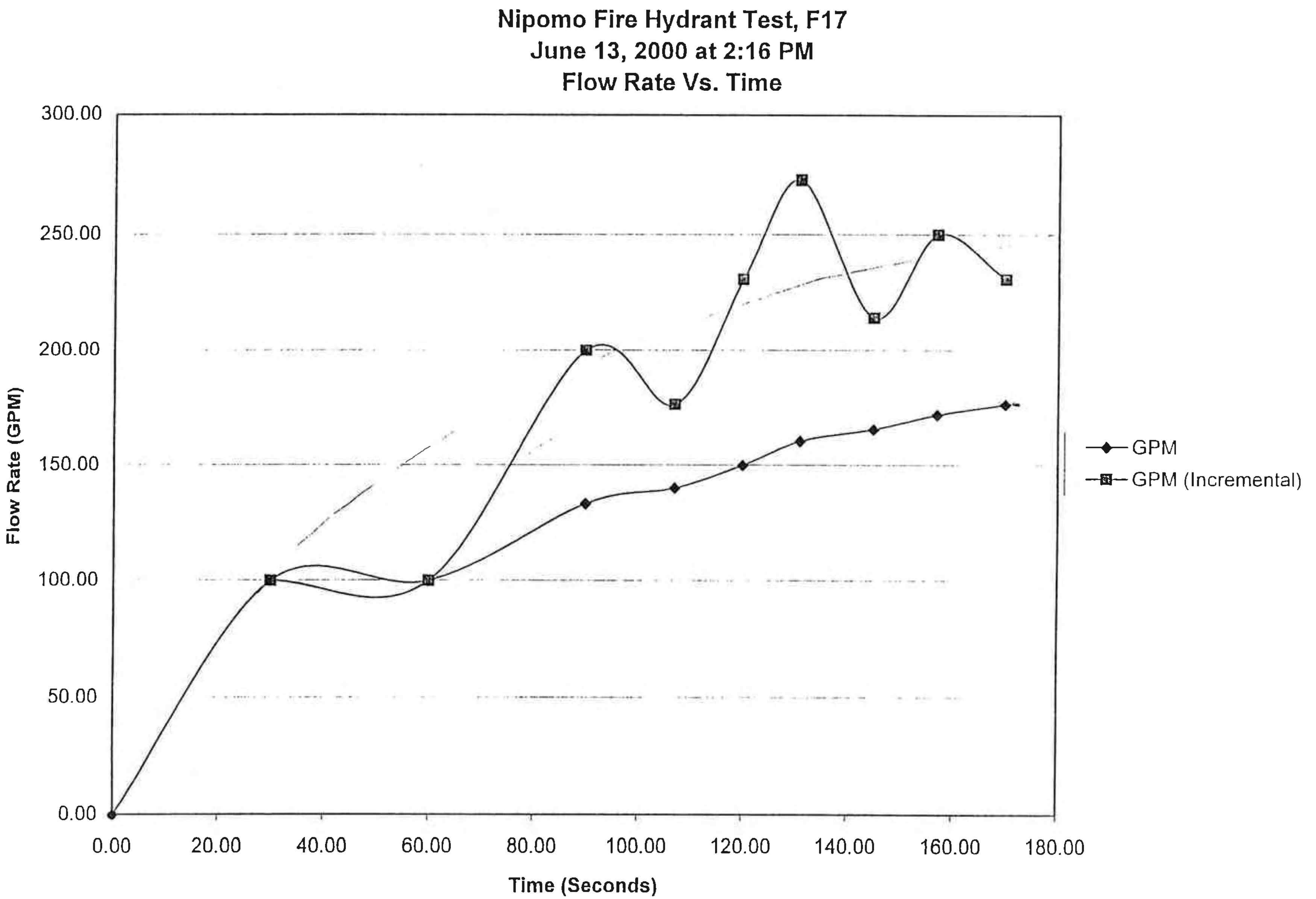
Well Pumps On at time of Test:
Bevington
Eureka
Via Concha

Weather Conditions:
Clear
Temperature = 90

System Tank Elevations at time of test:
Twin Tanks (1-3): 16.85 = Water Surface elevation of 539.10 (BOTTOM OF TANK LEVEL=522.25
Standpipe: 84.94 = Water Surface elevation of 545.07

Note: There appears to be a 3 - 5 foot drop in elevation from F17 to F18

3



Nipomo Fire Hydrant Test, F17
June 13, 2000 at 2:16 PM
Flow Rate Vs. Time
Flow Rate (GPM)
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
180.00
Time (Seconds)
GPM
GPM (Incremental)

50

F22 Frisco Lane

(4)

Nipomo Fire Hydrant Test, ~~F17~~, ~~Summit Station and Futura~~. Time: 2:32 PM, June 13, 2000

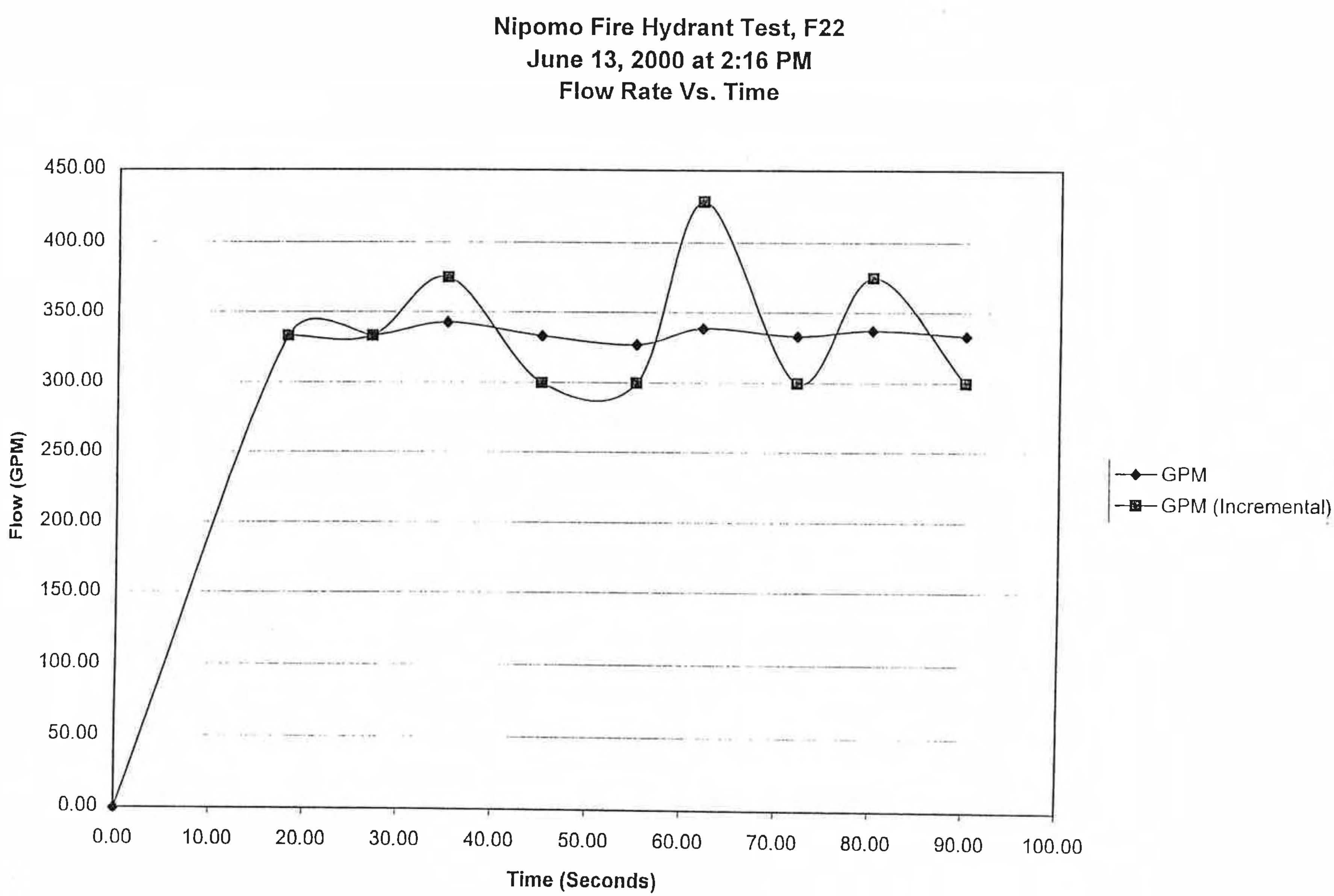
Time (Seconds)	Flow Total (Gallons)	GPS	GPM	Flow Total (Incremental)	Time (Incremental)	GPS	GPM (Incremental)
0.00	0.00	0.00	0.00				
18.00	100.00	5.56	333.33	100.00	18.00	5.56	333.33
27.00	150.00	5.56	333.33	50.00	9.00	5.56	333.33
35.00	200.00	5.71	342.86	50.00	8.00	6.25	375.00
45.00	250.00	5.56	333.33	50.00	10.00	5.00	300.00
55.00	300.00	5.45	327.27	50.00	10.00	5.00	300.00
62.00	350.00	5.65	338.71	50.00	7.00	7.14	428.57
72.00	400.00	5.56	333.33	50.00	10.00	5.00	300.00
80.00	450.00	5.63	337.50	50.00	8.00	6.25	375.00
90.00	500.00	5.56	333.33	50.00	10.00	5.00	300.00

Beginning Pressure = 78 psi
Static Pressure during test = 70 psi

Well Pumps On at time of Test:
Bevington
Eureka
Via Concha

Weather Conditions:
Clear
Temperature = 90

System Tank Elevations at time of test:
Twin Tanks (1-3): 16.85 = Water Surface elevation of 539.10
Standpipe: 84.94 = Water Surface elevation of 545.07


Nipomo Fire Hydrant Test, F22
June 13, 2000 at 2:16 PM
Flow Rate Vs. Time
Flow (GPM)
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
Time (Seconds)
GPM
GPM (Incremental)