LOS ALAMOS
COMMUNITY SERVICES DISTRICT

WASTEWATER COLLECTION AND TREATMENT FACILITIES PLANNING STUDY

FINAL
APRIL 25, 2012

PREPARED BY:
BETHEL ENGINEERING
2624 AIRPARK DRIVE
SANTA MARIA, CA 93455
(805) 934-5767
FAX 934-3448

LOS ALAMOS COMMUNITY SERVICES DISTRICT

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CONSULTANT – BETHEL ENGINEERING

Lori Speer, PE	District Engineer Senior Engineer, Bethel Engineering

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Executive Summary

This Wastewater Collection and Treatment Facilities Planning Study provides analysis of the existing facilities, identifies deficiencies and recommends improvements to the wastewater system to benefit the Community of Los Alamos. The study area of this report includes all of the land within the present Los Alamos Community Services District (LACSD or District) boundary, and those areas within the Urban Boundary, which are not currently within the District boundary. The principal land use in the study area is residential with a core commercial area along Bell Street and a large industrial parcel on the northeast side of town. The Zoning and Land Use designations within the Community Plan Update (2011) are the foundation for the future development and build out of the town of Los Alamos.

CURRENT WASTEWATER FLOWS

The population of the town of Los Alamos is expected to increase from the present population of 1,800 to 2,087 by the year 2015 (an annual increase of 3%). The average daily wastewater flow is expected to increase from 122,346 gpd currently to 137,331 gpd by the year 2015. The system maximum daily flow of 172,072 gpg occurred on November 25, 2006 and was 1.44 times the average annual wastewater flow. The average single-family household flow is estimated at 180 gallons per day. The average multi-family household flow is estimated at 100 gpd. Commercial and Industrial wastewater flows are estimated at 60 gpd/1000 SF of building floor space. Future wastewater flows are projected using these estimates.

CURRENT WASTEWATER FACILITIES

The Regional Water Quality Control Board (RWQCB) establishes the plant's permitted capacity (per Order No. R3-2005-0133) and requires that the discharge of daily flow averaged over each month shall not exceed 225,000 gallons.

The Los Alamos Community Services District Wastewater Collection and Treatment Facility can accommodate up to the permitted capacity and is estimated to reach this capacity in 2035. The system currently operates at approximately 55% of the permitted capacity.

FUTURE FACILITY EXPANSION AND FEES

The existing 3" irrigation main line cannot pump more than the permitted capacity without the concern of over-pressurizing the line. Therefore, the District should plan to install a new dual pump irrigation system, allowing the District to separate out the various Phases of the irrigation system to run simultaneously. The spray irrigation fields will also require 10-15 acres of expansion (Phase IV) for build out. In addition, there will need to be modifications to the Master Basin which provides for storage of excess treated water during wet weather when irrigation is not possible and to capture any surface runoff from rain. The modifications will include removal of the berm between the Master Basin and Section 15 to allow additional storage and the ability to return the Section 15 stored water to the Master Basin via surface flows.

For a complete list of the proposed improvement and associated costs, see Table 7.3 on page 37.

RECOMMENDATIONS

1. The capital improvement connection fee and service rates should be reviewed every five years and adjusted as needed to cover expected expenses. The current connection fee for wastewater service should remain the same, $6,162 for the next 5 years.
2. Budgeting for replacement value of infrastructure should take place at 125-150% of the book value due to inflation.
3. Every five year study should review the timing of anticipated build out and examine the possible upgrades needed to accommodate build out.
4. Items noted in Tables 7.3 and 7.4 on page 37 should be budgeted for during the recommended date of completion.

CHAPTER 1.0

INTRODUCTION

Study Area

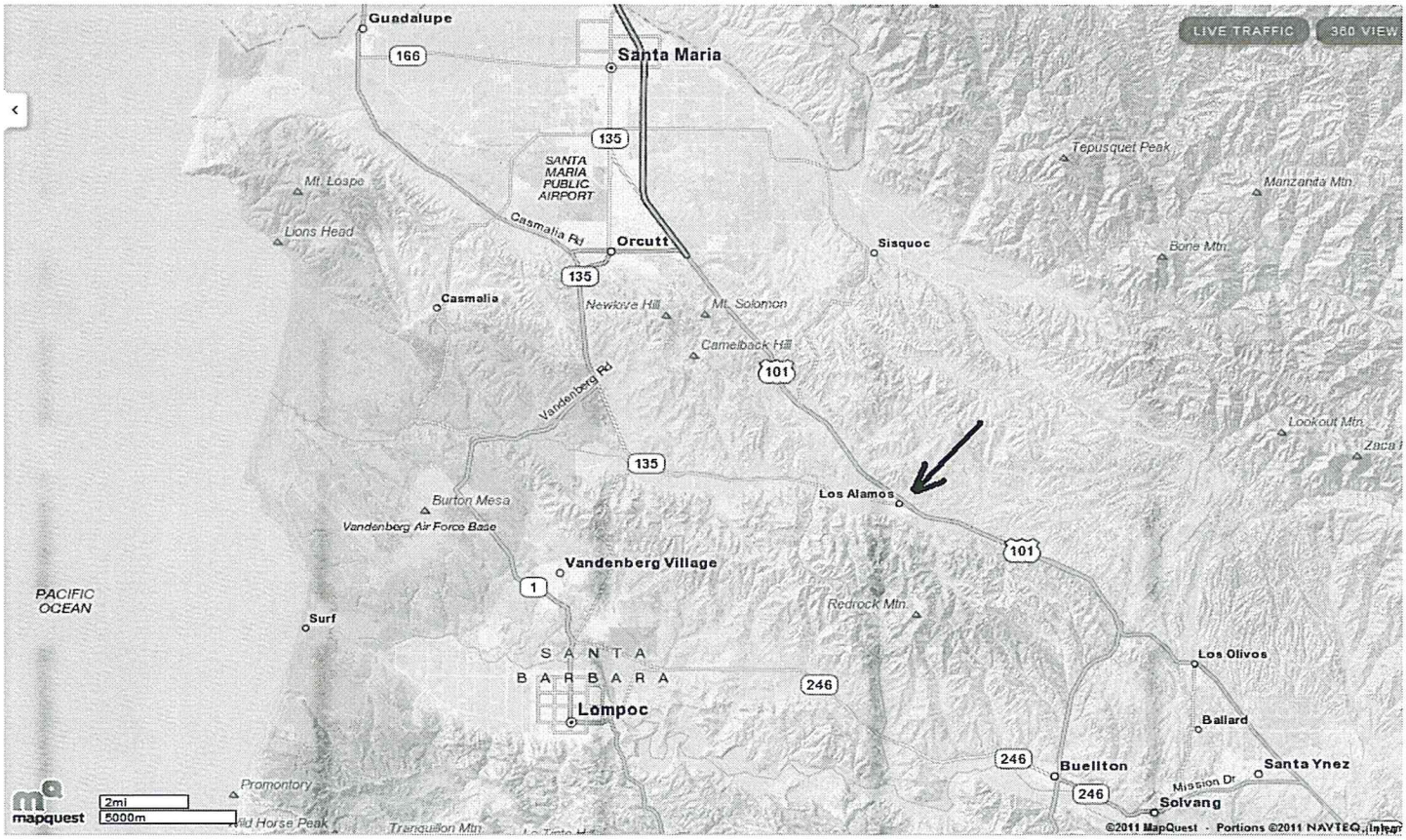
The town of Los Alamos is an unincorporated community located in west-central Santa Barbara County. Los Alamos is located off Highway 101 approximately 15 miles south of Santa Maria and 15 miles north of Buellton (Figure 1.1, page 2). U.S. Highway 101 passes through the community in a northwest to southeast direction and provides the principal connection between Los Alamos and Santa Maria to the north and the Santa Ynez Valley, Goleta and Santa Barbara to the south. State Route 135 is the main access corridor through downtown Los Alamos, connecting Los Alamos with agricultural lands, State Route 1 and Vandenberg Air Force Base to the west.

The Los Alamos Community Plan area is within the urban boundary line established when the Board of Supervisors adopted the Los Alamos Community Plan in 1994. The urban area includes the original Los Alamos town site established in 1879 and the larger lots, which were recorded as part of the town of Los Alamos in1881, located on both sides of Highway 101. The urban area also includes the Los Alamos Cemetery (established in 1888) and the Los Alamos Park (established in 1972). See Figure 1.2, page 5.

The Los Alamos Community Services District (LACSD) provides wastewater collection and treatment service, water service, and owns and maintains Ferrini Park. Although the District boundary and the Urban boundary remain the same throughout most of the town, the District boundary does not include several large parcels located northeast of Highway 101. See Figure 1.2, page 5. A total of 16 parcels (22 potential residential units) are located outside of the District Boundary. These parcels are 3-5 acre parcels. There are currently 10 residential units located in this area, which are served by on-site domestic wells and septic. The 22 potential units (10 units existing) have been included in this study as development on these parcels is required to connect to water and wastewater services if the services become available to these parcels.

The area addressed by this study lies within the current boundaries of the Los Alamos Community Services District (LACSD) and the Urban Boundary defined by the Los Alamos Community Plan Update adopted February 2011.

Figure 1.1: Vicinity Map



History

The Los Alamos Community Services District (LACSD) was formed on October 29, 1956, under Division 4 of the Street and Highway Code for the purpose of providing water service to the Community of Los Alamos utilizing the 1915 Act for a special assessment district. Water service to the community began in 1958.

There was a moratorium on new construction within Los Alamos during the 1980's due to the lack of a wastewater treatment plant for the Community. On April 8, 1985, the District was awarded a Federal EPA Grant and a grant from the California State Water Resources Control Board for the design and construction of the Los Alamos Wastewater Collection and Treatment Project. LACSD began providing sewer service to Los Alamos after the completion of the wastewater treatment plant and the extension of sewer lines in late 1988. The Regional Water Quality Control Board (RWQCB) adopted the original permit on July 12, 1985. Permit 85-97, issued for the operation of Phase I of the facility, allowed the LACSD to discharge a maximum of 100,000 gallons per day (gpd), averaged over each month.

The completion of Phase II of the wastewater treatment plant in September 1993 increased the capacity of the plant and began operating under Order No. 92-93 of the RWQCB (Central Coast Region). Order No. 92-93 allowed the LACSD to discharge a maximum of 176,000 gpd, averaged over each month.

The RWQCB revised Order No. 92-93 on December 2, 2005 by adopting Order No. R3-2005-0133. Order No. R3-2005-0133 established new waste discharge requirements for the LACSD Wastewater Treatment Plant due to the Phase III Expansion Project, allowing a maximum discharge of 225,000 gpd, averaged over each month. The completion of Phase III (expansion of the irrigation fields and the lift station wet well capacity) on October 10, 2006 proposed to provide Los Alamos with wastewater services through build-out of the town under the 1994 Los Alamos Community Plan.

Current Events

The County of Santa Barbara Board of Supervisors adopted the Los Alamos Community Plan Update and the Form-Based Code and Bell Street Design Guidelines on February 15, 2011. The focus of the Community Plan Update is not to expand the Urban Boundary, but rather focus on urban infill and revitalization of the existing Los Alamos downtown. Santa Barbara County Land Use Element states, "The Community Plan establishes land use designations and zone districts and includes goals, policies, development standards and actions to guide future development."

The following is a list of Policy and Action items within the Los Alamos Community Plan Update that directly affect the build-out of the town of Los Alamos and the approach to planning the wastewater services provided to the community.

Residential

- Action LUR-LA-1.1.1: In order to allow greater flexibility for multi-family residential development, the County shall consider rezones to DR-12.3 for contiguous parcels in the 7-R-2 zone district along Leslie and Main Streets.
- Action LUR-LA-2.2.1: Residential Development located on the far western end of Bell Street, within the CM-LA zone, shall be set back at least 100 feet from parcels zoned for agriculture. If the residential development is part of a multi-parcel development concept or the project design demonstrates other adequate buffering, the agricultural buffer setback shall be established by Santa Barbara County Planning and Development during project design.
- Policy LUR-LA-3.1: In order to provide housing opportunities in addition to those in the CM-LA district, renovation of existing substandard units shall be encouraged.
- Policy LUR-LA-3.2: In order to provide housing opportunities, mixed use zoning shall be encouraged where it is compatible with commercial uses.

Commercial

- Policy LUC-LA-2.1: New commercial mixed-use development (both local and visitor-serving) shall be encouraged directly along the Bell Street corridor. Renovation and/or expansion of existing local-serving uses in this commercial core shall be encouraged.

- Policy LUC-LA-2.2: Residential uses in the CM-LA Zone District shall be allowed as a primary use, subject to the provisions of the Santa Barbara County Land Use and Development Code.

Items noted within the Los Alamos Community Plan Update that directly impact proposed build out are the new land use designations, the affordable housing overlay, Bell Street Commercial Core Design Overlay and the assumption that the Lucas and Lewellen winery project will be constructed as approved by the Santa Barbara County Planning Commission in 2008.

Figure 1.2: Urban Boundary Versus LACSD Boundary

New Land Use Designations

The changes in land use designations for specific locations are listed below and referenced by the subarea in which they occur. The planning subareas are taken directly from the Los Alamos Community Plan Update and are shown in Figure 1.3, page 9.

- Subarea 1: The Burtness parcel (A.P.N. 101-120-022) was rezoned from Highway Commercial (CH) to Retail Commercial (C-2). This change allows for flexibility to create commercial uses that are both compatible with highway traffic, yet provide commercial uses that compliment adjacent residential uses. This parcel is located within the Bell Street Design Control Overlay area, see Figure 1.4 on page 10.
- Subarea 2: No Change
- Subarea 3: No Change
- Subarea 4: The land use designation will remain General Commercial, however, the underlying zoning of C-2 has changed to CM-LA.
- Subarea 5: The Thompson parcel (A.P.N. 101-260-059) was rezoned from Residential (DR-8) to General Commercial (C-3) because of the parcel's proximity to Highway 101.
- Subarea 6: No Change
- Subarea 7: No Change
- Subarea 8: No Change
- Subarea 9: No Change

Affordable Housing Overlay

The Affordable Housing (AH) Overlay applies to properties located in the northwest portion of the Plan Area (see Figure 1.4, page 10). The AH overlay zone promotes affordable housing production and implements the policies of the Comprehensive General Plan Housing Element by providing development incentives. A residential project within the AH Overlay in Los Alamos is eligible for increased density up to 8 units per acre, providing that 30 percent of the units are affordable to households with very low income, or 50 percent of the units are affordable to a mix of very low, low and moderate incomes. Although the bonus densities for affordable housing are offered, the build out numbers for residential units within the Community Plan Update does not include potential density bonus units. The Plan states that the additional units are speculative in nature and believes that developers will not be able to utilize the bonus due to site constraints, project type or other reasons. However, the District has included the possibility of the affordable housing bonus density offer in the build out of Los Alamos. There is approximately six acres within the District that is offered this bonus density and is not currently under development. Build out of these six acres with the bonus density of 8 units/acres compared to the 4.6 units/acre will result in an increase of 20 residential units compared to the total number of units at build out in the Community Plan Update.

Downtown Commercial Rezone to Mixed Use

The new Community Mixed Use-Los Alamos (CM-LA) zone district and Form-Based Development Code replaces the C-2 zoning in downtown Los Alamos. The new Community Mixed Use-Los Alamos (CM-LA) zone district increases buildable area, allows greater mixes of uses and relaxes permitting requirements and parking standards.

The Form-Based Code removes zoning regulation barriers to development and encourages reinvestment in downtown Los Alamos. The Bell Street Design Guidelines adopted with the Community Plan Update in February 2011, map out regulatory requirements and provide step-by-step guidance for development along Bell Street, resulting in mixed-use developments with retail on the ground floor and residential units above and behind.

The build out of the community and the ability to provide wastewater collection and treatment service to the community will be based on the Los Alamos Community Plan Update adopted on February 15, 2011. The Community Plan estimates 685 new residential units (288 units within the CM-LA zone), 451,480 SF of Commercial development and 98,035 SF of Light Industrial development.

Parcel 133-130-039 is the only parcel in Los Alamos with Light Industrial zoning. This parcel is the location of the Lucas and Lewellen winery project approved by the Santa Barbara County Planning Commission in 2008. Although the Los Alamos Community Plan defines their Goals, Policies and Development Standards for the Industrial land use to minimize the scale of any possible industrial project on this site through set backs, visibility constraints on packing and loading facilities and landscaping requirements, the maximum build out (335,412 SF of industrial space) for this parcel has been assumed for this study.

Authority and Scope

This study was undertaken on the authority between the Los Alamos Community Services District and Bethel Engineering. The Board voted to move forward with this study at the regularly scheduled Board Meeting on April 27, 2011. This study reviews the existing wastewater collection and treatment facilities (collection system capacity, lift station capacity, treatment, irrigation and retention basin capacity), makes recommendations for improvements necessary within the 5-year planning period, as well as for build out of the town of Los Alamos per the Los Alamos Community Plan Update (Feb. 2011). The Connection Fee section of this study (Chapter 8) reviews the infrastructure necessary for build out of the Community and the estimated expense for this infrastructure. The estimated expense is used to calculate and make recommendations for connection fees for the next 5-year period.

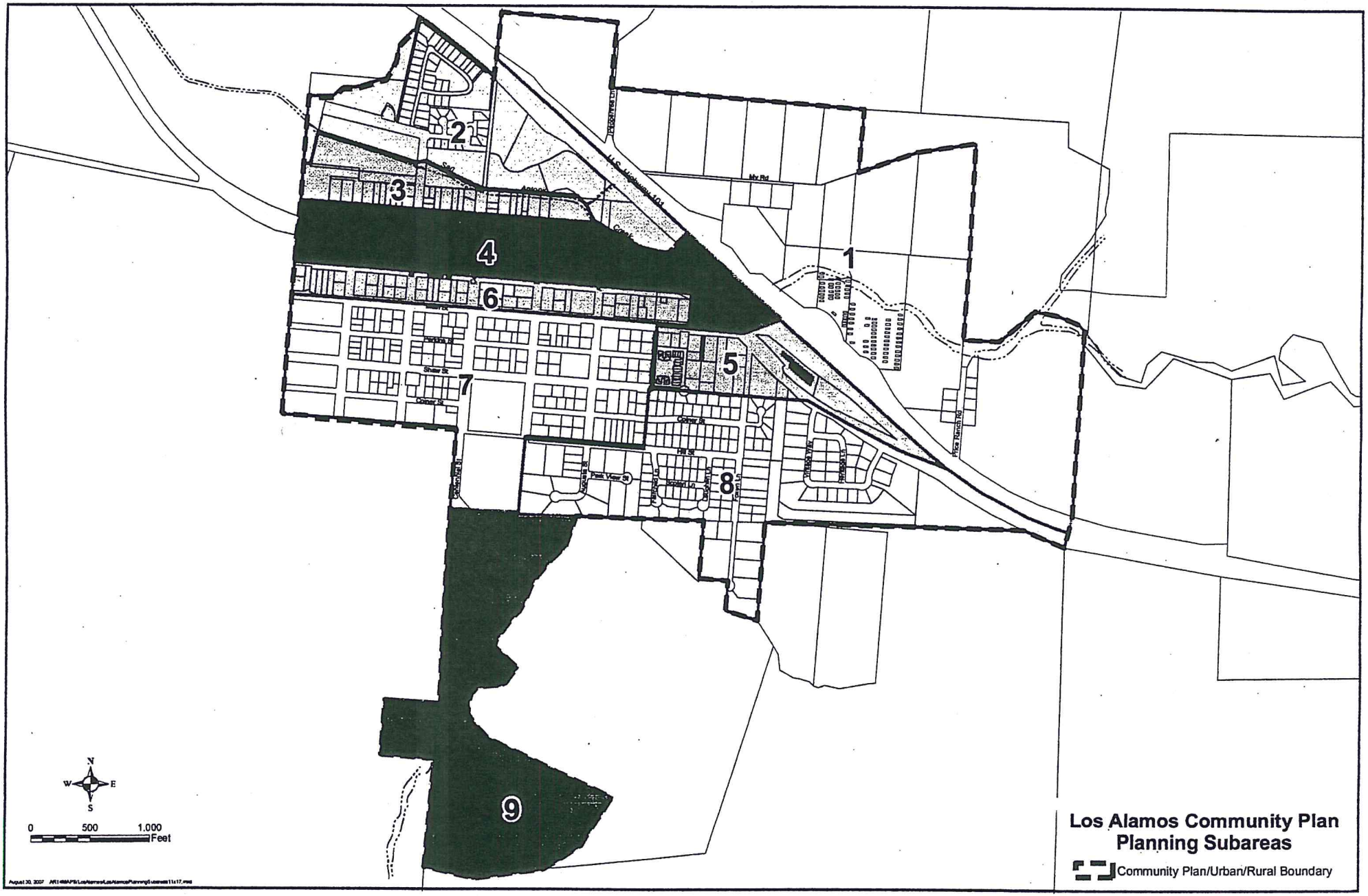
Abbreviations

The abbreviations used in this study are noted below.

ADWF	Average Dry Weather Flow
AWWF	Average Wet Weather Flow
CDPH	California Department of Public Health
EPA	Environmental Protection Agency
gpd	Gallons per day
gpm	Gallons per minute
LACSD	Los Alamos Community Services District
PDWF	Peak Dry Weather Flow
PWWF	Peak Wet Weather Flow
RWQCB	Regional Water Quality Control Board

psi	Pounds per square inch
SFR	Single Family Residential
MFR	Multi-Family Residential
SF	Square feet

Figure 1.3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Los Alamos Community Plan
Planning Subareas
Community Plan/Urban/Rural Boundary
N
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0
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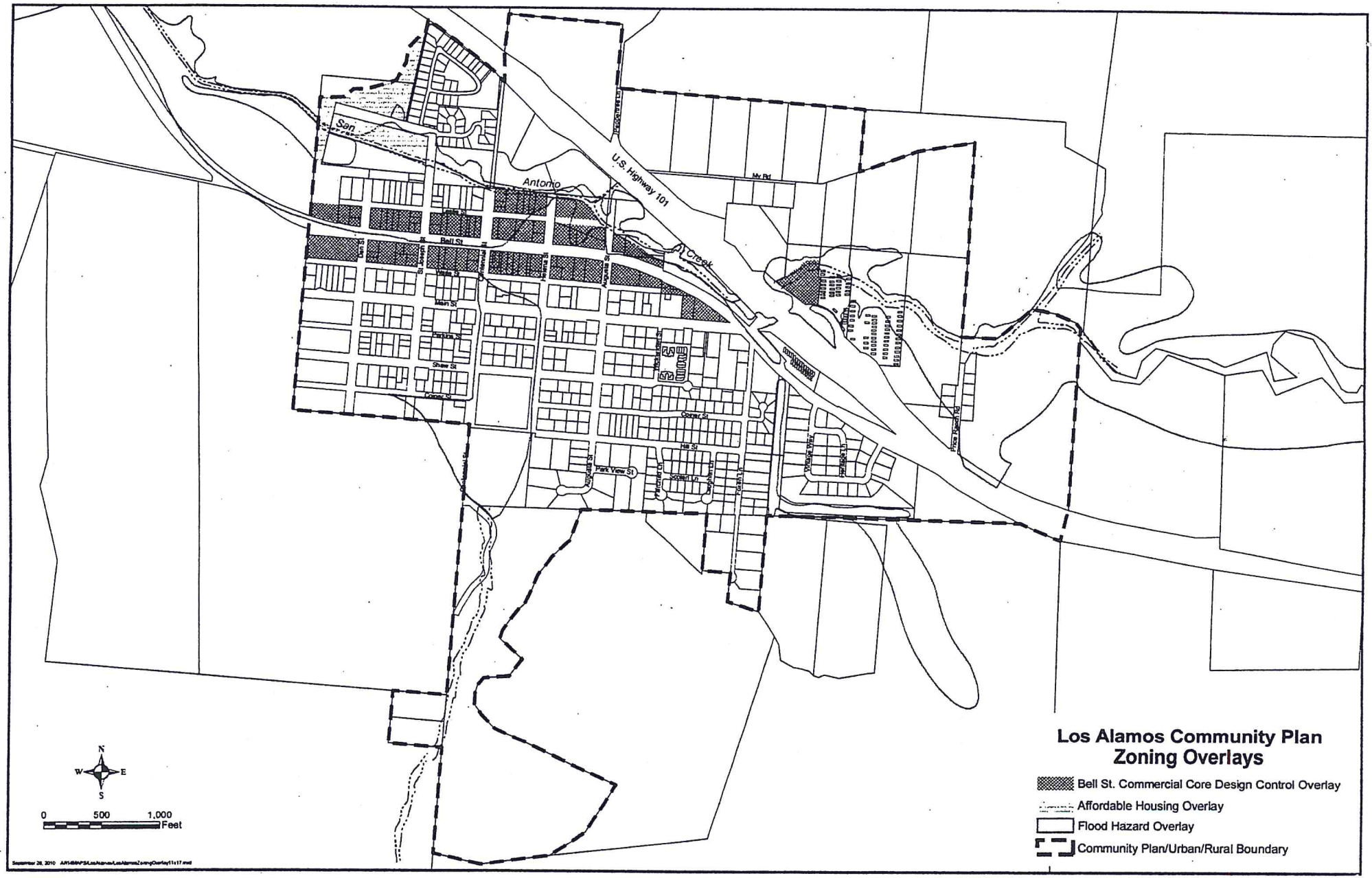
Feet

Figure 1.4


San
Antonio
U.S. Highway 101
Creek
Bell St
Main St
Chestnut St
Shaw St
Conner St
Hill St
Park View St
Mv Rd
Price Ranch Rd
N
W
E
S
0
500
1,000
Feet
Los Alamos Community Plan
Zoning Overlays
Bell St. Commercial Core Design Control Overlay
Affordable Housing Overlay
Flood Hazard Overlay
Community Plan/Urban/Rural Boundary

CHAPTER 2

LAND USE AND POPULATION

Land Use

The County of Santa Barbara Board of Supervisors approved the Los Alamos Community Plan Update on February 15, 2011. As with the previous Community Plan (1994), the Community Plan Urban Boundary does not fully conform to the LACSD boundary (refer to Figure 1.2 on page 5).

Santa Barbara County has prepared the Community Plan Update (2011) and Bell Street Design Guidelines to encourage infill of the Bell Street corridor. The mixed-use zoning and new design guidelines provide the ability to develop a commercial property with a residential component. The zoning and land use designations within the Community Plan Update are the foundation for future development and build out of the town of Los Alamos.

Los Alamos has a majority of residential zoning surrounding the Bell Street Mixed Use (residential/commercial) and Commercial downtown. A large (23 acre) undeveloped parcel (133-130-039) exists on the southeast edge of the community and is zoned Light Industrial. In addition to the residential, commercial and light industrial zoning mentioned above, there are 16 large lots (3-5 acres each) zoned to accommodate up to 22 residential units located within the Urban Boundary, but outside the LACSD boundary. There are currently 10 residential units located in this area, which are served by on-site domestic wells and septic. See Figure 2.1 on page 12 for the Zoning designations.

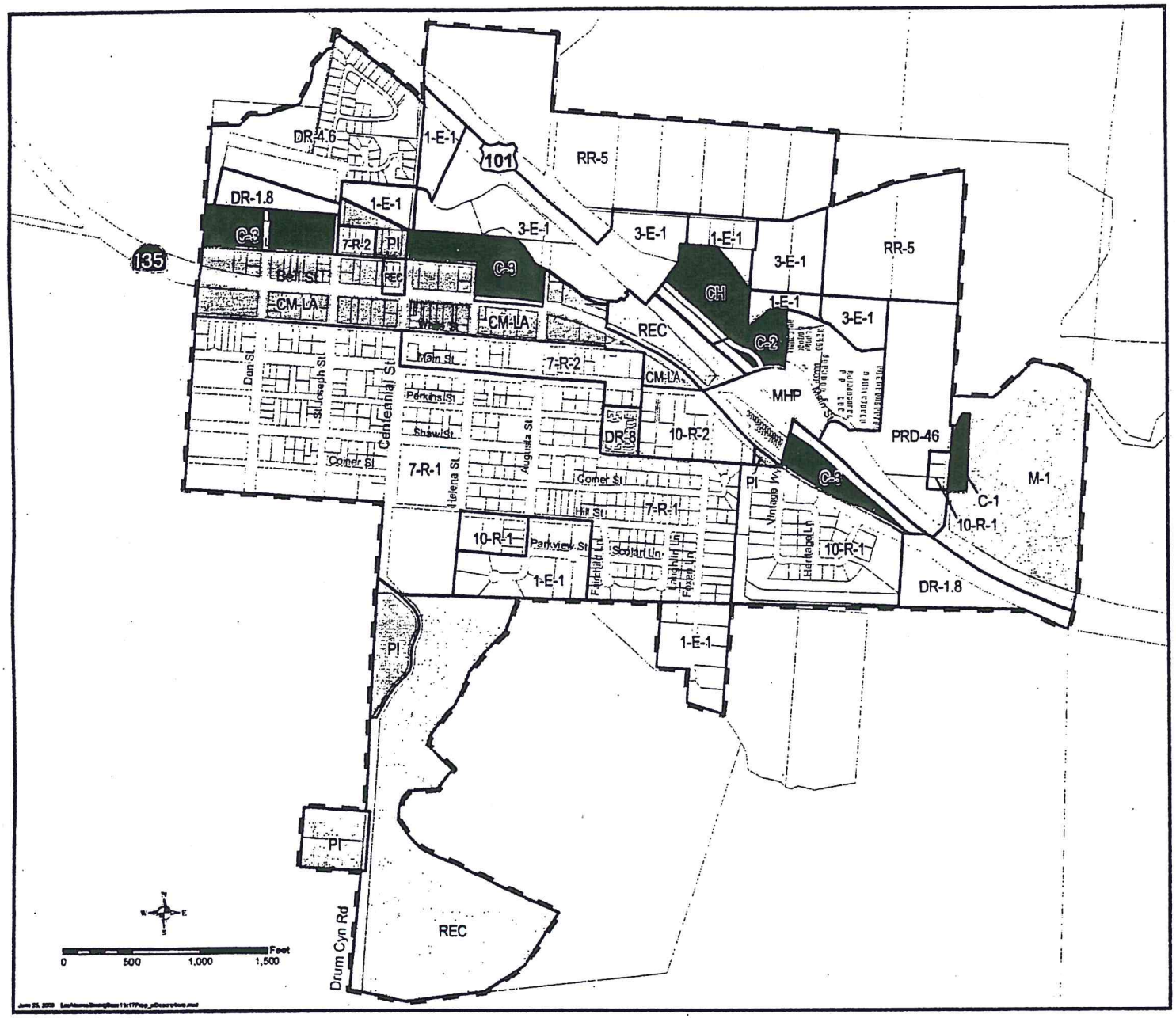
Calculations within this study for future number of residential units and commercial/industrial development are based on the Zoning designations per the Community Plan Update (2011) with the following adjustments.

- Build out of the six acres with the Affordable Housing Overlay will result in an increase of 20 residential units compared to the total number of units at build out in the Community Plan Update.

and

- Parcel 133-130-039 zoned Light Industrial could result in 335,412 SF of industrial development compared to the current Lucas and Lewellen project (98,035 SF) approved in 2008.

Figure 2.1



LOS ALAMOS COMMUNITY PLAN ZONING

RESIDENTIAL:

RR-5 Residential Ranchette, 5 Acre Minimum Lot Size

Single Family Residential:

3-E-1 3 Acres (Gross) Minimum Lot Size

1-E-1 1 Acre (Gross) Minimum Lot Size

10-R-1 10,000 Sq. Ft. (Net) Minimum Lot Size

7-R-1 7,000 Sq. Ft. (Net) Minimum Lot Size

Multiple Family Residential:

7-R-2 Two Family, 7,000 Sq. Ft. (Net) Minimum Lot Size

10-R-2 Two Family, 10,000 Sq. Ft. (Net) Minimum Lot Size

DR-1.8 Design Residential, 1.8 Units per Gross Acre

DR-4.6 Design Residential, 4.6 Units per Gross Acre

DR-8 Design Residential, 8 Units per Gross Acre

PRD-46 Planned Residential Development, 46 Units

MHP Mobile Home Park

COMMERCIAL:

C-1 Limited Commercial

C-2 Retail Commercial

C-3 General Commercial

CH Highway Commercial

PI Professional and Institutional

RESIDENTIAL/COMMERCIAL:

CM-LA Community Mixed Use - Los Alamos

INDUSTRIAL:

M-1 Light Industry

OPEN LAND USES:

REC Recreation

BOUNDARY LINES:

Zoning Boundary

Community Plan Boundary

Population/Housing

The population within the LACSD in 2000 was 1,372 per the 2000 California Census. The population estimate for Los Alamos in 2010 is 1,800. The 2010 census estimates a population of 1890 for the approximately 3.9 square mile Los Alamos area. However, because the District Boundary only encompasses approximately one square mile, but the majority of the population, the population served is estimated at 1800. Given the current Zoning and Land Use specified within the Los Alamos Community Plan Update (2011), the expected number of residential dwelling units at build out of the Urban Boundary will be 1341 (approximately 3,769 residents). Assumptions for the proposed build out number of residential units per the Community Plan (2011) are:

- Preservation of Historic Buildings.
- 17% of future residential development in commercial (CM-LA) zone based on permit trends and lot types.
- The number of ultimate residential units is reduced by 13 to account for 13 existing residential units assumed to be converted (redeveloped) at build out to commercial use. See total units at build out in Table 1 Community Plan Land Use and Build out Summary on page 25 of the Los Alamos Community Plan Update.
- Affordable Housing Overlay may not result in additional units due to site constraints, project type or other reasons. **The study discounts this assumption and includes an additional 20 units due to the Affordable Housing Overlay.**

There are a number of lots that are capable of supporting additional residential units, but due to the assumptions above are not included in the build out numbers. An example of this is the Olga Reed Elementary School Site. The Land Use designation for this site is RES-4.6/Educational. Therefore, the possibility exists that future redevelopment could construct residential dwellings on this site. However, it is assumed in the Community Plan, as well as within this study, that the school will remain in place.

The population and number of dwelling units has increased over the last four decades as shown in Table 2.1 on page 14 and is expected to continue to increase as new residential development continues to fill in the Urban Boundary limits.

TABLE 2.1:

POPULATION AND HOUSING 1970-Build out

YEAR	LOS ALAMOS POPULATION	PERCENT CHANGE	ANNUAL GROWTH RATE	NUMBER OF HOUSING UNITS*	NUMBER OF NEW HOUSING UNITS	PERCENT CHANGE	ANNUAL RATE
1970	402	---	---	146	---	---	---
1980	723	80%	6.1%	269	123	84%	6.3%
1990	1,031	43%	3.6%	369	100	37%	3.2%
2000	1,372**	33%	2.9%	471	102	28%	2.5%
2010	1,800***	31%	2.8%	649	178	38%	3.3%
2015	2,087	16%	3.0%	752	103	16%	3.0%
Build Out (2035)	3,769	81%	3.0%	1,341****	589	78%	3.0%

*Included active and inactive water meters
**Per the 2000 California Census
***Adjusted from the US Census 2010, see Population/Housing on page 12
****Estimated Per Land Use and Zoning Designations in the Community Plan Update (2011)

The number of residential dwelling units is currently 649. The current population is estimated at 1,800.

There were 21 dwelling units completed between 2006 and 2010 (see Tables 2.3 & 2.4 on page 15). There are an additional 74 units proposed for development at this time (see Table 2.5 on page 16). It is assumed that 103 units (including the 74 in Table 2.5 on page 16) will be completed in the next 5 years. Based on an annual rate of growth at 3%, residential build out of Los Alamos will take approximately 25 years (2035). Although residential build out is estimated in 2035, this study has estimated community build out at 2040 due to the projected build out of commercial and industrial property in Los Alamos.

Table 2.2 on page 15 indicates commercial and industrial land use projections based on the current zoning within the Urban Boundary noted by the Los Alamos Community Plan Update 2011.

TABLE 2.2

COMMERCIAL AND LIGHT INDUSTRIAL 2010-Buildout

YEAR	COMMERCIAL (SF)	PERCENT INCREASE	LIGHT INDUSTRIAL (SF)	PERCENT INCREASE
2010	200,150	-----	0	----
2015	243,513	21.7*	0	----
2020	296,271	48.0*	100,000	----
BUILD OUT (2040)	651,630**	120*	335,412	----

*Annual percent increase assumed at 4.0%
**Includes Public/Institutional, Excludes Elementary School (48,365 SF)

TABLE 2.3

RESIDENTIAL PROJECTS COMPLETED 2006-2010

PROJECT NAME	DESCRIPTION (# of Units)	OCCUPIED (Date completed)
Aquiniga	1-SFD	2/28/07
598 Foxen Lane	3-SFD	2/28/07
Price Ranch Rd	4-SFD	4/19/07
Village Collection	4-SFD	5/23/07
Coss	1-SFD	10/31/07
Troyna	1-SFD	11/30/07
Jetstream Properties	4-SFD	6/15/08
McKee	1-SFD	8/29/08
TOTAL:	19-SFD	

TABLE 2.4

COMMERCIAL/INDUSTRIAL PROJECTS COMPLETED 2006-2010

PROJECT NAME	DESCRIPTION (# of SF)	OCCUPIED (Date completed)
Telles	Cabinet Shop/2-apt units (1704 s.f.)	1/27/09
The Station	Restaurant (3495 s.f.)	12/21/10
TOTAL:	2 units/5199 SF	

TABLE 2.5

PROJECTS IN PROCESS*

PROJECT NAME	DESCRIPTION (# of Units or SF of commercial)	STATUS
Creekside Village	40-SFD Units	Under Construction
742-762 Bell Street	15 Apartment Units	In Planning Process
535 Main Street	1-SFD Unit	In Planning Process
230/240 Den Street	15 Apartment Units	In Planning Process
9086 Highway 101*	3-SFD Units	In Planning Process
TOTAL:	74 Units	

Projects in process are based on current applications with the District for Service Availability

*Water service only (exempt from sewer service)

CHAPTER 3

EXISTING WASTEWATER TREATMENT SYSTEM

The wastewater treatment system is comprised of three elements, the wastewater collection system, wastewater treatment facilities and the effluent disposal system. With the Wastewater Treatment Plant Expansion Project, Phase III, completed in October 2006, the wastewater treatment plant (WWTP) encompasses a total of 66.2 acres and is located two miles northwest of the community (see Figure 3.1, LACSD Wastewater Treatment and Disposal Facility on page 19). All effluent is processed completely on site using two treatment ponds (aerated oxidation), five disposal basins for evaporation and percolation, and reclamation via spray irrigation on approximately 47.6 acres of sloping fields. The following is a detailed description of the wastewater treatment system components.

Wastewater Collection System

The wastewater collection system delivers sewage from the residential and commercial properties within the District to the wastewater treatment plant (see Figure 3.2, Existing Collection System, page 20). The wastewater collection system is composed of sewer laterals, sewer mains, the sewer trunk, two lift (pump) stations and a force main. There are approximately 44,750 linear feet (8.5 miles) of sewer collection pipes throughout Los Alamos.

Sewer Laterals

Each connection to the wastewater collection system is via a sewer lateral. The sewer laterals are private lines that tie residential or commercial properties to the public sewer main lines. Sewer laterals are maintained by the property Owner and must be a minimum of 4-inches in diameter.

Sewer Mains

The sewer mains are public lines located throughout the town of Los Alamos, usually within public or private streets and always within LACSD easement to allow the District legal access for maintenance and repair. The sewer mains are a minimum of 6-inches in diameter and connect the sewer laterals to the sewer trunk. With the exception of one developed residential property located on Augusta Street, north of San Antonio Creek, all development within the Los Alamos Community Services District gravity flows to the main lift station on Bell Street.

Sewer Trunk

The sewer trunk for the town of Los Alamos consists of 10-inch diameter line that runs west along Main Street connecting the east side of Highway 101 to the western edge of the town. A 12-inch sewer trunk then continues from Main Street north on Den Street, west on Waite Street, then north again along the westerly edge of town to Bell Street. The 12" trunk continues westerly on Bell Street to the primary Bell Street lift station.

Bell Street Lift Station

This is the primary lift station located on the southeast side of the Bell Street Bridge, just south of the wastewater treatment plant. Two influent dry-well pumps, rated at 7.5 horsepower each, send effluent via the 8" force main across San Antonio Creek and up to the wastewater treatment plant. While the majority of the wastewater treatment system components must be designed to meet a projected daily flow averaged over each month, the capacity of the collection pipes and the lift station pumps must meet the peak hourly maximum flow.

Flow Measurement

An 8" electromagnetic flow meter within the primary lift station on Bell Street conveys continuous flow information to the wastewater treatment plant (WWTP) control building. The flow measurement is used to determine the gallons per day (gpd) entering the treatment plant from the collection system.

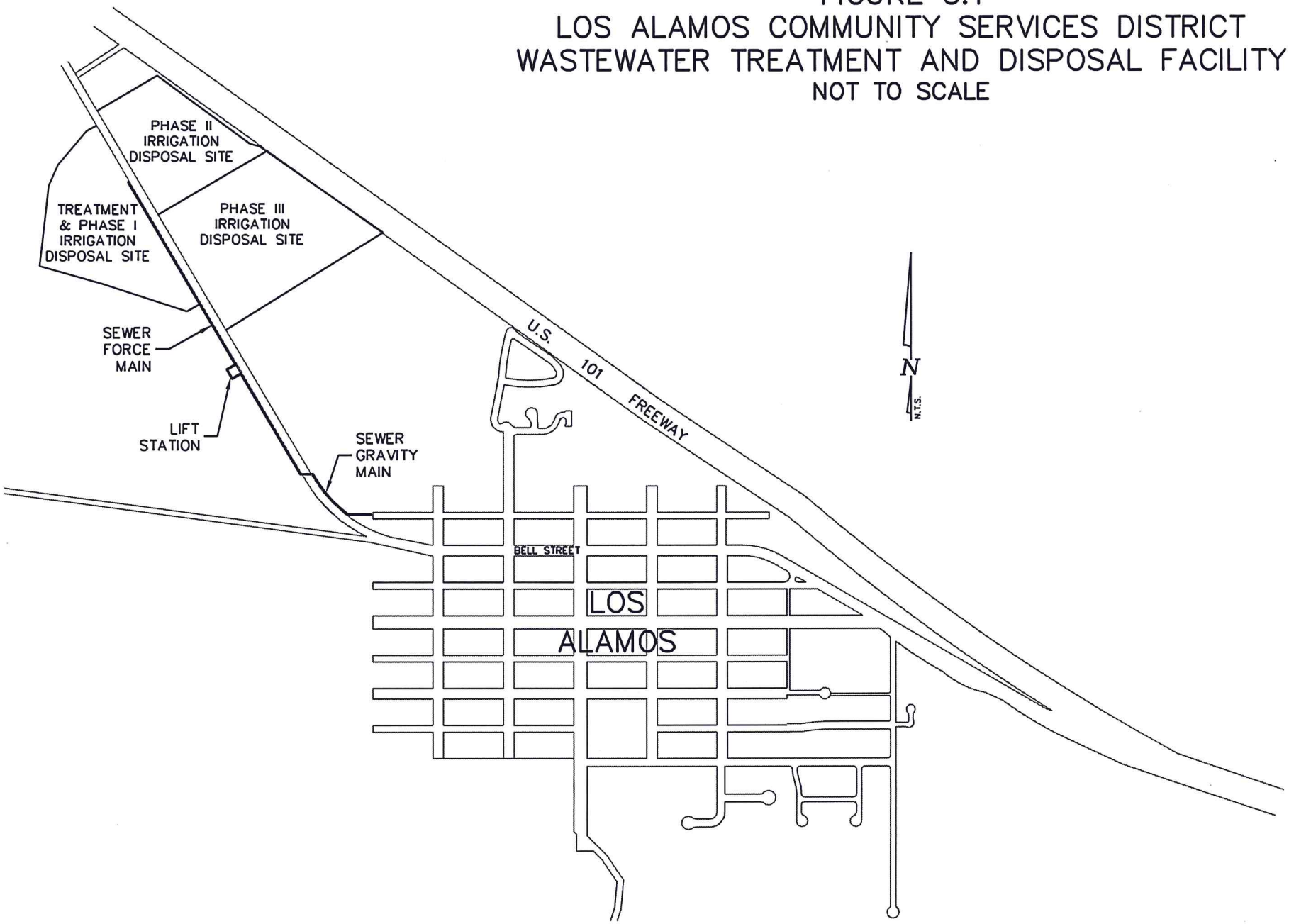
Force Main

The connection to the wastewater treatment plant from the primary lift station is 1,950 linear feet of 8-inch diameter force main. The sewer force main runs along the westerly side of Bell Street from the primary lift station, across the Bell Street Bridge and to the wastewater treatment plant.

Augusta Street Lift Station

The Augusta Street lift station is located on Augusta Street near San Antonio Creek. This secondary lift station serves to connect a single residential property on the north side of San Antonio Creek to the community sewer trunk.

FIGURE 3.1
LOS ALAMOS COMMUNITY SERVICES DISTRICT
WASTEWATER TREATMENT AND DISPOSAL FACILITY
NOT TO SCALE



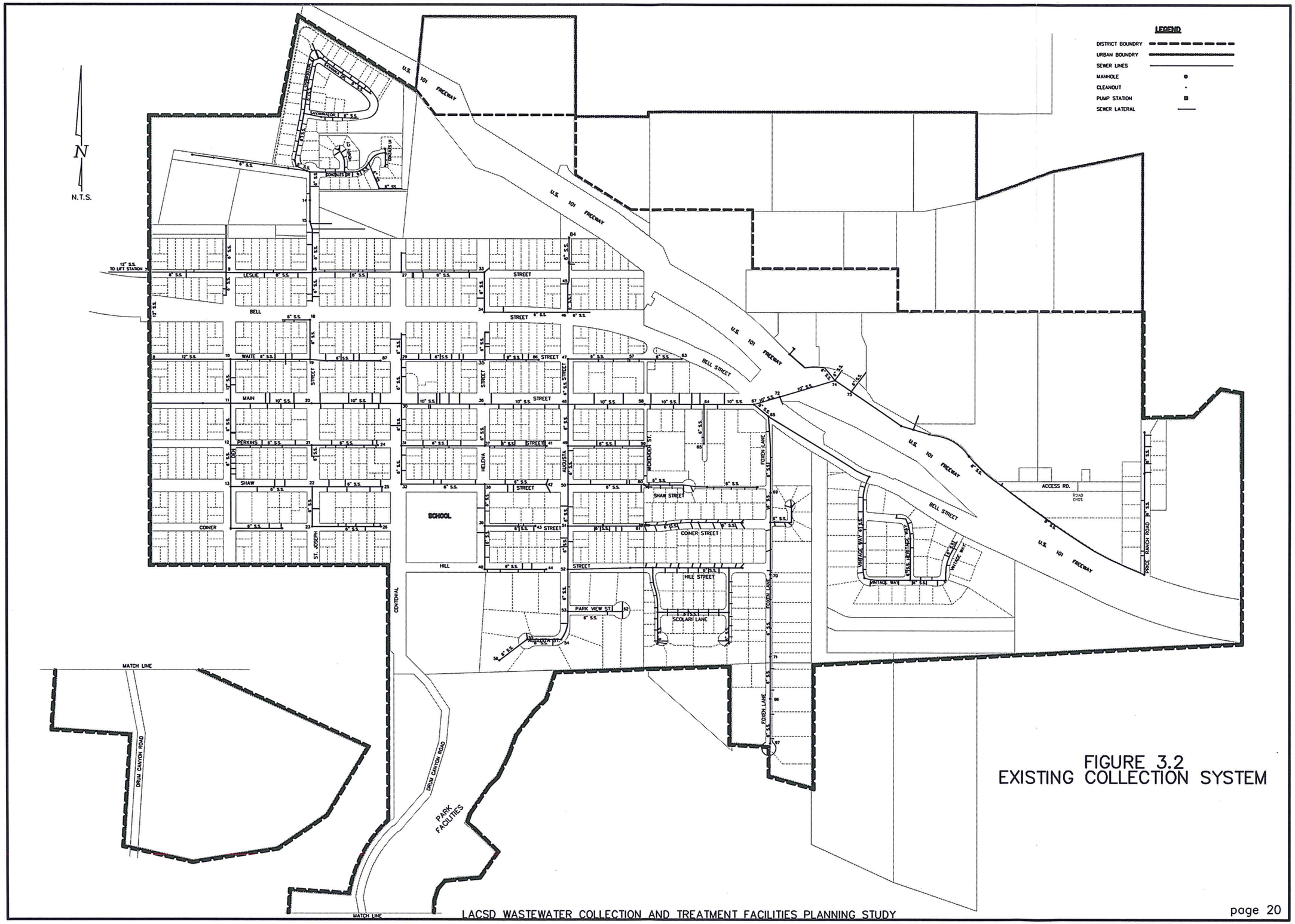


FIGURE 3.2
EXISTING COLLECTION SYSTEM

Wastewater Treatment Facilities

Headworks

Sewage pumped from the lift station through the force main passes the headworks consisting of a grinder (comminutor) with a 2-inch bypass bar screen and piping to the aeration treatment ponds.

Treatment Ponds

There are two partial mix facultative ponds with a capacity of 1.4 million gallons each. The two ponds are aerated with approximately 18 feet of depth and have an average detention time of 7 days each. The treatment capacity is rated at 400,000 gpd.

Effluent Disposal System

Reclamation System

The plant's reclamation method currently uses 47.6 acres of spray irrigation fields (12 acres with Phase I, 17.6 acres with Phase II and 18 acres with Phase III). The reclamation area for Phases I and II is formed by the natural watershed of a small bowl-shaped valley bisected by Bell Street. This configuration ensures that all surface runoff from rain and wastewater irrigation collects in the holding basins as required by the Regional Water Quality Control Board.

The Phase III WWTP expansion added 18 acres of irrigation between Highway 101 and Bell Street just south of the Phase II expansion. The reclamation area for Phase III is sloped to the southwest corner next to Bell Street. A basin was constructed at this location, the lowest portion of the site, to capture any site surface runoff from rain and wastewater irrigation from this watershed area.

Effluent Evaporation/Percolation Basins

The Regional Water Quality Control Board requires that ALL contaminated water from the wastewater treatment plant site be captured and maintained on site, including wastewater irrigation and any surface runoff from rain. The effluent evaporation/percolation basins are for retaining surface runoff from rain, ensuring that any storm water within the wastewater irrigation fields is maintained on site and within the wastewater treatment plant. The disposal basins also retain treated effluent during wet weather months when the District is unable to irrigate. The retained treated effluent and/or surface runoff in the basins will evaporate, percolate or be pumped back into the treatment ponds for irrigation when weather permits. The basins are part of the wastewater treatment plant process and should be drained of all wastewater and surface runoff from rain each year so as not to limit the capacity of the basins the following year.

There are five effluent evaporation/percolation basins (including the Phase III expansion completed in 2006) that provide a total of 64.4 acre-feet of storage. See Table 3.1, page 22 for basin volumes and Figure 3.3, page 23 for basin locations. The original overflow basin (Master Basin) located south of the facultative ponds has a capacity of approximately 42.7 acre-feet. The two linked basins (Upper Basin and Lower Basin) completed under the Phase II wastewater treatment plant expansion in 1994 are located northeast of Bell Street and provide approximately 10.1 acre-feet of storage. The two Phase II basins are linked, such that the Upper Basin drains to the Lower Basin, and then

can be drained into the Master Basin to be pumped back into the treatment ponds for irrigation. Phase III Basin provides 9.1 acre-feet of storage and provides an earthen dike on the south edge to prevent runoff from Phase III irrigation and surface runoff from rain from leaving the site. Section 15 offers a dual purpose, operating as a spray irrigation field during dry weather months and providing additional storage volume during wet weather months. The Master Basin is designed to overflow into Section 15 if its capacity is exceeded. The Phase III basin can be drained into Section 15, however, it must be pumped into the Master Basin in order to be irrigated. Section 15 currently provides 2.5 acre-feet of storage volume.

TABLE 3.1

EFFLUENT BASIN VOLUMES

BASIN NAME	VOLUME (acre-feet)
Master Basin	42.7
Phase II Lower Basin	5.7
Phase II Upper Basin	4.4
Phase III	9.1
Section 15 Basin	2.5
TOTAL:	64.4

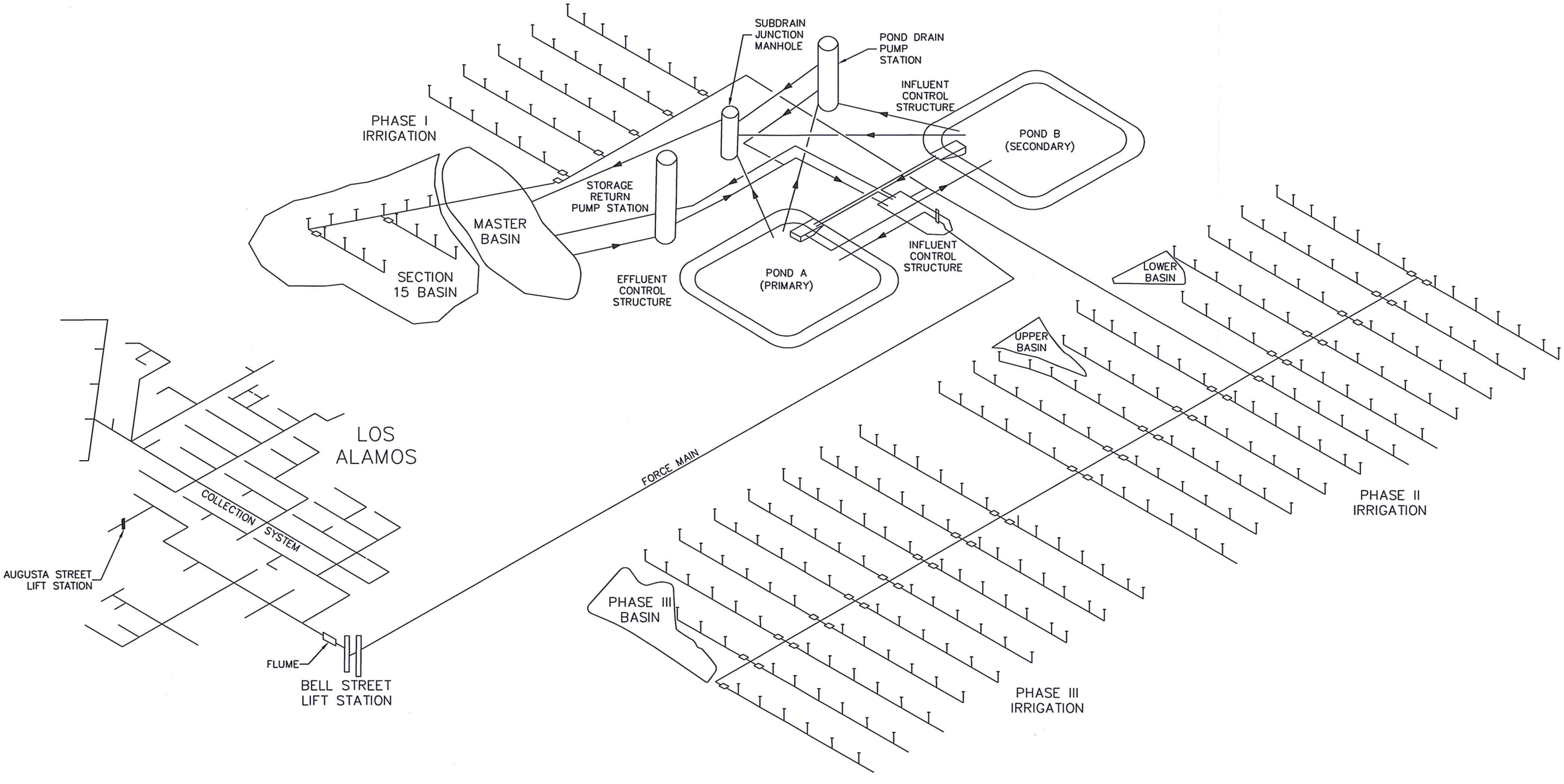


FIGURE 3.3
LOS ALAMOS WASTEWATER COLLECTION & TREATMENT FACILITIES FUNCTIONAL LAYOUT

CHAPTER 4

PRESENT AND FUTURE WASTEWATER FLOWS TO TREATMENT PLANT

Wastewater Collection Area

The District is authorized to provide wastewater collection and treatment services within the LACSD boundary. However, under special circumstances, the District could provide wastewater collection and treatment services outside the District Boundary with an out of agency service agreement reviewed and approved by the LACSD Board of Directors if it has adequate capacity available to meet the disposal demands. All wastewater connections are on a first come-first serve basis. The physical constraint for this study is the Los Alamos Community Plan Urban/Rural Boundary in Figure 1.2, page 5.

Present Wastewater Flows To Treatment Plant

The historic average sewer flow per residential dwelling unit (single-family and multi-family combined) in Los Alamos has ranged from 157 to 209 gpd. Although previous water and wastewater planning studies have never separated single-family and multi-family residential units, the change in focus for development in the Los Alamos Community Plan Update to concentrate on infill of the Bell Street corridor with mixed-use developments presented a large amount of multi-family residential units to occur. This change in build out, increased the amount of units by 431 compared to the 1994 Los Alamos Community Plan and the dynamics of the water and wastewater needs of the Community, creating a need to look closely at the differences between single-family use and multi-family use.

TABLE 4.1

TOTAL DAILY FLOW (gpd) AVERAGED OVER EACH MONTH 2006-2010

	2006	2007	2008	2009	2010
January	108,549	120,350	117,003	115,088	125,593
February	112,687	119,987	121,879	118,171	124,366
March	112,674	118,205	117,612	119,045	120,706
April	115,481	121,841	115,466	114,759	123,106
May	114,872	120,743	115,401	116,864	122,577
June	120,988	119,310	114,144	115,316	120,942
July	128,784	123,845	113,443	116,445	122,911
August	121,618	119,450	115,496	120,562	118,341
September	126,963	119,142	119,204	121,613	123,736
October	122,562	116,071	116,783	118,567	120,443
November	124,384	119,368	119,878	122,872	127,457
December	119,133	116,622	115,502	120,154	117,981
Annual Average	119,057	119,577	118,484	118,288	122,346

Information in Table 4.1 provided by K Barnard, LACSD

The annual average wastewater flow measured (per the RWQCB permit) and averaged over the last five years (2006-2010) is 119,550 gpd. The peak monthly average over the last five years occurred in July 2006 and was 128,784 gpd. See Table 4.1, page 25. The system maximum daily flow of 172,072 gallons occurred on November 25, 2006. This was 1.44 times greater than the average annual use of 119,550 gpd over the five-year period presented in Table 4.1 on page 25. The measured wastewater flows vary with the following:

1. Number of sewer connections.
2. Population and/or households.
3. Size and intensity of commercial and industrial uses.
4. Infiltration and inflow (I/I) of storm water and groundwater.

Infiltration and inflow is the contribution to wastewater flows from extraneous groundwater or storm water entering the collection system. Infiltration is characterized by leaky pipes and manholes allowing groundwater to infiltrate the collection system. Inflow is the direct entrance of storm water to the wastewater collection system through sources such as manhole and cleanout lids. I/I can increase operational costs and reduce sewer collection and treatment capacity. As a part of the District's Sewer System Management Plan (SSMP), the District inspects the WWTP daily, the sewer lift stations weekly and the system's sanitary sewer manholes quarterly to minimize and prevent I/I.

Future Wastewater Disposal Demand

Water use within the District is metered and tallied by land use category (i.e. single-family residential, multi-family residential, commercial, institutional and industrial) on

the Public Water System Statistics data sheets. Sewer flows are only captured at the primary wastewater lift station on Bell Street after they have been combined for the entire town. The average daily wastewater generation in Los Alamos has been historically 37-40% of the average daily water production. However, with the introduction of the tiered monthly water rate structure in February 2007, there has been a decrease in water production, but no noticeable decrease in sewer flows. It is assumed that a large portion of the decrease in water used is for irrigation purposes and therefore not noticeable in the measurement of sewer flows. The 2010 average daily sewer flow in Los Alamos was 46% of the average daily water production.

COMMERCIAL/INDUSTRIAL FLOWS

Some assumptions must be in place to separate the commercial/institutional/industrial flows from the residential flows. Table 3.5 from the LACSD Water Facilities Planning Study was used to estimate the Commercial and Industrial Land Use wastewater generation per 1000 square feet of building floor space. The average daily water demand for commercial and industrial land uses is 90 gpd/1000 SF. Approximately 65% of this water used will go into the sewer. See calculation below.

Commercial/Industrial

Average Sewer Flow = 65% (Average water use) = 0.65*90 GPD
= 58.5 gpd/1000 SF
= use 60 gpd/1000 SF

RESIDENTIAL FLOWS

The average residential wastewater generation values are estimated based on this conservative data and the water demands found in the LACSD Water Facilities Planning Study. The average water demand for a single-family unit in Los Alamos is 360 gpd and the average water demand for a multi-family unit is 200 gpd.

Residential

SF - Average Sewer Flow = 50% (Average daily water use) = 0.50*360 GPD
= 180 gpd

MF - Average Sewer Flow = 50% (Average water use) = 0.50*200 GPD
= 100 gpd

The future wastewater disposal demand is based on the existing land use classifications within the Urban Boundary. Refer to Figure 2.1 Zoning Designations on page 12.

Existing and projected annual average flows are shown in Table 4.2 on page 27.

TABLE 4.2

PAST AND PROJECTED WASTEWATER VOLUMES (GPD) BY LAND USE

	2010	2015	Build Out
Residential Ave.	129,800	121,730	189,894
Commercial Ave.	8,807	14,250	39,098
Lt. Industrial Ave.	0	0	5,882
Elementary School*	2,340	2,400	6,080
Total Projected Ave.		138,380	240,954

* 10 gpd per student

TABLE 4.3

PROJECTED RESIDENTIAL WASTEWATER FLOWS

YEAR	POPULATION*	RESIDENTIAL UNITS	SINGLE FAMILY UNITS**	MULTI-FAMILY UNITS***	AVERAGE DAILY FLOW (gpd)	AVERAGE ANNUAL (MG)
2011	1854	668	501	167	106,880	39.0
2012	1909	689	517	172	110,260	40.2
2013	1967	709	532	177	113,460	41.4
2014	2026	730	548	182	116,840	42.6
2015	2087	752	564	188	120,320	43.9
2020	2419	872	610	262	136,000	49.6
Build Out (2035)	3769	1341	671	670	187,780	68.5

*3.0% Annual Growth Rate from the adjusted 2010 Census population of 1800, see Population/Housing on page 13.

**75% of Residential Units through 2015, 70% of Residential Units in 2020 and 50% of Residential Units at Build Out.

***25% of Residential Units through 2015, 30% of Residential Units in 2020 and 50% of Residential Units at Build Out.

TABLE 4.4

PROJECTED COMMERCIAL & INDUSTRIAL WASTEWATER FLOWS

YEAR	COMMERCIAL (SF)	LIGHT INDUSTRIAL (SF)	AVERAGE DAILY FLOW (gpd)	AVERAGE ANNUAL FLOW (MG)
2011	208,156	0	12,489	4.6
2012	216,482	0	12,989	4.7
2013	225,142	0	13,509	4.9
2014	234,147	0	14,049	5.1
2015	243,513	0	14,611	5.3
2020	296,271	100,000	23,776	8.7
Build Out (2040)	651,630	335,412	59,223	21.6

TABLE 4.5

PROJECTED WASTEWATER FLOW TOTALS

YEAR	COMMERCIAL & INDUSTRIAL AVERAGE DAILY FLOW (gpd)	RESIDENTIAL AVERAGE DAILY FLOW (gpd)	ELEMENTARY SCHOOL	TOTAL AVERAGE DAILY FLOW (gpd)	MAXIMUM DAILY FLOW (gpd x 1.5)	AVERAGE ANNUAL FLOW (MG)
2011	12,489	106,880	2340	121,709	182,564	44.4
2012	12,989	110,260	2350	125,599	188,399	45.8
2013	13,509	113,460	2375	129,344	194,016	47.2
2014	14,049	116,840	2390	133,279	199,919	48.6
2015	14,611	120,320	2400	137,331	205,997	50.1
2020	23,776	136,000	2500	162,276	243,414	59.2
Build Out (2040)	59,223	187,780	6080	253,083	379,625	92.4

*10 gpd per student

CHAPTER 5

PRESENT AND FUTURE WASTEWATER COLLECTION AND TREATMENT CAPACITY

Design criteria must be established to determine which portions of the existing system are adequate, and to help identify system deficiencies. The design criteria explains the planning goals for the wastewater collection and treatment system, defining the level of service and reliability that should be expected of a modern and efficiently run wastewater collection and treatment facility.

Wastewater Collection and Treatment System Capacities

The three elements of the LACSD wastewater system (the wastewater collection system, wastewater treatment facilities and the effluent disposal system) are reviewed in this chapter for both current deficiencies and necessary improvements for build out.

The wastewater treatment system is currently permitted (Regional Water Quality Control Board Order No. R3-2005-0133) to discharge a maximum of 225,000 gallons per day averaged over one month. The maximum projected wastewater average daily flow at build out is 253,083 per Table 4.5 on page 28. The discharge permit with the RWQCB will need to be revised as Los Alamos moves closer to build out.

Wastewater Collection System

The purpose of the collection system is to provide a safe and reliable removal of effluent for all applicable developments and uses. This requires that pressure and volume requirements be met during peak wet weather flows. To meet these requirements, collection lines must be sized to provide maximum build out flows.

As additional development projects come on line, the wastewater collection system is expandable by means of connecting additional laterals to the sewer main and trunk lines. The capacity is limited only to the pipe sizing and the related ability of the connected lift station.

The wastewater collection system presently has a 12-inch diameter trunk line that is rated at 615-gpm peak hourly flow (assuming 75% full and a minimum slope of 0.0015). This amount would equate to an average daily flow of 442,800 gpd using an hourly peaking factor of 2.0. The capacity of the 12" trunk line for the wastewater collection system exceeds the 379,625 gpd maximum daily flow at build out.

Future development of residential, commercial, and light industrial properties east of Highway 101 can be served with the existing 10-inch diameter line extending from Main Street. This 10-inch diameter trunk is rated at 450-gpm peak hourly flow (assuming 75% full and a minimum slope of 0.0020). Using a 2.0 peaking factor, the flow equates to an average daily flow of 324,000 gpd.

In February 2007, the entire wastewater collection system was hydro-jetted and is proposed for completion on a regular basis every 8-10 years (next proposed date is 2014-

2015). Proper maintenance and flushing of the pipes is required to prevent sanitary sewer overflows (sso), leaks, blockages, and backups. The District's Sanitary Sewer Management Plan (SSMP) also includes (at minimum) daily inspections of the WWTP, weekly inspections of the sewer lift stations and quarterly inspections of the sanitary sewer manholes.

The sewer mains and sewer trunk are sized appropriately for the projected build out flows. However, maintenance and replacement of sewer mains and the sewer trunk is an expense that should be accounted for in the depreciation funds portion of the District's budget. It is estimated that the PVC sewer pipe will last 60+ years. The pipes will be replaced in large sections (as breaks are noticed) in order to reduce service disruptions and to maintain the economics of replacement.

Bell Street Lift Station

The primary lift station pumps currently operate at 350 gal./min. each. The station can process the permitted average annual flow of 225,000 gpd with both pumps operating approximately 5.4 hours daily. Using a maximum operational rate of 10 hours, these pumps will process 420,000 gpd. The capacity of existing pumps can accommodate the maximum daily flow of 379,625 gpd estimated at build out.

The Phase III Expansion Project increased the volume capacity of the lift station in the event of pump failure. Two additional 7' diameter wet wells were placed next to the existing wet well, providing 6,000 gallons (3,000 each) of storage at this location. The additional storage is for pump efficiency and pump failure, not for daily operation. If one pump fails under current wastewater flows, the alternate pump would process 350 gpm and maintain the estimated 253 gpm maximum flow (using a peaking factor of 2.0). However, the estimated maximum flow at build out would be 527 gpm, 177 gpm more than one of the existing pumps could provide for. The storage capacity currently in place will provide approximately 30 minutes during the maximum flow for replacement of the failed pump. Based on this, the District should plan for larger pumps or additional wet-well capacity as build out occurs.

Force Main

The force main can currently accommodate the maximum 700 gpm that the existing pumps can deliver. The force main would also be able to accommodate the build out maximum daily flow of 379,625 gpd.

Headworks

The existing headworks can accommodate the permitted capacity of 225,000 gpd, but the comminutor will need to be upgraded to accommodate build out of the Community. The proposed comminutor model (DM-T15) will replace the existing model and accommodate the estimated maximum daily build out wastewater flow of 379,625.

Treatment Ponds

The treatment capacity of the wastewater treatment plant is 400,000 gpd. This capacity will provide for build out of the town with the projected build out average daily flow of 253,083 gpd.

Reclamation System

It is estimated that the current available irrigation fields (47.6 acres) would provide for the irrigation of the permitted 225,000 gpd on average. The build out average daily flow is estimated at 253,083, leaving a shortfall of approximately 28,000 gpd. In order to provide for build out of the town, the District may require the acquisition of 10-15 acres for a Phase IV irrigation field and associated basin and maintenance access road.

The existing system also consists of a pump and irrigation pipes and sprinklers. The current system features and layout will provide for the permitted capacity of 225,000 gpd, but nothing more. The current system is limited by the irrigation main line size of 3". The existing 3" main line cannot pump more than the permitted capacity without the concern of over-pressurizing the line. Therefore, the District should plan to increase the size of the mainlines or install a new dual pump irrigation system, allowing the District to separate out the various Phases of the irrigation system to run simultaneously.

Effluent Evaporation/Percolation Basins

The Regional Water Quality Control Board requires that ALL contaminated water from the wastewater treatment plant site be captured and maintained on site. Therefore, the basins must be capable of storing flows during wet months when irrigation is not allowed and any surface runoff from rain collected in the basins. The following calculations assume that irrigation is not allowed for 30 consecutive days due to wet weather and that the basins on Phases II and III fill and require emptying two times due to two back-to-back 100-year storms during this same 30 day period.

The maximum average wet weather flow was 172,072 gpd in November 2010. Using this as a guide for wet weather flow and the inability to irrigate for 30 consecutive days, this requires 15.8 acre-feet of storage. An additional 38.4 acre-feet of storage is necessary to drain Phase II and III Basins two times each. See calculations below.

Irrigation and Surface Runoff Retention Volume

Phase II Upper Basin + Phase II Lower Basin + Phase III Basin = 4.4 + 5.7 + 9.1
= 19.2 acre-feet

19.2 acre-feet X 2 = 38.4 acre-feet

Wet-Weather Retention Volume (No Irrigation)

Peak Wet Weather Flow * 30 days = 172,072* gpd * 30 days
= 5,162,160 gallons
= 15.8 acre-feet

*Peak Wet Weather Flow is from November 25, 2006 (maximum daily flow in 5-year study period)

Current storage capacity in Phase I is 42.7 acre-feet. The necessary storage capacity with the scenario noted above is:
38.4 ac-ft + 15.8 ac-ft. = 54.2 ac-ft

Grading within the wastewater treatment plant site can provide additional retention area by removing some of the soil between the Master Basin and Section 15 and building up the access road around Section 15. The proposed grading would allow Section 15 to surface drain into the Master Basin without being pumped. This would allow for all of the basins stored water to enter the storage return structure and to be pumped back into the treatment ponds and irrigated. The new configuration of the Master Basin and Section 15 would provide a total storage volume of 56.2 acre-feet , which exceeds the necessary maximum storage capacity of 54.2 acre-feet.

CHAPTER 6

FUTURE WASTEWATER SYSTEM EXPANSION

Wastewater treatment plants should be designed to accommodate the maximum wastewater in-flow. This prevents possible discharges of effluent and partially treated water beyond the system's capacity. Currently the plant is operating at approximately 55% of permitted capacity and 48% of the calculated maximum build out flow.

The population projections (Table 2.1, page 14) indicate that there will be 752 residential units in Los Alamos when the next five-year study is prepared. This study also projects a total of 243,513 square feet of commercial development to exist in 2015 (Table 2.2, page 15). This will result in a total average daily wastewater flow of 137,331 gpd (Table 4.5, page 28). Therefore, the existing treatment facility has sufficient capacity to serve the projected development during the five-year study period (through 2015).

However, the District does face some shortfalls for build out. Upgrades as mentioned herein will be required for build out and the total wet weather storage volume in the Master Basin and Section 15 will need to be increased to 56.2 acre-feet. Wastewater services from the District will continue to be on a first come-first serve basis throughout build out.

The system capacity is currently restricted to 225,000 gpd by the RWQCB. The standard practice policy of the RWQCB requests that when a facility operates at 75% of the capacity that the District is on notice to begin planning measures to address an increasing demand. This 75% checkpoint threshold obligates the LACSD to establish a schedule for necessary treatment plant upgrades and to submit this schedule to both the EPA and the RWQCB at such time as the daily flows averaged over each month exceed 75% of the permitted discharge capacity of the treatment plant facilities. The LACSD will also be required to provide a best estimate of the time when the permitted plant capacity would be exceeded.

This "check-point" threshold (WDR, District Wastewater Discharge Requirements) is established to ensure that adequate time is allowed for the lengthy permit process, design uncertainties, securing of agreements, construction of improvements, and to provide service to previously approved projects once they begin producing wastewater flows. This threshold is estimated using RWQCB's daily flow averaged over each month and would be 168,750 gpd (75% of the permitted 225,000 gpd.). This threshold may be encountered by 2022.

Planning Considerations

The design criteria discussed should represent the planning goals for the wastewater system.

Under the Los Alamos Community Plan Update, the wastewater goal SD-LA-1 states "Link development to a well-managed wastewater treatment system that best serves the public health and welfare." Policy SD_LA-1.1 states "For those areas within the Los

Alamos Community Services District boundaries, build out shall be accommodated within eventual projected capacity of the wastewater treatment system." This adopted policy does not necessarily imply that growth will stop when the wastewater system's maximum capacity is met, but that the wastewater treatment system must grow (if necessary) as the community grows. Policy SD-LA-1.4 states "If expansion of the wastewater infrastructure becomes necessary due to new development, the burden of expansion shall be placed on the new development."

As the LACSD Wastewater Treatment Plant reaches 90% of the permitted capacity (225,000 gpd), the County shall (per the Community Plan Update) suspend issuing land use permits requiring sewer system connections except for emergency or public benefit purposes until additional wastewater treatment capacity is constructed.

CHAPTER 7

PROPOSED IMPROVEMENTS

The wastewater collection and treatment system requires improvements and maintenance to provide a safe, efficient system. Improvements and maintenance rely on different funding for the proposed projects. Some of the projects proposed in Table 7.3 on page 37 and all of the projects proposed in Table 7.4 on page 37 are included to be completed within the next 5-year period (assuming funding is available). Capital Improvement Fees or new construction connection fees will fund the projects in Table 7.3, page 37. The projects in Table 7.4, page 37, will be funded from the Sewer R & R (Repair and Replacement) account within the operating expense portion of the District's annual budget.

A proposed cost list and schedule for completing necessary improvements are summarized in Tables 7.3 & 7.4 on page 37. These tables estimate the improvements costs at $1,660,000 for Capital Improvements through build out and $295,000 for Maintenance Projects in the next five years.

New Improvements are paid for by the Capital Improvement Fees, discussed in the next chapter. Revenues from this source could amount to $634,686 in the next 5 years based on collecting 100% of the new 103 residential units with the current Capital Improvement Fee of $6,162. To complete all of the improvements during this planning period, money will have to be borrowed from other funding sources until all 103 Capital Improvement Fees have been collected. In addition, the District has $289,427 (as of February 2012) due on a loan used to complete various District facilities improvement projects.

The Capital Improvements recommended will allow the District to provide a high level of wastewater service to its present and future customers. The estimated costs are realistic and the proposed schedule should allow development to proceed in an orderly fashion while facilities are being upgraded.

Wastewater Collection System Maintenance

The maintenance of the wastewater collection system needs to be considered as a priority to prevent the pipes from filling with solids and obstructing flows. The entire collection system was cleaned in February 2007 and should be cleaned again in 2014-2015. A regular pattern of cleaning every 8-10 years should be continued to maintain the reliability of the piping system, and to prevent sanitary sewer overflows as outlined in the District' Sewer System Management Plan.

While the collection pipes are not exceeding their life expectancy of 60 years within the next study period, it is suggested that depreciation funds are set aside for the purpose of replacing these pipes. The life expectancy for the pipes has been placed at 60-years from the base year of 1988.

TABLE 7.1

IMPROVEMENTS COMPLETED 2006-2010

IMPROVEMENTS	DATE COMPLETED	COST
WWTP Phase III Expansion	November 2006	$1,139.008
WWTP John Deere Tractor	June 2008	$37,938
WWTP Phase III Drainage	November 2008	$21,380
Aerator Float	December 2008	$7,884
Aerator Motor	December 2008	$2,557
WWTP Tractor Garage/Shop	September 2010	$65,892
	TOTAL COST:	$1,274,659

TABLE 7.2

R & R MAINTENANCE PROJECTS COMPLETED 2006-2010

IMPROVEMENTS	DATE COMPLETED	COST
Collection System Hydrojetting	February 2007	$19,000
Office Roofing and Painting*	July 2007	$3,000
Ferrini Park Restoration*	March 2008	$9,400
Slurry-Seal of WWTP Asphalt	July 2010	$5,700
	TOTAL COST:	$37,100

* Shared 50/50 between sewer and water

TABLE 7.3

PROPOSED CAPITAL IMPROVEMENTS 2012-Buildout

PRIORITY	IMPROVEMENTS	RECOMMENDED DATE OF COMPLETION	COST
1	Sewer Rate & Connection Fee Study	2012	$15,000
2	Carport at Office*	2012-2013	$25,000
3	Utility Vehicle	2014	$15,000
4	Phase II Upper and Lower Basin Overflows	2015	$40,000
5	SCADA	2015	$125,000
6	Concrete Slope Cover	2015	$300,000
7	Comminutor	2020+	$80,000
8	Master Basin Expansion Earthwork	2020+	$120,000
9	Irrigation modifications due to earthwork	2020+	$40,000
10	Phase IV Expansion Land and Improvements	2020+	$750,000
11	Dual Irrigation Pump System	2020+	$50,000
12	Upgrade Lift Station Pumps	2020+	$100,000
		TOTAL:	$1,660,000

* Shared 50/50 between sewer and water

TABLE 7.4

R & R PROPOSED MAINTENANCE PROJECTS 2012-2016

PRIORITY	IMPROVEMENTS	RECOMMENDED DATE OF COMPLETION	COST
1	WWTP Effluent Pond Cleaning	2012-2014	$75,000
2	Collection System Hydrojetting	2014-2015	$20,000
		TOTAL:	$95,000

CHAPTER 8

CONNECTION FEE

As discussed in Chapter 7, Capital Improvements consist of the Los Alamos Community Services District's proposed infrastructure necessary to provide for the development that will be sustained by the District's wastewater system. The Capital Improvements (new infrastructure) are paid for by the Capital Improvement Fees (connection fees) from new developments. Chapter 8 reviews the existing wastewater connection fee and the ability to provide the necessary infrastructure. The connection fee for wastewater in Los Alamos is currently $6,162. Revenues from this source could amount to $634,686 in the next 5 years based on collecting 100% of the new 103 residential units (estimated based on 3% annual growth, see Table 2.1 on page 14). Although the current fee should accommodate the improvements during this planning period (2012-2016, see Table 7.3, page 37) money will need to be borrowed from other funding sources to complete the necessary infrastructure for build out of the Community.

Wastewater Service Connection Fee Calculation

The wastewater service connection fee that new developers will pay for a service connection to the Los Alamos Community Services wastewater system combines two charges. The first is a "buy-in" fee to the existing infrastructure. The second is a charge to recover the cost of facilities to serve the demand the new development creates.

The buy-in portion of the connection fee is calculated based on the total existing assets divided by the number of units planned for at build out of the town. The value for the total existing assets is a combination of 100% of the itemized cost of sewer only related assets and 50% of the water/sewer related assets on the Los Alamos Community Services Depreciation Schedule. The total number of units is adjusted for the proposed commercial and industrial properties planned for in the 2011 Los Alamos Community Plan Update (51 existing units and 196 potential units). The total existing assets value for the wastewater infrastructure for the Los Alamos Community Services District ($5,393,593.23) is from the Los Alamos Community Services District Depreciation Schedule ending 6/30/11.

The number of residential equivalent units for commercial and industrial development is 247 as shown on page 47 in the Water Facilities Planning Study, dated December 28, 2011.

NOTE: 51 equivalent units are existing and there are 196 potential equivalent units. See Buy-In calculation on page 39.

The buy-in portion of the wastewater connection fee for new development should be reviewed every five years to include additional infrastructure installed in the water system. The build out of Los Alamos will remain 1341 residential units plus the commercial and industrial residential equivalents (247 units). The total units are 1588 per the 2011 Los Alamos Community Plan Update zoning.

The long time frame between 2011 and build out (2040) creates uncertainty about the ability of the District to collect connection fees from 100% of the units proposed for build out by the 2011 Los Alamos Community Plan Update and economically expand the capacity of the wastewater system. Therefore, an 80% factor will be applied to the total number of future units proposed at build out. The Facilities Planning Study is done every five years and will adjust the possible build out units as build out of the Community progresses. As units are added to the system the uncertainty of total build out units will decrease, decreasing the need for the 80% factor.

Buy-In = $\frac{\text{TOTAL EXISTING ASSETS VALUE}}{\text{Build Out Units (adjusted for commercial/industrial)}}$

= $\frac{\$4,864,581.89 + [(50\%) \times \$1,058,022.68^*]}{\text{Existing units} + [\text{Future Units} \times 80\%]}$

= $\frac{\$5,393,593.23}{(649+51) + [(692 + 196) \times 80\%]}$

= $\frac{\$5,393,593.23}{1410 \text{ units}}$

= **$3,825**

*Total of Water and Sewer related assets on the LACSD Depreciation Schedule (50% are counted towards wastewater)

The second portion of the wastewater connection fee is established to recover the cost of facilities necessary to serve the demand that the new development creates. This will also be reviewed every five years to determine the necessary infrastructure to serve the proposed development as well as any changes in the number of units at build out. The District will provide for build out of the Community based on the zoning in the 2011 Los Alamos Community Plan Update. The improvements necessary for build out include those in Table 7.3 (page 37).

The same 80% factor discussed above will be applied to the total number of units proposed at build out for the remaining undeveloped land. The Facilities Planning Study is done every five years and will adjust the possible build out units as build out of the Community progresses. As units are added to the system the uncertainty of total build out units will decrease, decreasing the need for the 80% factor.

Development Created Demand Costs/Unit = Prop. Capital Improvements 2011-Build Out / Est. Development 2011-Build Out (80%)

= Proposed Capital Improvements 2011-BO / 710 (See Future units calculation under Buy-In Calculation above)

$$= \frac{\$1,660,000}{710}$$

= **$2,338**

TOTAL Water Connection Fee = Buy-In + Development Created Demand Costs
= $3,825 + $2,338 = $6,163

The District's current wastewater service connection fee for new development is $6,162. It is recommended that the District maintain the same wastewater service connection fee to provide the necessary infrastructure for expected development and the associated system needs.