CHAPTER SIX
COMMUNITY INFRASTRUCTURE

6.1 TRANSPORTATION

6.1.1 U. S. Highway 89

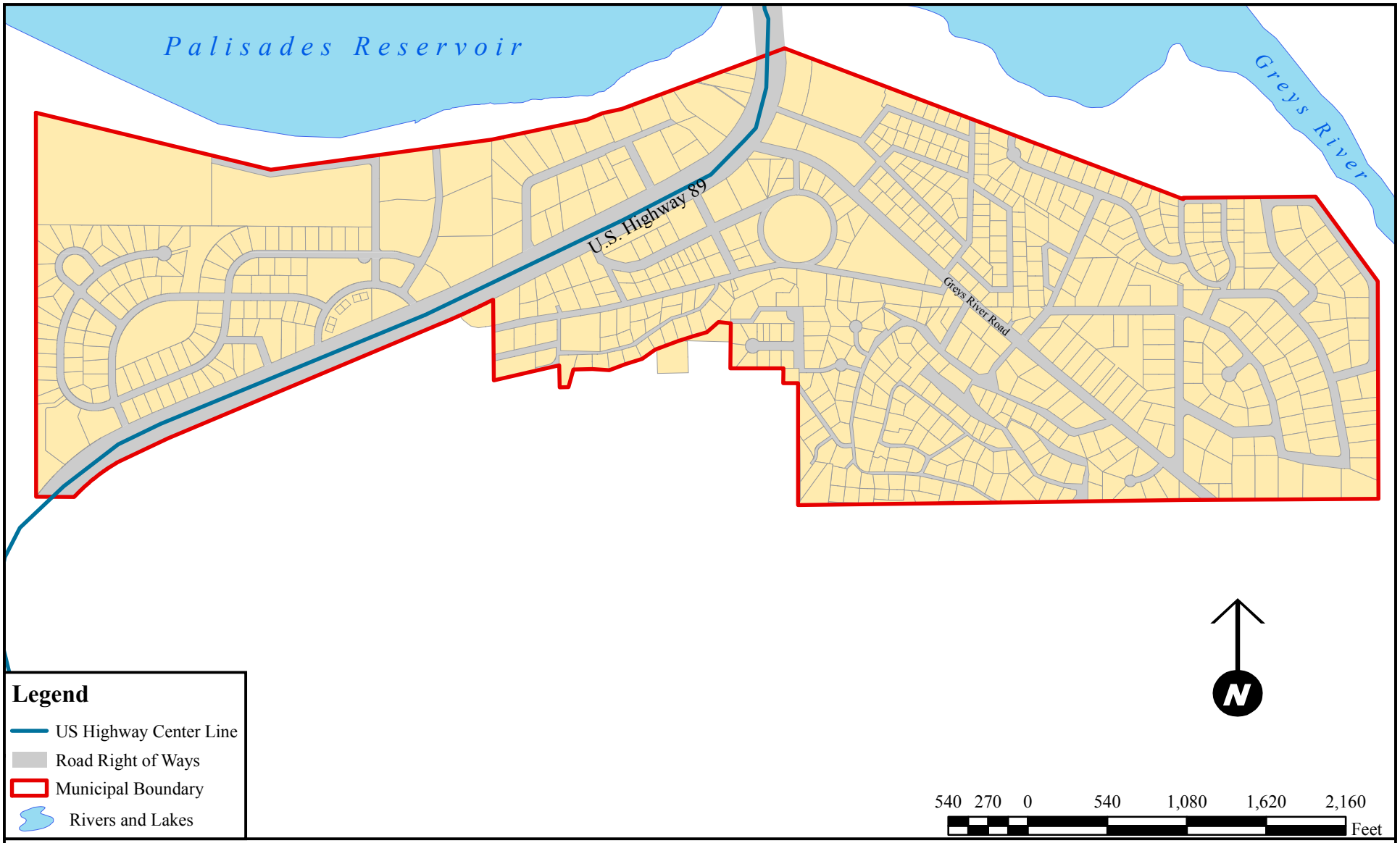
6.1.1.1 General Highway Characteristics

The primary vehicular access serving Alpine is U.S. Highway 89 (Figure 6-1). This highway is part of the National Highway System and classified as a principal arterial (Wyoming Department of Transportation, Systems Planning, 2005).

This two-lane highway extends from the southwest part of Alpine through the northern boundary of the community. U.S. Highway 89 provides access to various Star Valley communities in northern Lincoln County, as well as southeast Idaho. To the north, U.S. Highway 89 provides access to the Town of Jackson and Yellowstone National Park.

U.S. Highway 89 through Alpine is a paved, two-lane highway with a center, 2-way left turning lane, as well as right turning lanes on both sides of the highway. Consequently, there is convenient vehicular access to commercial establishments on the east and west side of the highway.

The road right-of-way through Alpine includes some shrubs, a supporting irrigation system, and decorative street lighting near the edge of the highway right-of-way. An informal service road is situated between existing landscaping and the edge of the right-of-way. However, incoming passenger vehicles do not use the service road.



Alpine Municipal Master Plan

Transportation Systems Alpine, Wyoming

Prepared by: Pedersen Planning Consultants
P.O. Box 66, Encampment, WY 82325
Tel: 307-327-5434 Web: www.pedersenplanning.com

Figure 6-1

6.1.1.2 Traffic Volumes

Recent Vehicular Traffic

Seasonal traffic counts made in the vicinity of Alpine are made and used by the Wyoming Department of Transportation to estimate annual average daily traffic volumes at selected highway locations. Recent estimates made by the Wyoming Department of Transportation (Table 6-1) indicate an average daily traffic volume of almost 4,000 vehicles per day in 2004 at the intersection of U.S. Highway 89 and Greys River Road (Wiseman, 2005). Average daily traffic volumes since 2000 indicate a gradual rise in the number of vehicles traveling through Alpine.

About 99 percent of this traffic comprised passenger vehicles (including light trucks). Consequently, only a limited volume of semi-truck traffic passes through the community.

During the winter months, a portion of the highway right-of-way is frequently used by snowmobilers. All terrain vehicles (ATVs) also make occasional use of the same right-of-way during spring, summer and fall.

TABLE 6-1
AVERAGE DAILY TRAFFIC VOLUMES
SELECTED POINTS
ALPINE, WY VICINITY
2000 - 2004

	2000			*2001*			*2002*			*2003*			*2004*		
Location	***All***	***Truck***	***Pass.***	***All***	***Truck***	***Pass.***	***All***	***Truck***	***Pass.***	***All***	***Truck***	***Pass.***	***All***	***Truck***	***Pass.***
US 26 at Alpine Junction	1,800	260	1,540	1,700	300	1,400	1,600	290	1,310	1,600	280	1,320	1,740	280	1,460
US 89 at Greys River Road Junction	3,700	320	3,380	3,500	320	3,180	3,590	300	3,290	3,760	320	3,440	3,990	330	3,660
US 26/89 at Alpine Junction	3,200	300	2,900	3,400	330	3,070	3,480	370	3,110	3,610	390	3,220	3,800	400	3,400

Source: Wiseman, 2005.

Anticipated Vehicular Traffic

In January 2005, the Wyoming Department of Transportation (WYDOT) published a U.S. Highway 89 Corridor Study for the Star Valley, WY communities of Alpine, Etna, Thayne, Grover, Afton, and Smoot. This report forecasts a significant increase in average annual daily traffic volumes (AADT) along U.S. Highway 89 in Alpine. By the year 2027, future average annual traffic volumes are expected to rise to 7,100 vehicles. This potential increase represents an anticipated 82 percent growth in annual daily traffic volumes during the next 21 years.

6.1.1.3 Level of Service

The 2005 Corridor Study also includes a determination of level of service along U.S. Highway 89. (Table 6-2) *"Level of Service" (LOS) is a qualitative measurement of vehicular traffic conditions that considers volume capacity, speed and travel time, freedom to maneuver, traffic interruptions, and comfort levels"* (WYDOT, Systems Planning, 2005). The six levels of LOS are identified by a grading system, i.e., A through F, that were originally defined in the Highway Capacity Manual in 1965 and subsequently refined in later editions of the Highway Capacity Manual in 1985 and 2000 (Transportation Research Board, 2006).

The analysis of level of service determined in the 2005 Corridor Study concluded that vehicular traffic levels in 2003 represented stable, acceptable traffic conditions with a somewhat restricted movement of vehicles ("C" level of service).

With a gradual increase in average annual daily traffic, the Wyoming Department of Transportation forecasts that the future level of service of U.S. Highway 89, between Afton and Alpine Junction, will gradually decline to a level of service D by 2027 in the absence of any future highway improvements. Level of service D is characterized by restricted traffic movement, high passing demand, and very little passing opportunity. The anticipated decline in level of service will be further exacerbated if a greater number of vehicular access points are developed along this segment of U.S. Highway 89.

TABLE 6-2
LEVEL OF SERVICE DEFINITIONS
HIGHWAY CAPACITY MANUAL

Level of Service	Vehicular Traffic Conditions
A	Free flow traffic, low traffic density, passing demand well below passing capacity.
B	Minimum delays, stable traffic density, passing demand equals passing capacity.
C	Stable conditions, somewhat restricted movement, acceptable traffic conditions.
D	Restricted traffic movement, high passing demand, very little passing opportunity
E	Numerous delays, no passing opportunities, congestion.
F	Severe congestion, no passing opportunities, forced traffic flow.

Source: Wyoming Department of Transportation, Systems Planning, 2005

6.1.1.4 Planned Highway Improvements

In order to maintain a minimum level of service C, the 2005 Corridor Study concludes that a five-lane highway will eventually be needed from north of Afton through the Town of Alpine. The recommended five-lane highway would generally include two 12-foot lanes in each direction, a 12-foot center lane to accommodate two-way left turns, and two 8-foot shoulders.

WYDOT envisions the future acquisition of road right-of-way through Alpine during a future project development phase after completion of an environmental review and approval process. The 2005 Corridor Study also recommends that Lincoln County should require all new construction, adjacent to the Afton-Alpine highway segment, to have a set back of 75 feet from the centerline of U.S. Highway 89.

In recognition of the significant cost of planned highway improvements, WYDOT also recommends the adoption of an effective access management plan for the segments of U.S. Highway 89 in Star Valley. The 2005 Corridor Study also envisions the implementation of community planning and zoning guidelines.

6.1.1.5 Potential Needs and Opportunities

U.S. Highway 89 is the primary vehicular access to Alpine. It is essential that this highway corridor is sufficiently attractive to draw future vehicular traffic off of the highway and people into local retail establishments.

The attractiveness of the commercial area along the U.S. Highway 89 corridor is dependent upon a combination of factors such as the future level of service, effective and convenient points of vehicular access, available vehicular parking, available opportunities for pedestrians, bicyclists, and snowmobile enthusiasts, as well as a unified landscaping theme.

The availability of a 200-foot highway right-of-way through Alpine enables the Town of Alpine and WYDOT to work cooperatively to improve the attractiveness of the highway commercial area and, at the same time, accommodate a future widening of the highway corridor. In order to achieve these objectives, frontage roads could be constructed within the existing right-of-way along both sides of U.S. Highway 89 corridor. Vehicular access points to the frontage roads and nearby vehicular parking areas at each retail establishment would ideally be, at least, 300 feet apart along both sides of the highway. These improvements will help reduce future traffic congestion and the maintenance of an acceptable level of service, i.e., service level C, through the Town of Alpine.

A more unified landscaping theme along the highway corridor through Alpine is also needed to create a more attractive retail environment. In selected right-of-way locations, existing aspen trees need to be combined with wild flowers and shrub plantings. Railroad ties, other wood material, and rock can be used to define and draw attention to landscaped areas and vehicular access points. These concepts need to be incorporated into a related landscaping plan for the corridor.



Landscaped areas within the highway right-of-way can also be used to enable alternate modes of travel through the highway corridor. Trails or walkways for pedestrians, bicyclists, and snow machines can also be designated to encourage resident and visitor access to retail establishments along U.S. Highway 89.

In terms of future traffic safety, the installation of intersection street lighting at selected locations of heavier use and within speed zone transitions could offer some significant safety benefits. One potential location might be the U.S. Highway 89/Riverside Drive intersection which is situated along a horizontal curve on the southwest fringe of Alpine. Such improvements should be considered by the Wyoming Department of Transportation.

6.1.2 Municipal Road Network

6.1.2.1 General Road Characteristics

The municipal road network that serves the Town of Alpine provides vehicular access to U.S. Highway 89 and Greys River Road (Figure 6-1). Municipal roads in Alpine are two-lane roadways that provide access almost exclusively to passenger vehicles and light trucks.

Primary roads in the community roadways include Greys River Road, Alpine Drive, Trail Drive Road, and East Mill Road. These roadways, as well as Sunset Drive and Riverview Meadows subdivision, contain a paved asphaltic surface. The remainder of the community is served by improved roadways with a crushed rock or gravel surface. Few municipal roads contain any drainage facilities or swales within the road right-of-way.

The Town of Alpine's Street Addressing Map includes a few municipal road segments that are not improved. These road segments include the north end of Elk Run Road in the Alpine West subdivision, as well as a circular roadway around one parcel in Lake View Estates, Tract C, that is identified as Alpine Circle.

6.1.2.2 Planned Road Improvements

No municipal road plan, which outlines planned road improvements within the community, has been prepared for the Town of Alpine at the time of this report.

6.1.2.3 Potential Needs and Opportunities

Alpine Circle

Alpine Circle, which is shown on the Town of Alpine's Street Addressing Map, is needed to encourage future land use development around one parcel in Lake View Estates, Tract C. The construction of the municipal road would provide an alternate vehicular access route to Greys River Road, from Lake View Estates, Tract C, and redirect some local traffic in Alpine away from U.S. Highway 89. The availability of this alternate route may also, to a limited extent, help ease local traffic congestion along U.S. Highway 89 during peak travel periods.

The construction of this road would initially not need to be paved. However, the roadway would ideally contain a minimum of a compacted 6-inch gravel or crushed rock base (in two courses).

Surface Treatments and Maintenance of Existing Municipal Roads

Gravel and crush rock surfaces on municipal roads should be treated with a bituminous surface (asphalt). Such treatment could be accomplished with, at least, a two-shot chip and seal application, at least, every five to 10 years. These improvements should be more specifically scheduled in the context of a municipal road plan (Brown, 2006).

Paved municipal roadways in the community should receive scheduled annual and long-term maintenance. Annual maintenance should include, at least, pothole and /or trench patching. A seal coat should be applied every five to 10 years (Brown, 2006).

Vehicular Parking

From December through March, a considerable number of snow machines travel through Alpine en route to their travel across Palisades Reservoir, the Bridger National Forest and other scenic areas in the vicinity of Alpine. In order to gain potential economic benefits from this recreational traffic, it is recommended that the Town of Alpine establish designated vehicular parking areas for snow machine trailers and related towing vehicles. Some potential sites within the community could include:

- U.S Bureau of Reclamation property on the south side of Palisades Reservoir and east of U.S. Highway 89.
- Undeveloped municipal property in Alpine West subdivision could temporarily be used on a seasonal basis until planned facilities, e.g., library, child development center, are developed by the Town of Alpine.

In addition, the Town of Alpine should meet with appropriate representatives of the U.S. Forest Service and encourage the U.S. Forest Service to expand the capacity of its paved vehicular parking area along Greys River Road.

Proposed snow machine routes in the recommended community trail system would provide snow machine access from potential vehicular parking areas to accommodations and food services and other retail services along U.S. Highway 89.

6.2 MUNICIPAL WATER SYSTEM

6.2.1 Service Area

The Town of Alpine's municipal water system serves almost the entire community (Figure 6-2). Undeveloped, municipal-owned lands in the Alpine West subdivision are the only lands not yet served by the water distribution system.

In December 2005, the municipal water system served approximately 380 residential and commercial customers. The primary consumers of municipal water supplies were residential customers.

6.2.2 Water Consumption

6.2.2.1 Average Day Demand in 2005

In order to estimate recent water consumption in the Town of Alpine, municipal water meter data was examined for a two-year period that extended from January 1, 2004 through December 31, 2005. Excluded from this data is potable water used by the Town of Alpine for the irrigation of the Kid's Park, located next to the Civic Center, as well as a landscaped area along the U.S. Highway 89 right-of-way.

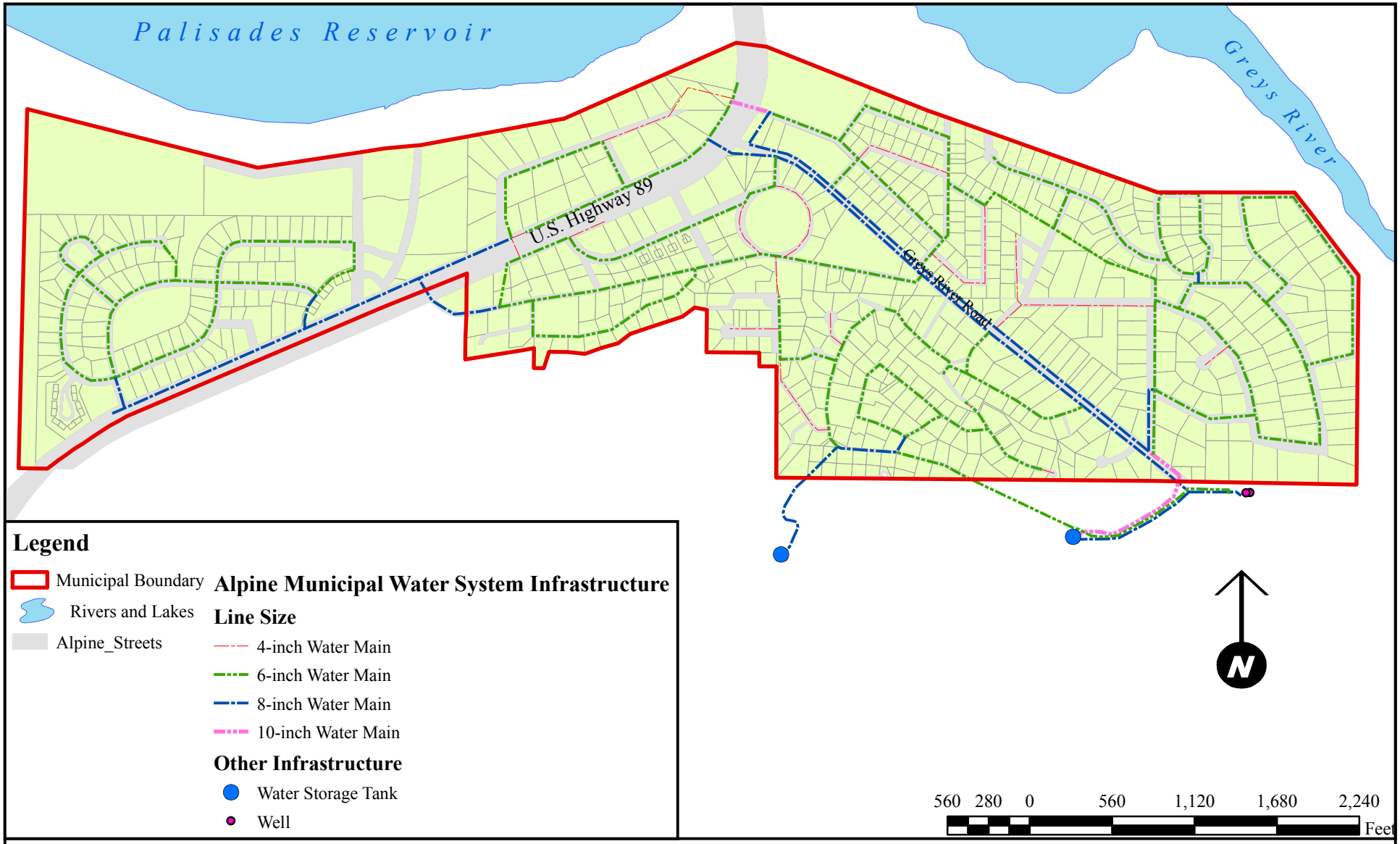
Water meter data for the two-year period indicates that the community of Alpine annually consumes roughly 56.4 million gallons of water. Using the estimated population size of 602 persons in 2005, the daily per capita consumption equates to about 257 gallons per day.

From January 2004 through December 2005, approximately 112,869,371 gallons of potable water was consumed by the Alpine community. During this period, roughly 71 percent of all water consumption was associated with residential land uses. Commercial land uses accounted for about 13 percent of all consumption. Mixed residential and commercial land uses represented almost 12 percent of total consumption. The remaining consumers of municipal water were tied to land uses associated with agriculture, as well as community and public facilities.

Water consumption peaks during the months of July and August. Lower consumption occurs in January and February.

Residential Consumption

The average day demand for residential land uses was 109,517 gallons of water during the January 2004-December 2005 period. There were 340 residential units served by 323 residential water meters.



Alpine Community Development Plan

Municipal Water System Alpine, Wyoming

Prepared by: Pedersen Planning Consultants
P.O. Box 66, Encampment, WY 82325
Tel: 307-327-5434 Web: www.pedersenplanning.com

Figure 6-2

The average daily household consumption was 322 gallons per day. Using an average household size of 2.53 persons, which characterized Alpine in the year 2000, each Alpine resident consumed about 127 gallons per day for residential purposes. This level of consumption is not considered to be excessive in the context of national residential consumption rates or residential consumption rates found in other smaller Wyoming communities.

Commercial Consumption

Twenty-seven water meters in the municipal water system served commercial facilities from January 2004 through December 2005. The average day demand for each commercial facility was approximately 626 gallons per day. While there is considerable variability in the types of commercial uses in Alpine, this level of consumption is considered to be excessive in light of the type and size of commercial facilities in the community.

Based upon their regular review of municipal water meter data, municipal staff believes that excessive consumption is being reflected from, at least, three commercial facilities. The consumption recorded from these meters accounted for almost 55 percent of the total water used by all commercial facilities in Alpine. Consequently, leaks may be present in the distribution system or service laterals that connect to municipal distribution lines. Or, in some cases, the water meters may be malfunctioning.

Mixed Residential and Commercial Facility Consumption

The water consumption from mixed residential and commercial facilities represented about 12 percent of the total water consumption from January 2004 through December 2005. The average day demand for this type of facility was approximately 18,424 gallons.

Nineteen separate water users associated with mixed residential and commercial facilities shared six water meters in December 2005. Consequently, the average day demand for each mixed residential and commercial facility was about 970 gallons per day. This level of consumption is reasonable and not considered excessive.

Community Facility Consumption

Community facilities in Alpine include privately-owned facilities that are generally available for public uses, e.g., church and childcare facilities. From January 2004 through December 2005, community facilities in Alpine consumed 1,192,253 gallons of water. The average day demand for community facilities was about 817 gallons per day.

This volume of water consumption appears to be excessive in light of the type and size of existing community facilities. A leak in a service lateral, or the distribution system near one of the existing community facilities, is suspected.

6.2.2.2 Maximum Day Demand in 2005

Rendezvous Engineering estimates that the maximum day demand in 2005 was roughly 500 gallons per minute, or about 720,000 gallons per day. This estimate was based upon the amount of water pumped into municipal water storage tanks from municipal groundwater supplies in 2005 (Ablondi, 2006).

When compared to the estimated average day demand for the water system, the estimated maximum day demand appears to be roughly 4.65 times the average day demand. Maximum day demands associated with most municipal systems in the United States range between 1.5 and 2.0 times average day demand (Merritt, 1983). The difference for Alpine primarily reflects the fact that irrigation uses by the Town of Alpine are not metered and, therefore, not included in the earlier estimates of average day demand.

6.2.2.3 Anticipated Water Consumption: 2006 through 2016

Pedersen Planning Consultants forecasts a community population of 720 persons within the existing municipal boundary by the year 2016. Assuming that annual water consumption rates remain constant during the next 10 years, it is anticipated that the Town of Alpine will annually consume approximately 67,496,400 gallons. This volume represents an average day water demand of 184,922 gallons, or roughly 185,000 gallons per day (Table 6-3).

TABLE 6-3
ANTICIPATED AVERAGE DAY DEMAND
MUNICIPAL WATER SYSTEM
2005 - 2016

Year	*Within Municipal Boundary (gallons per day)*	*Potential Annexation Area (gallons per day)*	*Cumulative Average Day Demand (gallons per day)*
2005	154,616	0	154,616
2006	156,413	3,904	160,317
2007	158,211	32,165	190,376
2008	160,523	48,859	209,382
2009	163,605	75,057	238,662
2010	166,430	105,106	271,536
2011	170,026	136,441	306,467
2012	173,365	166,490	339,855
2013	176,447	191,147	367,594
2014	179,786	215,803	395,589
2015	182,611	237,891	420,502
2016	184,922	256,126	441,048

Source: Town of Alpine, 2006, and Pedersen Planning Consultants, 2006.

Areas north of Alpine that are under consideration for future annexation include Alpine Meadows, the Snake River Junction Project, and the Best Western Flying Saddle property. If the planned land uses in these areas were connected to the municipal water system, they could increase the average water demand in 2016 by an additional 256,126 gallons.

On a cumulative basis, anticipated growth within the 2006 municipal boundary, as well as land uses within these potential annexation areas, could generate a cumulative average day demand of roughly 441,000 gallons per day in 2016.

6.2.3 Water Supply

In 1988, the Town of Alpine experienced an outbreak of *e coli* bacteria in springs that supplied the municipal water system. In the aftermath of the outbreak, two groundwater wells were developed in the Greys River Valley subdivision. Water well #1 was originally drilled by MCO Drilling Company to a depth of 275 feet. Water well #2 was drilled in October, 1988 to a depth of 243 feet.

Each of the two groundwater wells produces about 350 to 360 gallons per minute. Operation of the wells is alternated every 16 hours to enhance the life of well pumps. Both wells are supported by 50 horsepower pumps.

Chlorination of the two groundwater wells is achieved via an automated injection of hypo-chlorite solution. Chlorination comes on-line for about one hour in the morning (7-8 am) and one hour in the afternoon (3-4 pm).

6.2.4 Water Storage

The municipal water system has two water storage tanks. Both are made of concrete. These tanks are located at higher elevations to afford gravity feed to the distribution system. A booster pump system near the groundwater wells transports treated water to the larger 500,000 gallon storage tank via a 10-inch transmission main.

6.2.5 Water Distribution System

The water transmission system comprises 8 and 10-inch poly-vinyl chloride (PVC) pipe. Ten-inch transmission lines carry water from the booster station to the 500,000-gallon storage tank. Otherwise, the size of all other transmission pipe is 8-inch (Jensen, 2005).

The municipal water distribution system includes 4 and 6-inch PVC distribution lines. About 80 percent of the distribution system is served by 6-inch distribution lines (Jensen, 2005).

There is concern among some municipal leaders that significant leaks may be present in the water distribution system. However, the municipal public works director believes that there are no significant leaks in the system. His conclusion is based upon his regular review of water meter records and his monitoring of booster station volumes of treated water that are delivered to the 500,000-gallon water storage tank.

6.2.6 Planned System Improvements

The completion of a Level II study of Alpine's water system continues at the time of this report. On an interim basis, Rendezvous Engineering has already concluded that:

- Existing groundwater wells can produce up to 500 gallons per minute if well pumps are upgraded.

- One or more groundwater wells could be developed in the existing well field. The Town of Alpine plans to drill and construct a new well to help meet future water demands within the present municipal boundary, as well as provide additional water supply to potential annexation areas north of Alpine. .

The Town of Alpine received a $184,000 grant for the drilling and related pump testing of the new exploratory well, as well as a $537,000 grant for improvements to the two existing groundwater wells. Well improvements will generally include the purchase and installation of new well pumps, as well as a back-up power supply (Abernathy, 2006). These improvements were approved by the Wyoming Water Development Commission and subsequently funded by the Wyoming State Legislature in 2006.

6.2.7 Potential Needs and Opportunities

6.2.7.1 Support of Future Water Demands Within the Present Municipal Boundary

Planned improvements to Alpine's two groundwater wells, as well as the development of a third groundwater well, can be expected to meet future water demands within the present municipal boundary during the next 10 years. This conclusion assumes that well production would continue to alternate the use of wells to conserve the life of both well pumps. Two wells operating simultaneously, at rate of about 500 gallons per minute, can produce about 1,440,000 gallons per day.

Assuming that future maximum day demands would represent about 4.65 x the anticipated average day demand, future maximum day demands within the present municipal boundary would be approximately 860,000 gallons per day in 2016. Consequently, it appears that planned improvements and expansion of the municipal water supply will be capable of meeting future water demands within the present municipal boundary through, at least, 2016.

A hydraulic analysis of the entire water system is needed to confirm the adequacy of existing water storage facilities, the transmission system and water distribution system.

6.2.7.2 Support of Potential Annexation Areas North of Alpine

Rendezvous Engineering has also concluded that these cumulative water supplies will also provide some additional supplies that could be used to support a portion of water demands in potential annexation areas (Ablondi, 2006). The correlation of anticipated maximum day demand and water production within the present municipal boundary suggests the potential availability of 580,000 gallons per day through 2016.

In order to supplement the water supplies needed to support potential annexation areas north of Alpine, an existing 8-inch transmission line along Greys River Road will need to be extended roughly 600 feet across the existing bridge (along U.S. Highway 89) to the north side of Palisades Reservoir. Rendezvous Engineering recommends that the extended transmission line should be, at least, a 12-inch line. The potential cost to design and construct this transmission line extension would be roughly $150,000 (Ablondi, 2006).

6.3 MUNICIPAL WASTEWATER SYSTEM

6.3.1 Service Area

Approximately 88 facilities are connected to the municipal wastewater system (Figure 6-3). About 66 percent of these facilities include single family residential housing units.

Areas not served by the wastewater system generally include most of the subdivisions that are south and east of the U.S. Highway 89/Greys River Road intersection.

6.3.2 Wastewater Generation

6.3.2.1 Wastewater Generation in 2005

Average daily wastewater flows generated by the community were initially examined on the basis of treatment plant flow records. The municipal public works director records wastewater flow discharge levels from the wastewater treatment plant each morning. These records suggest that the average daily wastewater flow to the municipal wastewater treatment plant is estimated to be about 30,000 to 35,000 gallons per day (Jensen, 2005).

Existing wastewater generation was also calculated using water meter records, from January 2004 through December 2005, for the 88 facilities connected to the municipal wastewater system. It was also assumed that local wastewater generation represented 75 percent of total water consumption.

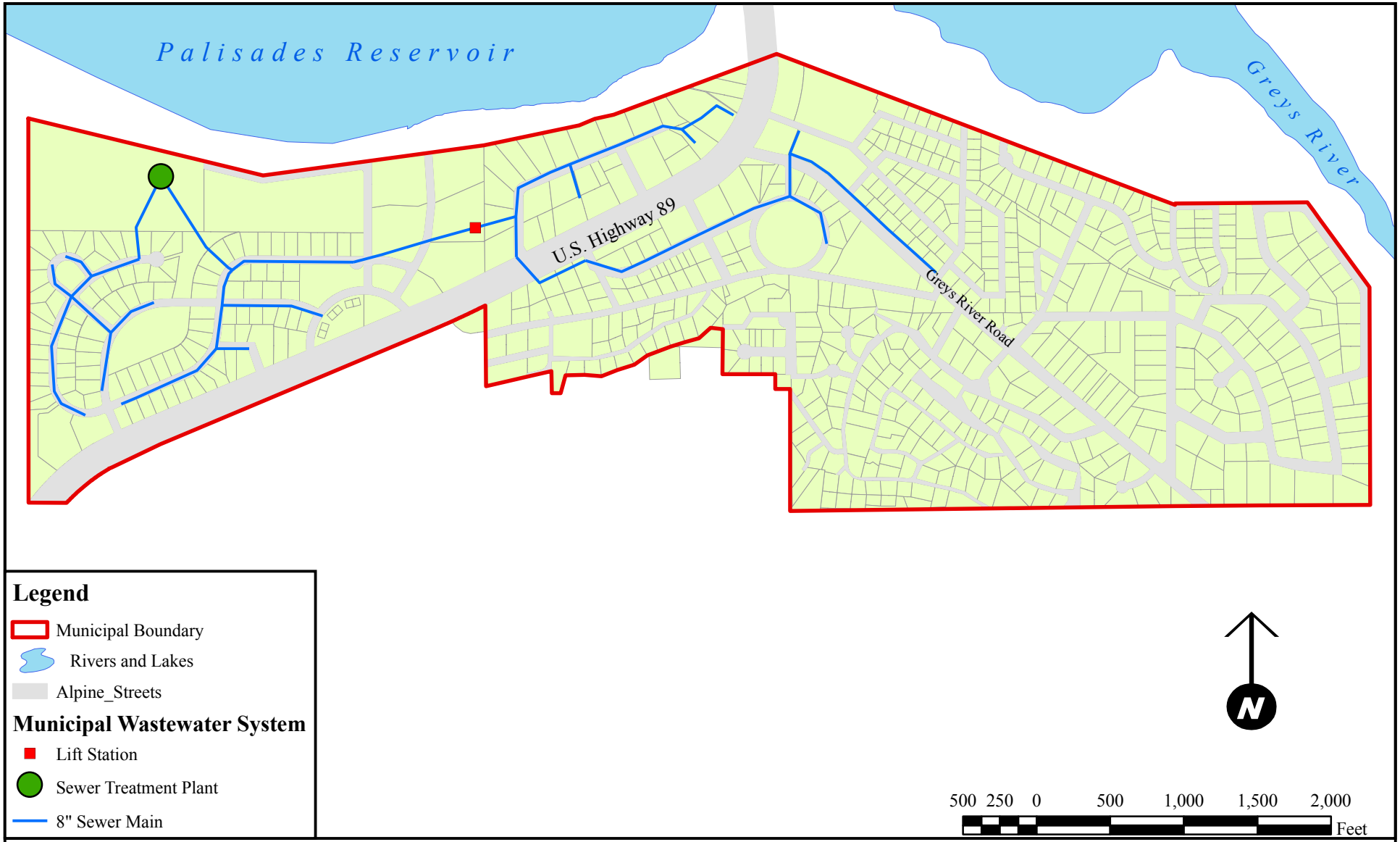
Water consumption data indicates that the 88 facilities connected to the wastewater system consumed an average of 66,971 gallons of water per day in 2004 and 2005. This suggests a total average daily wastewater flow of 50,228 gallons in 2004 and 2005

Based upon these analyses, it appears that average daily wastewater flows in 2004 and 2005 ranged between 30,000 and 50,300 gallons per day. The upper end of this range is believed to be more reliable because this estimate is based upon actual water consumption and an assumed water: wastewater ratio of 75 percent. An estimated flow of roughly 50,300 gallons suggests that the wastewater treatment plant is normally operating at roughly 77 percent of total treatment capacity and the need for treatment plant expansion.

6.3.2.2 Anticipated Wastewater Generation: 2006-2016

If all land uses and related facilities in the Town of Alpine are gradually connected to the municipal sewer system, average daily wastewater flows can be expected to rise to almost 139,000 gallons per day by the year 2016 (Table 6-4). Such flows would exceed the existing wastewater treatment plant capacity of 65,000 gallons per day.

The potential annexation of Alpine Meadows, the proposed Snake River Junction Project, and the Flying Saddle properties would eventually generate an additional average daily flow of roughly 192,000 gallons. On a cumulative basis, increased wastewater generation within the 2006 municipal boundary, as well as the proposed annexation areas, are expected to generate a combined average daily flow of roughly 331,000 gallons per day.



Alpine Municipal Master Plan

Municipal Wastewater System Alpine, Wyoming

Prepared by: Pedersen Planning Consultants
P.O. Box 66, Encampment, WY 82325
Tel: 307-327-5434 Web: www.pedersenplanning.com

Figure 6-3

TABLE 6-4
AVERAGE DAILY WASTEWATER FLOWS
EXISTING 2005 MUNICIPAL BOUNDARY AND POTENTIAL ANNEXATION AREA
ALPINE, WY
2005 - 2016

Year	*2005 Boundary Avg. Daily Flow (gal.)* [a]	*Proposed Annexation Area Avg. Daily Flow (gal.)* [b]	*Combined Area Avg. Daily Flow (gal.)*
2005	50,228	0	50,228
2006	117,310	2,928	120,238
2007	118,658	24,124	142,782
2008	120,392	36,644	157,037
2009	122,704	56,293	178,997
2010	124,823	78,830	203,652
2011	127,520	102,331	229,850
2012	130,024	124,868	254,891
2013	132,335	143,360	275,696
2014	134,840	161,852	296,692
2015	136,958	178,418	315,377
2016	138,692	192,095	330,786

Notes: a) Beyond 2005, the statistical model assumed that all properties within the 2005 boundary are connected to the municipal wastewater system. b) Proposed annexation area includes Alpine Meadows, Snake River Junction, and Flying Saddle properties.

Source: Town of Alpine, 2006; Metcalf and Eddy, 1972; and Pedersen Planning Consultants, 2006.

6.3.3 Wastewater Collection

The wastewater collection system comprises 6 and 8-inch polyvinyl chloride (PVC) pipe. Most of the system includes 8 inch pipe. Sewer laterals are constructed with 4-inch lines (Jensen, 2005). Manholes are constructed of pre-cast concrete.

One lift station supports the collection system. The lift station is situated northeast of the Alpine Volunteer Fire Department building in the Alpine West subdivision (Nelson Engineering, 2006).

6.3.4 Wastewater Treatment and Disposal

The municipal wastewater treatment plant is located in the Alpine West subdivision. The plant is situated on a 17-acre parcel that is leased by the Wyoming Game and Fish Department (WGFD) which obtained or leased the parcel from the U.S. Bureau of Reclamation. WGFD wants the Town of Alpine to purchase the land from USBOR or WGFD.

The wastewater treatment system includes *"….two packaged treatment plants, one rated at 25,000 gpd and one rated at 65,000 gpd. Currently only the 65,000 gpd plant is in operation. The 25,000 gpd plant is useable with some improvements for treatment of raw wastewater or as an aerobic digester for the waste biosolids from the 65,000 gpd plant"* (Nelson Engineering, 2006).

The treatment process involves an activated sludge process with extended aeration. Disinfection of treated effluent is accomplished through the use of an ultraviolet (UV) light treatment process.

Treated wastewater effluent from the treatment plant is ultimately discharged into the Snake River via an 8-in ductile iron discharge line or 10-inch PVC discharge pipe. The Town of Alpine is authorized to discharge treated effluent into the Snake River via a National Pollutant Discharge Elimination System (NPDES) permit for the treatment plant. The existing NPDES permit, which was issued in January 2004, expires in December 2008 (Nelson Engineering, 2006). .

6.3.5 Sludge Treatment and Removal

Existing sludge drying beds that were constructed as part of the municipal treatment plant are ineffective due, in part, to the presence of colder temperatures throughout much of the year. For this reason, the Town of Alpine uses a portable sludge treatment system, i.e., the Flo-Trend system, that is used about once every two weeks to withdraw and break down sludge from the treatment plant. The Flo-Trend system uses polymers to break down sewage sludge. The treated sludge is returned back to the clarifiers and ultimately discharged into the Snake River. (Jensen, 2005). Thickened biosolids are eventually applied to land as a soil amendment (Nelson Engineering, 2006).

6.3.6 Planned System Improvements

6.3.6.1 Improvement and Expansion of Collection System

1995 Wastewater Facilities Plan

A wastewater facilities plan for the Town of Alpine was prepared by Sunrise Engineering, Inc., in 1995. This plan considered a variety of wastewater management issues.

Sunrise Engineering concluded, in part, that future expansion of the municipal wastewater collection system should be limited within existing municipal boundaries. Further, any expansion of the collection system should be made by developers of new residential subdivisions within the community. It was recommended that a gravity flow collection system be used to collect future wastewater flows.

Two wastewater treatment alternatives were examined to treat future wastewater flows in the community. These options included:

- Construct a force main to the north side of the Snake River and the construction of a mechanical treatment plant that would use an extended aeration treatment process.

- Construct two mechanical treatment facilities in northwest and northeast Alpine that would employ an extended aeration treatment process. The construction of a force main in the northeast part of Alpine was also envisioned to facilitate the collection of flows from some of the lower elevation areas in the community.

The second option was ultimately recommended.

The first phase of the recommended plan was to extend the wastewater collection system to an area that now comprises most of Tract C, as well as the 2nd and 7th Additions of the Lake View Estates Subdivision, Palisades Heights Subdivision, and Lost Elk Townhouses. Additional treatment capacity was proposed to serve the growing needs of the River View Meadows subdivision.

Phase 2 of the recommended plan was to provide wastewater collection and treatment for the remaining unsewered areas in east Alpine. These flows were to be served by a separate 100,000 gallon treatment plant.

Alpine Wastewater Treatment Plant Feasibility Study

The Alpine Wastewater Treatment Plant Feasibility Study was completed by Nelson Engineering in March 2006. While this study focuses primarily upon the treatment plant, the study provides a proposed layout for the expansion of the collection system to unsewered areas within the present municipal boundary.

Nelson Engineering also estimated probable construction costs for the expansion of the collection system. The estimated cost for the construction of collection system improvements was $2,248,700. The construction of a related pump station and force main along the northern municipal boundary was estimated to be $780,900.

An estimate was also presented for the replacement of approximately 400 feet of sewer line near the wastewater treatment plant and the correction of a pipe alignment in one manhole within the existing collection system. Nelson Engineering estimated that the construction of these collection system improvements would cost roughly $3,064,600.

6.3.6.2 Expansion of Wastewater Treatment Capacity

Representatives of the North Star Utility District have recommended to the Town of Alpine that it consider the expansion of its municipal wastewater treatment plant. The purpose of the expansion would be, in part, to accommodate anticipated wastewater flows from selected areas north of Alpine.

In the context of this proposal, the potential cost of expanding the existing wastewater treatment plant or developing a new wastewater treatment plant was evaluated by Nelson Engineering in early 2006. The Alpine Wastewater Treatment Plant Feasibility Study investigated various treatment alternatives in the context of anticipated wastewater flows from within the present municipal boundary and potential annexation areas north of Alpine. The study recommended the development of a new wastewater treatment plant that would initially have a maximum day capacity of 400,000 gallons per day. The proposed treatment plant would be designed to use an activated sludge membrane bioreactor for the treatment process.

The treatment capacity of the proposed treatment plant would be expandable through the incorporation of more aeration basins and membrane cassettes in future construction phases. These improvements could eventually increase the treatment capacity of the proposed plant up to roughly 800,000 gallons per day.

Nelson Engineering estimated that construction costs for this facility to be roughly $4.8 million. An additional $647,500 would be required for design and construction management services. The financial plan associated with the study recommended that the Town of Alpine would pursue a Mineral Royalty Grant to pay for 50 percent of the treatment plant construction costs that would include design, permitting, land and easement acquisition, and construction engineering.

6.3.7 Potential Needs and Opportunities

6.3.7.1 Improvement and Expansion of Sewer Collection System

The planned improvement and expansion of the municipal sewer collection system is needed to support potential residential, commercial, and other land use expansion within Alpine. But as these improvements are pursued, it is essential that these improvements are closely coordinated with Alpine residents.

Comments received concerning the draft Master Plan report included a recommendation from a resident of the Forest Meadows Subdivision in east Alpine. This resident requested that the residents of the Forest Meadows Subdivision review and approve all plans for expansion of the collection system into east Alpine prior to implementation by the Town of Alpine.

6.3.7.2 Wastewater Treatment Plant

Anticipated maximum daily flows, which represent average daily flows x 1.5, are typically used for the calculation of treatment plant capacity. Using the anticipated average daily flows for 2016, it is anticipated that maximum day wastewater flows within the present municipal boundary will be about 208,038 gallons per day. Wastewater flows from recommended annexation areas would generate an additional 288,143 gallons of maximum day flow.

Consequently, anticipated maximum daily flows indicate a need for an expanded or new wastewater treatment plant facility in Alpine. Anticipated flows for the 2006-2016 period suggest that this need exists whether or not nearby land use development projects north of Alpine are connected to the municipal wastewater system.

6.4 ELECTRICAL ENERGY

Lower Valley Energy, based in Afton and Jackson, Wyoming, provides electrical service to Alpine. This electrical service and natural gas provider is a rural, member-owned cooperative that generally serves Lincoln, Sublette and Teton County, Wyoming; Bonneville and Caribou County, Idaho; and portions of Yellowstone National Park

While Lower Valley Energy is also a natural gas provider, these services are not available in the Town of Alpine.

6.4.1 Alpine Substation

Within the Town of Alpine, Lower Valley Energy operates and maintains an electrical substation that has a carrying capacity of 10.5 megawatt (MW) and a related transformer rated at 7,500 kilowatts. The Alpine substation has one vacant bay that could be used to accommodate an additional 5 MW of carrying capacity.

6.4.2 Electrical Energy Consumption

Recent electrical energy consumption in Alpine is well within the capacity of the substation. Existing land uses generate peak demands roughly 3.5 MW during the winter months. In contrast, energy consumption during the fall is about 1.9 MW.

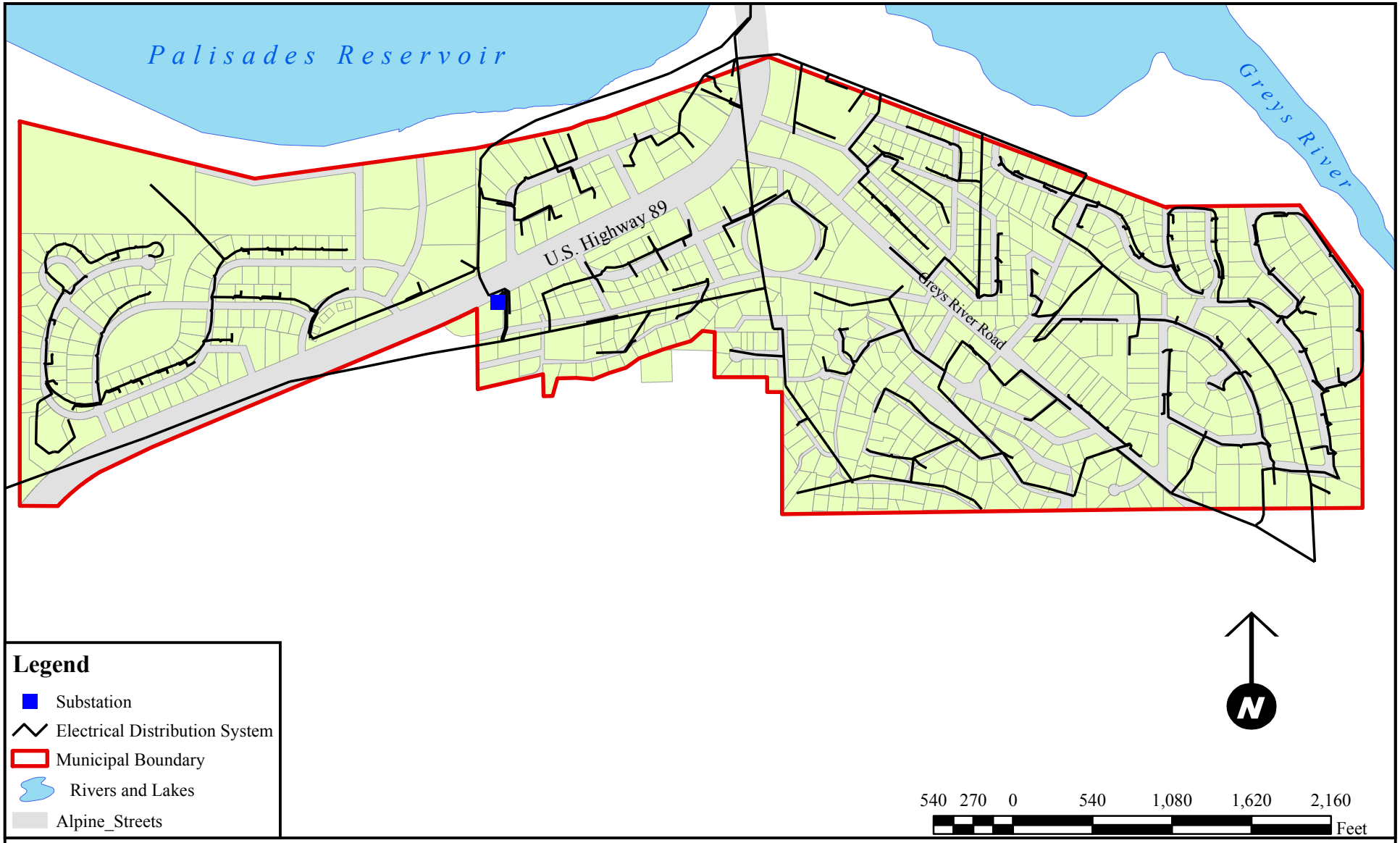
6.4.3 Electrical Distribution

The electrical distribution system (Figure 6-4) serves all subdivisions within the community. Most all of this distribution system consists of overhead distribution lines. Available electrical service is 60-hertz, alternating current, single or three-phase.

6.5 TELECOMMUNICATIONS

Silver Star Communications, based in Freedom, Wyoming, provides video (television), telephone (land line and cellular), and internet services to residential and commercial customers in Alpine and other portions of Wyoming's Star Valley. The company is an affiliate of Teton Telecom, based in nearby Teton Valley, Idaho. Together, these companies serve a geographical area encompassing over 2,800 square miles in western Wyoming and eastern Idaho. Customer care centers are situated in Afton and Thayne, Wyoming.

The internet services offered by Silver Star Communications include dial-up, DSL, as well as high speed wireless access. The speed of available high speed internet services range between 513 k and 1.4 Mb. These speeds are generally adequate to serve the needs of most residential and small business customers.



Alpine Municipal Master Plan

Prepared by: Pedersen Planning Consultants
P.O. Box 66, Encampment, WY 82325
Tel: 307-327-5434 Web: www.pedersenplanning.com

Lower Valley Energy Electricial Distribution System Alpine, Wyoming

Figure 6-4

6.6 FIRE SUPPRESSION AND EMERGENCY MEDICAL SERVICES

6.6.1 General

Fire suppression and emergency medical services are provided to the Town of Alpine by the Alpine Volunteer Fire Department, Inc., a non-profit organization that is not a fire district. Fire suppression and emergency medical equipment are based in the community within the Alpine Volunteer Fire Department building along U.S. Highway 89.

6.6.2 Service Area

The Alpine Volunteer Fire Department provides fire suppression and emergency medical services within a service area that encompasses roughly 481 square miles. The service area extends south to County Road 111 (Jack Knife Road) and northeast to the Teton County line. Northwest of Alpine, the service area extends about eight miles toward Idaho Falls, ID. Both sides of the Palisades Reservoir are also served by the Department; this portion of the service area extends an additional ten miles north to Indian Creek. In addition, the Alpine Volunteer Fire Department provides service east of Alpine approximately 50 miles up the Greys River drainage (Potter, 2006).

6.6.3 Available Personnel

The Alpine Volunteer Fire Department has 25 volunteers that serve on an on-call basis. Each volunteer carries a pager unit to facilitate their response to a fire or emergency medical service call (Potter, 2006). .

The department includes 13 emergency medical technicians (EMTs) and 12 firefighters. Eight of the 13 EMTs are cross-trained and available to serve as firefighters (Potter, 2006).

6.6.4 Calls

In 2005, the Alpine Volunteer Fire Department (AVFD) made about 120-130 emergency calls. Roughly 90 percent of these calls were requests for emergency medical services; the remaining calls represented requests for fire suppression services. Firefighters support emergency medical service calls associated with traffic accidents since AVFD firefighters are trained in victim extrication (Potter, 2006).

6.6.5 Operational Issues

6.6.5.1 Wildfire Potential

In January 2001, the U.S. Department of Agriculture and the U.S. Department of Interior jointly issued a national list of urban wildland interface communities in the vicinity of federal lands that are considered to be at high risk from potential wildfire (Federal Register, 2001). This designation reflected, in part, earlier analyses by the U.S. Forest Service and the U.S. Bureau of Land Management in 2000. These analyses sought to develop a federal interagency response to severe wildland fire, reduce their impacts on rural communities, and assure adequate firefighting capacity in the future. The National Fire Plan for the U.S. Forest Service addressed five key points that included:

- Firefighting;
- Rehabilitation and restoration;
- Hazardous fuel reduction;
- Community assistance; and,
- Accountability (Bridger-Teton National Forest and Caribou-Targhee National Forest, 2003).

In 2001, these national recommendations prompted the U.S. Forest Service to organize an Alpine Fuels Hazard Reduction project in the vicinity of Alpine, WY in light of its high risk from potential wildfire. This project consists of forest thinning, prescribed burning, and natural fuel treatment projects in an area that is north and east of Alpine. The U.S. Forest Service and the U.S. Bureau of Land Management are, in part, establishing a tree break or buffer zone along the southeast boundary of Alpine (Bridger-Teton National Forest and Caribou-Targhee National Forest, 2003).

The project is expected to continue through 2011. But, long-term maintenance of the fire break around Alpine will be necessary to address the high potential for wildfire (Potter, 2006).

6.6.5.2 Defensible Space Program

The Alpine Volunteer Fire Department also organized and continues to operate a defensible space program in Alpine. This program works with local landowners to haul and burn timber and other vegetative material that are adjacent to local residences. Landowners are responsible for the cost of clearing and aggregation of these materials. AVFD hauls and burns timber and vegetative materials that are removed and collected by local landowners.

Until 2005, the Town of Alpine authorized AVFD to use a municipal dump truck. Subsequently, local businessman, Clarence Rinehart, donated a truck to AVFD for the hauling of timber and other vegetative material to a designated site owned by the U.S. Bureau of Land Management.

The Alpine Volunteer Fire Department needs to acquire a used flatbed truck, or a 12 cubic yard dump truck, to enable the department to continue hauling timber and other vegetative material to the designated BLM burn site. The estimated cost for acquisition of this equipment is about $30,000. An additional $5,000-$7,000 will annually be required for the purchase of fuel, insurance, maintenance and repair (Potter, 2006).

6.6.5.3 Equipment Replacement Needs

The Alpine Volunteer Fire Department has a continuing need to acquire fire suppression and emergency medical service equipment. For example, AVFD recently purchased a new ambulance that is necessary to support its delivery of emergency medical services.

AVFD needs to replace its existing pumper truck. The replacement of this truck will require an expenditure of roughly $200,000 (Potter, 2006).

A new rescue truck is also needed to support vehicle extrications associated with traffic accidents. The anticipated cost for a new rescue truck is approximately $100,000 (Potter, 2006).

6.6.6 Financial Issues

As a non-profit corporation, the Alpine Volunteer Fire Department has a continuing need to acquire funds for the support of the purchase of new equipment, as well as sustain ongoing operations. Operation of the department is financially supported by Lincoln County, the Town of Alpine, the Alpine-Bonneville Fire District in Idaho, and private donations. Service fees are also collected from private individuals for ambulance services. In addition, AVFD also pursues and obtains various federal and state grants via the Town of Alpine (Potter, 2006).

One of the significant costs incurred by the AVFD is the periodic replacement of equipment. To prepare for these periodic equipment replacement needs, AVFD has established a reserve fund for equipment replacement fund. However, funds within the replacement fund were almost depleted with the purchase of a new ambulance (Potter, 2006).

Despite these available resources, the overall financial resources of the Alpine Volunteer Fire Department are, at best, tenuous and uncertain. The uncertainty concerning the availability of future funding does not enable the department to adequately plan and schedule anticipated expenditures for both operations and equipment replacement.

In FY 2005, AVFD received $26,000 from the Town of Alpine, $40,000 from Lincoln County, $6,000 from the Alpine-Bonneville Fire District, as well as additional $4,000 in ambulance bill service receipts. AVFD estimates that the department requires about $95,000 to operate its equipment, provide adequate volunteer training, and secure required liability insurance. An additional $6,000-$7,000 is needed to obtain workmens' compensation, as well as accident and accidental death and disability insurance from the municipal liability pool. Consequently, greater financial support is needed from the Town of Alpine, Lincoln County and other public agencies.