



3 PLAN DEVELOPMENT

LAND USE SUITABILITY

Initial planning efforts centered on determining, based on physical characteristics, which of the approximately 176 Pine Nut Allotments included in this study would be suitable for major development and how they would rank from the standpoint of developers interested in entering into long-term lease agreements with allotment owners.

The first step in the analysis was to define criteria critical to development suitability. These criteria, described in Table 3-1, include:

- Topography
- Access
- Public Services
- Soils Suitability for Development
- Ownership

Topography and Access

Two criteria – topography and access – directly affect the cost of development and its attractiveness to developers and consequently were determined to be critical to the development potential of allotments.

Level land is the most economical to develop; as slopes become steeper, costs increase because of the amount of earthwork that becomes necessary to construct roads, utilities, and pads for buildings. In addition, the higher the elevation the greater the snowfall and longer the snow season and the more problems occur with snow removal to maintain access. Snow removal also has a direct cost impact on the homeowner. As a result, higher elevations are not attractive to developers or to prospective homebuyers.

From a developer's standpoint, the most desirable areas to develop are those that have or are adjacent to existing roads, particularly improved roads. The further away from an existing public road, the higher the development cost and the less attractive the allotment is to developers. In addition, if there is no public road providing existing access to an allotment, the problem of securing an easement through another allotment or allotments can become a major problem because of the fractionated ownerships of the allotments.

Table 3-1 Development Suitability Criteria			
Physical Characteristic	Criterion	Suitability Rating	
Topography			
Slope	0-6%	Good	
	6-9%	Fair	
	9-12%	Poor	
	12-20%	Very Poor	
	Above 20%	Not Developable	
Elevation	Less than 5800 ft.	Good	
	5800-6500 ft.	Fair	
	Greater than 6500 ft.	Not Developable	
Access			
US 395 Allotments			
Distance to Paved Road	Adjacent to Paved Road	Good	
	Less than 2 miles	Fair	
	More than 2 miles	Not Developable	
Existing Access Road	Yes	Good	
	No	Not Developable	
North & Northeast Allotments			
Distance to Paved Road	Adjacent to Paved Road	Good	
	Less than 2 miles	Good	
	More than 2 miles	Fair	
Existing Access Road	Yes	Good	
	No	Fair	
Public Services			
Power & Communications	Less than 2 miles	Good	
	More than 2 miles	Marginal	
Accessibility to Groundwater	Less than 5200 ft. Elev.	Fair	
	5200-6500 ft. Elev.	Marginal	
	Above 6500 ft. Elev.	Very Poor	
Suitability for Sewage Treatment	0-6% slope	Good	
	6-9% slope	Fair	
	9-12% slope	Poor	
	12-20% slope	Very Poor	
	Above 20% slope	Not Feasible	
Soils Suitability for Development			
Building Site Development Suitability	Corrosion of Concrete	All criterion rated as follows: Good Fair Poor Very Poor Not Suitable	
	Lawns & Landscaping		
	Golf Fairways		
	Local Roads & Streets		
	Shallow Excavations		
	Dwellings & Small Commercial Buildings		
	Construction Materials		Sources of Gravel
			Sources of Roadfill
			Source of Sand
	Land Management		Source of Topsoil
			Off Trail & Road Erosion Hazard
	Recreational Development		On Trail & Road Erosion Hazard
			Suitability for Roads
Sanitary Facilities	Camp Areas, Picnic Areas, Playgrounds		
	Paths Trails, & Motorcycle Trails		
Ownership	Suitable for Septic Tank Absorption Fields		
	Suitability for Sewage Lagoons		
Number of Allotment Owners	0-5	Good	
	6-15	Fair	
	16-30	Marginal	
	31-50	Poor	
	>50	Very Poor	

Consequently, it was determined that some of the allotments were not suitable for development because of their elevation and/or slope or lack of access. These included:

Parcels above 6500 feet in elevation
Parcels with slopes greater than 20%
Parcels more than 2 miles from a developed road
Parcels with no existing access

The analysis indicated:

- All of the 26 North and Northeast allotments are totally, or in part, developable and could be attractive to developers.
- Of the 150 US 395 allotments, 39 are suitable for development and 15 had marginal suitability. The remaining 101 were considered unsuitable for development and were designated for cultural, recreational, or natural resources uses.

Public Services

Proximity to Power and Communications

As with roads, the proximity of power and communication systems, as well as the ability to extend these systems, is a development concern, particularly if easements need to be secured across other allotments. Any allotment over two miles distance from service was considered undesirable for development within the near future.

Water Supply and Quality

Based on discussions with local officials and BIA personnel, the extension of water service from existing public systems is not a viable option in serving the allotments. As a result, the assumption is that each development will need to rely on groundwater for domestic use, whether in a community system, depending on development densities, or individual wells for each property. A Groundwater Supply and Feasibility Study conducted as part of this project (Appendix E) investigated groundwater availability, sustainability and quality. The analysis indicated that all areas have availability and long-term sustainability concerns, depending on the location. Below the 5200 foot elevation, potential for groundwater is fair. Between 5200 feet and 6500 feet, the potential is marginal. Also, wells at these elevations are likely to be deeper and therefore more costly to develop. The potential for groundwater above 6500 feet is very poor. Groundwater quality is also of concern, but information was not definitive to use as a criterion. However, the investigation showed that groundwater may need to be treated for sulfate, iron, arsenic, and manganese and, as a result, testing for water quality will be essential and potential developers need to be prepared to treat groundwater for domestic uses.

Sewerage Facilities

As with water supply and distribution, the extension of sewer service from an existing public system is not a viable option in serving the allotments. As a result, the assumption is that each development will need to provide for sewage collection and treatment whether in a community system or individual systems. Density of development and terrain impact the viability and cost of sewage collection and treatment. Community collection systems can be viable up to approximately one-acre parcels. Lower densities will

require individual systems for each house. Relative to terrain, the steeper the terrain the more problems in finding appropriate sites and the more cost in constructing these systems. Slopes of over 20% were considered non-viable; usually, soils are very shallow at these slopes, sometimes soils have to be imported for subsurface systems and excavation costs can become prohibitive.

Soils Suitability for Development

A Rangeland Resource Inventory conducted by the BIA and the USDA Natural Resources Conservation Service (NRCS) for the Pine Nut Allotments rated the suitability of the various soil types to support differing uses. Five critical suitability factors, shown in Table 3-1, were evaluated for residential, commercial, and light industrial development. These factors were considered critical because they have a direct correlation to the cost of development. As the soils suitability decreases, costs for development increase. However, poor soil conditions do not preclude development. Soil problems can be overcome, but it adds to the cost of development and impacts the overall feasibility of a proposed development. A detailed description of the soils suitability analysis for the 80 allotments considered to be attractive to developers is contained in the Land Use Suitability Report in Appendix C of this Plan.

Ownership

The number of owners for each allotment is a factor that affects the desirability of an allotment to a developer. Ownership numbers for the Pine Nut Allotment range from one to well over 100 in a number of cases. The fewer owners, the more chance that consensus can be reached and in a shorter time frame. The more owners, the less chance that even a majority can be reached. Realistically, a developer is not going to be attracted to allotments with more than 15 owners.

FINDINGS

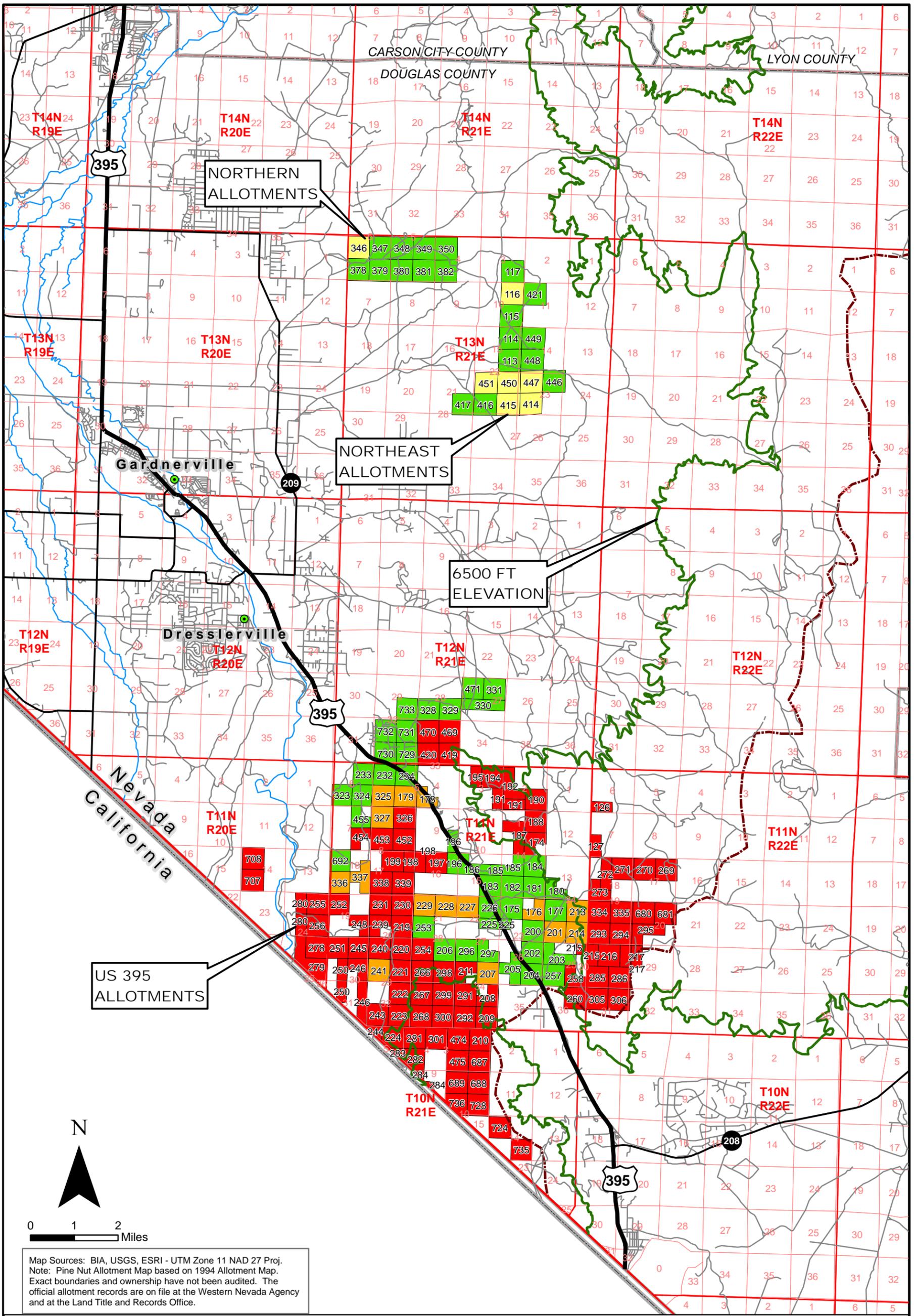
Based on the characteristics discussed above, the following findings were identified. A summary table of the findings is contained in Appendix C. Overall land suitability is shown in Figure 3-1.

North Allotments

All of the 10 allotments in this area are totally, or in part, developable. Only one allotment has potential slope problems in some areas, but development can be designed to avoid that portion of the allotment. Rural residential development is extending from the west and is almost at the western allotments in the group. Public roads and power and communication systems are also in proximity and will likely be extended to the east as urbanization occurs.

In general, soils suitability for shallow excavations and for construction of dwellings or commercial structures is not particularly good. Also, ratings for community sewage lagoons are very poor in this area. However, a number of soils have fair suitability ratings for septic tank drainfields. As a result, large lot development, similar to that which has occurred to the west of these allotments, with individual septic tanks with drainfields may be possible in some areas. Otherwise, community wastewater treatment facilities probably will be necessary and will increase the cost of development.

The number of allotment owners in this area is fairly attractive as well, since over half have 15 or less owners, although none has five or less owners.



Map Sources: BIA, USGS, ESRI - UTM Zone 11 NAD 27 Proj.
 Note: Pine Nut Allotment Map based on 1994 Allotment Map.
 Exact boundaries and ownership have not been audited. The
 official allotment records are on file at the Western Nevada Agency
 and at the Land Title and Records Office.

Figure 3-1

Development Suitability

Pine Nut Allotments, Douglas County, Nevada

Map Prepared by Cascade Design Professionals, Inc., Jan. 2009

Legend

- 6500 Ft. El.
- Local Road
- Carson River Watershed Boundary
- 50 Meter Contours
- Development Suitability**
- Good
- Fair
- Marginal
- Not Developable

Northeast Allotments

All of the 16 allotments in this area are totally developable. Although further to the east than the North Allotments, rural residential development from the southwest will eventually extend to this block of allotments over the mid term and long term. Public roads and power and communication systems also will be extended with this development eventually making these allotments very attractive for development.

Soil problems in this area are similar to the North Allotments—not particularly good for shallow excavations and for dwellings and small commercial structures. Likewise, there are some soil types where septic tank drainfields will probably be possible, and could support low density development.

The number of allotment owners is also workable for many of these allotments as half have 15 or less owners and five allotments have 5 or less owners.

US 395 Allotments

The US 395 corridor has a variety of terrain and elevation issues as well as access problems. The analysis shows that 39 allotments are suitable for development, 15 have marginal suitability, and 96 are not suitable. (See Figure 3-1 for the locations of developable allotments.) The most attractive allotments for development lie adjacent to US 395 where access is direct and there is fairly level terrain. A few other allotments are also attractive on the north and northwest boundary of the allotments, due to favorable slopes and existing access.

It should be noted that several allotments were included even though they did not strictly meet development criteria, because they were either adjacent to US 395, had other access, or had fairly level terrain.

The biggest problems for development along this corridor are excessive slopes, high elevations, and lack of access and/or excessive distance from US 395. Also, groundwater availability diminishes east of US 395.

Because of the steeper terrain and shallow soils, soil conditions in this area are less desirable for development than the northern allotments. One of the biggest development cost factors in this area will be the need for community sewage treatment systems as almost uniformly the soils are not suitable for either septic tank drainfields or for community lagoon systems. As was the case with the Pine View development, wastewater treatment plants most likely will be required. Also, soil suitability for shallow excavation and for dwellings and small scale commercial developments is not very good and will be a problem in areas where slopes increase.

Ownership is a much bigger issue in this area. Overall, only 32% of the allotments have 15 or less owners and 13% have five or less owners. However, 31% of the allotments have 50 or more owners, including a number with over 100 owners.

HIGHEST AND BEST USE DESIGNATION

As part of plan development, a development trend analysis of the Pine Nut region was conducted (Appendix D). The analysis looked at overall growth trends and projections, patterns and types of growth and development, growth and development in relation to the allotment areas, and influences on the allotment areas. Results of the analysis indicated that the allotment areas are subject to overall growth influences in Douglas County, but do not have specific influences affecting their short-term or near-term development potentials. Development of individual allotments will be in response to opportunities as they arise, but cannot be predicted in advance based on development patterns and trends. Based on this analysis, as well as the land use suitability analysis, the following highest and best land use designations were assigned.

Northern Allotments (North Allotments, Northeast Allotments)

The northern allotments appear to offer the best opportunities for larger scale development, either as residential subdivisions or as a planned community such as a senior retirement center. The land is relatively flat, accessible with road construction, and relatively close to existing development. If there are no significant barriers to development, these allotments appear to have the greatest value if they are combined into these kinds of larger scale development. The area is also suitable for multiple lots but economies of scale in developing infrastructure support higher densities.

US 395 Allotments

Northwest Transition Area between Pine Nut Mountains and Carson Valley

The northwest end of the US 395 allotments where the road transitions between the Carson Valley and the Pine Nut Mountains includes the Ruhenstroth community area as well as the Pine View Estates. This is the last area of urban zoning southeast of the Gardnerville ranchettes before leaving the Carson Valley and climbing the grade into the Pine Nut Mountains and includes large tracts of land owned by the Washoe Tribe. The predominant lot size is one acre in the residential area. There are also some industrial uses, primarily related to resource industries and service facilities.

Further development of this area may cause residential demand to extend southeastward into the Pine Nut allotments. Some of the allotments offer better view properties because of the elevation gains.

"Highest & Best Use"
<p>North Allotments</p> <p><i>Larger-scale, planned development such as residential subdivisions or self-contained communities such as a retirement center or resort.</i></p>
<p>Northeast Allotments</p> <p><i>Larger-scale, planned development such as residential subdivisions or self-contained communities such as a retirement center or resort.</i></p>
<p>US 395 Allotments</p> <p><i>Single-family residential development or small subdivisions on the flatter parcels in the area between the Pine Nut Mountains and Carson Valley</i></p> <p><i>Horse ranches or other "lifestyle" homesites in the Topaz Lake—Holbrook Junction Area, at the southern end of the Pine Nut Mountains</i></p> <p><i>Single-family residential development in the flatter allotment areas in the central Hwy 395 Allotments, close to the highway for families that want relative isolation and a rural lifestyle</i></p> <p><i>Essentially no development potential beyond the flatter areas for allotment east and west of the highway; retain for cultural, recreational, or resource uses</i></p>

There are also some allotments suited for single-family developments both southwest and northeast of US 395. It is expected that any such demand will be on an individual lot basis rather than for planned subdivisions such as Pine View Estates.

Topaz Lake – Holbrook Junction Area

This area offers the only commercial facilities along US 395 through the Pine Nut Mountains, along with the lodge and other services at Topaz Lake. The area has several planned developments and/or subdivisions in addition to the commercial facilities at Holbrook Junction. Areas along US 395 are platted for lots ranging in size generally from one acre to five acres. While some of these have been built out, there are still many lots available for sale or for resale. There is also a long-term plan to construct up to 5,000 residential units on the east side of Topaz Lake.

This area essentially anchors the southern end of the Pine Nut allotments, putting residential communities at both ends of the US 395 corridor, along with some commercial facilities. As the county's population grows, it can be expected that demand for residential land will gradually infill toward the middle.

Some of the allotments at the southern end of the Pine Nut Mountains could be developed for horse ranches or other "lifestyle" home sites similar to existing subdivisions. Lot sizes would be in the two-acre to five-acre range.

Central US 395 Allotments

The Central US 395 area between Pine View Estates on the north to the Holbrook Junction area to the south comprises a small amount of single-family residential development, generally on small acreages. There are some properties developed specifically for horse ranches offering a rural lifestyle that may not be available in the more urbanized areas. Most lots range from two to five acres in size.

Any additional development in this area will probably fit the same pattern. This is not an area that is conducive to residential subdivisions in part because of its relative isolation from community services and also because of more severe winter weather conditions that would impact workers commuting to jobs in Gardnerville or Minden. That will also limit the development of community infrastructure systems, favoring wells and septic systems that also suggest larger lots.

Flatter allotment areas close to US 395 are suitable for single-family residential development for families that want relative isolation and a rural lifestyle, generally with lots in the two-acre size range. Difficult commuting during the winter months makes the area unsuitable for family-oriented subdivisions.

Areas East/West Areas of US 395

All of these remaining allotments are located in the rugged hills, valleys and mountains farther off Highway 395. Beyond the flatter areas, there is essentially no development potential. These areas were designated to be retained for cultural, recreational, or resource uses. Most of the slopes are too steep for any kind of development, including construction of wells and septic systems. While there are some spectacular views from some of the higher areas, the severe winter weather conditions above about 6,500 feet would completely isolate these areas for several months of each year.