3.18 Socioeconomics and Environmental Justice

The study area for socioeconomics and environmental justice is defined in terms of local county boundaries and includes Clark, White Pine, and Lincoln counties in Nevada and Juab and Millard counties in Utah. These five counties encompass virtually the entire extent of the four basic areal geographies associated with the proposed development and operation of the proposed ROW, groundwater development areas, and most of the area of potential indirect effects from groundwater level declines associated with groundwater pumping (referred to as the region of study) (**Figure 3.18-1**). A number of the hydrographic basins included in the groundwater model extend outside these five counties; small portions of these basins, such as western Beaver County, are at risk for long-term drawdown. However, those areas are excluded from the socioeconomic study area due to their remoteness, sparse population, and limited areal extent of the affected areas, which together limit the potential for appreciable socioeconomic effects.

3.18.1 Affected Environment

3.18.1.1 Overview[1]

The 3 Nevada and 2 Utah counties encompass a vast geographic expanse of 28,550 square miles, ranging from 555 square miles in Juab County to 10,365 square miles in Lincoln County. Private lands constitute only a small share of the land in the area. As across much of the west, the federal government manages a majority of land in the study area, with the share of such public lands ranging from 70 percent in Juab County to 94 percent in Lincoln County (General Services Administration 2005). Additional lands are managed by the two states and local governments, and lands held in trust for various American Indian tribes are managed by the federal government. Federal and private land ownership patterns in the three Nevada counties are changing as a result of Congressionally authorized major land disposal actions in these counties. These land ownership patterns have numerous implications for social, economic, local governance, and local government finance conditions across the study area.

QUICK REFERENCE

ATV – All-terrain vehicle
CAGR – Compound Annual Growth Rate
CEQ – Council on Environmental Quality
DRI – Desert Research Institute
EMS – Emergency Medical Services
EMT – Emergency Medical Technician
GID – General Improvement District
LDS – Church of Jesus Christ of Latter Day Saints
LVCVA – Las Vegas Convention and Visitors Authority
MSA – Metropolitan Statistical Area
NAICS – North American Industrial Classification System
NDOT – Nevada Department of Transportation
NSD – Nevada State Demographer
NSE – Nevada State Engineer
PILT – Payment in Lieu of Taxes
RV – Recreational Vehicle
TCWF – Temporary Construction Worker Facility
UGOPB – Utah Governor's Office of Planning and Budget
UNLV-CBER – University of Nevada, Las Vegas - Center for Business and Economic Research
USACE – U.S. Army Corps of Engineers
USDA – U.S. Department of Agriculture
USE – Utah State Engineer
USEPA – U.S. Environmental Protection Agency

[1] Note: This section draws on information from numerous public sources; information that is reported and/or updated periodically. For projects like the GWD involving lengthy and complex NEPA assessments, new data releases and revisions of previously published data pose challenges with respect to describing the affected environment, particularly given CEQ guidance to rely on the best available information. Some members of the public interpret that guidance to mean always using the most current available data. Given the virtually continual release of data, the guidance must be balanced with the need for a cut-off to facilitate completing the assessment, provided that any substantive change occurring after that cut-off is considered. For this report, most of the economic and demographic data are current through 2007 or 2008. The ensuing economic recession dramatically affected social and economic conditions in southern Nevada, particularly Clark County, and the full consequences may still not be apparent. Given the long-term nature of the groundwater development, the assessment focuses on key dimensions of the social and economic environment within the study area, particularly those that differentiate Clark County and the rural areas of the region in which most of the GWD development and all of the future production would occur.

Figure 3.18-1 Socioeconomic Region of Study

Clark County and Las Vegas, its major community, is an internationally known entertainment, gaming, and conference/convention/tourism destination. Although hospitality and leisure-related activities support much of the community's economy, its economic base also includes light and heavy manufacturing, financial and other services, and transportation services. The local economies in the rural counties remain heavily dependent on natural resources including agriculture, mineral development, outdoor recreation, and tourism. Clark County was home to 1.95 million residents in 2010 and was among the fastest growing urban areas in the nation, gaining more than 575,000 residents between 2000 and 2010. The area's economy added more than 310,000 jobs between 2000 and 2008; however, the recession resulted in the loss of approximately 100,000 jobs in 2009 and early 2010. The cities of North Las Vegas, Henderson, Boulder City, and Mesquite also are in Clark County and many additional residents live in large urban planned communities in the Las Vegas Valley that are not incorporated municipalities. The other 4 counties in the study area are predominately rural, with 2010 resident populations ranging from 5,345 residents in Lincoln County to 12,503 residents in Millard County. The populations of Juab and Millard counties are concentrated in the eastern sections of those counties, more than 80 highway miles from the potentially affected areas.

Communities[2] located in or near the proposed groundwater pumping basins in Lincoln and White Pine counties include Ely, Baker, Pioche, Panaca, Caliente, and Alamo in Nevada, and Garrison and Callao in Utah. Other nearby communities, settlements, or developments in the area include McGill, Ruth, Lund, Hiko, and Ursine (Eagle Valley). Ely is the largest community in the rural area (2010 population of 4,255), and along with Caliente (2010 population of 1,130) are the only incorporated communities in these 2 counties.

No American Indian Reservations are located within the proposed groundwater pumping basins, although five are located wholly or partially within the three Nevada counties: the Ely Colony, the Confederated Tribes of the Goshute Indian Reservation, the Moapa Indian Reservation, the Las Vegas Colony, and the Fort Mohave Reservation (NPS 1997). The Las Vegas Colony and Fort Mohave Reservation are quite distant from the project ROW and exploratory areas and the Fort Mohave Reservation is outside the three major flow systems associated with the project. The Paiute Tribe of Utah has tribal reservation lands in several locations in southwestern Utah; however, none are located within the indirect effects study area. There are other tribes, including those on nearby reservations in Nevada, Utah, and Arizona with traditional ancestral ties to the area. Those historic ties are described in the Cultural Resources section of this chapter.

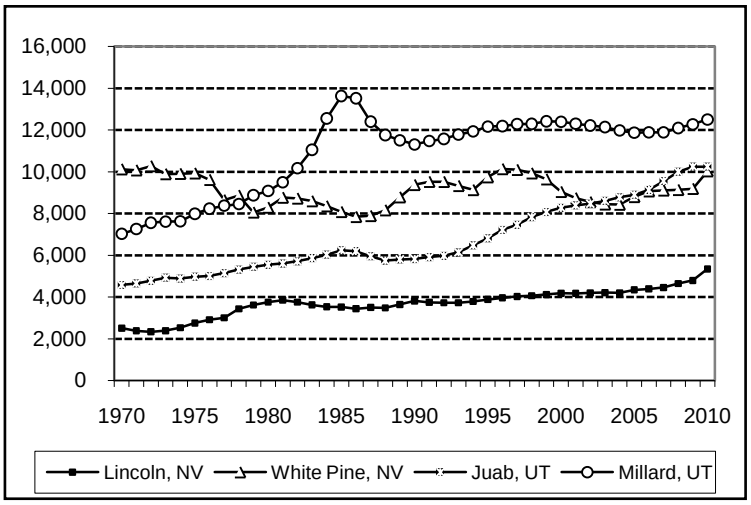
3.18.1.2 Population and Demographics

Population Trends

Population growth trends among the counties since 1970 reflect important economic and demographic influences and events that contribute to current conditions (**Figure 3.18-2**). Lincoln, Juab, and Millard counties all experienced long-term population growth, while White Pine County experienced a pattern of cyclic contraction and expansion tied to mining and the opening of a state prison. Important influences affecting growth in Juab and Millard counties include the completion of I-15 between Las Vegas and Salt Lake City in the 1970s and more recent economic and population growth in the Salt Lake City-Orem metropolitan area, with growth spreading southward along the Wasatch Range. Juab and Millard counties recorded populations of 10,246 and 12,503, respectively, in the 2010 U.S. Census, with most of the population being concentrated in the eastern portions of each county. Little population growth occurred over the past decade in the western portions of each county that are in the study area.

Settlement patterns within the four rural counties are similar, with much of the population concentrated in and near a few established communities, such as Ely, McGill, Ruth, and Baker in White Pine County and Nephi and Mona in Juab County. All counties have resident populations living on farms, ranches, and residential acreages/tracts in unincorporated areas. Development in the outlying areas tends to be concentrated along streams and near springs in the valleys and flats, as those locations attracted settlers who homesteaded the area or acquired land through the BLM's Desert Entry program.

[2] These communities are described in more detail in **Appendix F3-18**.



Sources: U.S. Bureau of Economic Analysis 2009; U.S. Census Bureau 2011a, 2010a.

Figure 3.18-2 Total Population, Four Rural Study-Area Counties, By County, 1970 to 2010

Baker, an unincorporated community situated in the Snake Valley in eastern White Pine County and located along the primary road access to the GBNP, is the only community in which a segment of the proposed pipeline ROW could be located. Along with nearby Garrison, Utah and the Border Inn, a service station/restaurant/motel enterprise along U.S. 6/50 at the Nevada – Utah state line, Baker holds an important social and economic place in the region. Including nearby rural development, the Baker area is home to approximately 200 residents. Baker and the surrounding area has attracted a few new residents in recent years, primarily semi-retired and/or lifestyle migrants attracted by the area's social, environmental, and scenic amenities or people looking for a more relaxed rural setting. Typically, the new residents were previously acquainted with the area; for example, they may have previously visited the area during a vacation. Several of them now operate small businesses in the community. At the same time, Baker and the remainder of the Snake Valley have also experienced out-migration of young adults pursuing education or employment.

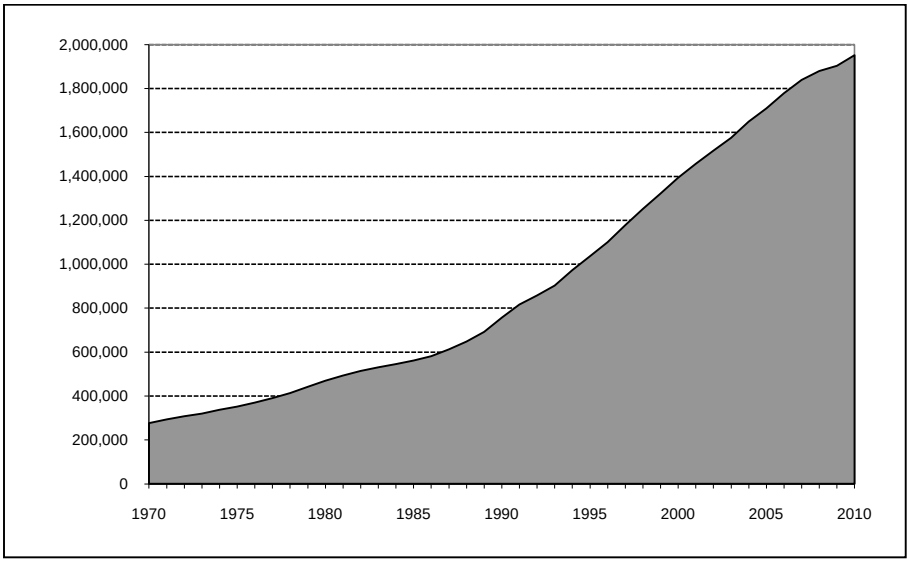
Other communities and settlements in the study area include Callao, Trout Creek, Partoun, Gandy, and EskDale in Utah, rural residential development in White Pine County near GBNP and Baker, on Sacramento Pass and in Spring Valley, and the emerging Coyote Springs development in southern Lincoln/northern Clark counties. All but the latter are located in the Snake Valley or Spring Valley hydrologic basins. The EskDale community is a religious community of about 80 residents, supported primarily by a thriving dairy farm and dairy cattle breeding/animal husbandry operation. Approximately 300 to 350 residents reside in Garrison and other areas of western Juab and Millard counties. Due to the limited amount of private land, the remaining groundwater development areas are sparsely inhabited.

The majority of Lincoln County's residents, including those in Panaca, Pioche, and Caliente, live east of the proposed pipeline ROW and proposed groundwater development basins. The town of Alamo lies west of the pipeline ROW, but along with the Coyote Spring development, it is situated in the White River flow system.

As mentioned in Water Resources, Section 3.3, the Salt Lake Desert flow system includes portions of Elko County in Nevada and Tooele, Beaver, and Iron counties in Utah. With the exception of the area in Tooele County, these areas are very sparsely populated, with populations limited to those associated with a few ranches. The area in Tooele County includes a small portion of the Goshute Indian Reservation and the small historic communities of Ibapah and Gold Hill. The total population of the area was approximately 150 to 175 in 2010.

Population trends in the four rural counties stand in stark contrast to that which has occurred in Clark County, where the resident population climbed more than 7-fold, from 277,230 in 1970 to 1,951,269 in 2010. During that period, Clark County's population growth achieved a long-term compounded annual growth rate of 5 percent (**Figure 3.18-3**), consistently ranking among the fastest growing metropolitan areas in the nation. Net population gains of more than

575,000 in Clark County between 2000 and 2010 accounted for more than 80 percent of the Nevada's statewide population growth of 702,294 residents during the same period, which is equivalent to a 3.1 percent compounded annual growth rate for the state. Following decades of uninterrupted growth, the lingering effects of the national economic recession were expected to result in a net decline in Clark County's population between 2009 and 2010; the Nevada State Demographer anticipated a net decline of approximately 50,000 residents (Nevada State Demographer 2010). The expected decline wasn't evident in the population estimates and 2010 population counts reported by the U.S. Census, although other statistics suggest that a substantial outmigration did occur. Utah registered a statewide increase of more than 530,000 residents between 2000 and 2010, representing a growth rate of 2.2 percent compounded annual growth rate.



Sources: U.S. Bureau of Economic Analysis 2009; U.S. Census Bureau 2011a, 2010a.

Figure 3.18-3 Clark County Population, 1970 to 2010

Population growth in Clark County has been focused in and around Las Vegas. The city of Las Vegas, the central city in the MSA, has seen its population more than double since 1990, to nearly 584,000 in 2010. The population of Henderson climbed more than 4-fold during the same period, to nearly 258,000 in 2010, while the City of North Las Vegas gained more than 169,000 residents. Boulder City and Mesquite, both of which are outside of the Las Vegas Valley, gained 2,456 and 13,405 residents, respectively. Substantial population growth also occurred in the unincorporated areas surrounding Las Vegas over the past decade. The Clark County Department of Comprehensive Planning estimated the population of unincorporated Clark County at more than 861,000 residents in 2008 (Clark County 2008a).

The national economic recession that began in late 2008 dramatically curtailed the pace of economic expansion and population growth in Clark County. Residential construction, which had been a vital driver of the region's economy, slowed dramatically, as record high numbers of units went into foreclosure and residential housing prices declined sharply. According to one real estate reporting service, the median sales price in Las Vegas has declined more than 55 percent from its peak of more than $281,000 in mid-2006 (Zillow 2011). The 2010 Census reported an overall housing vacancy rate of 15 percent for Clark County. New commercial and resort development also slowed, the slowdown in construction contributing to record high unemployment that peaked at 15 percent in late 2010 (U.S. Bureau of Labor Statistics 2011). Las Vegas' gaming, convention, and entertainment industry was also impacted as the weaker economy resulted in convention cancellations and reduced discretionary travel and spending by visitors. Visitor and gaming statistics compiled by the Las Vegas Convention and Visitors Authority (LVCVA), including near 30 percent reductions in convention attendance and average daily room rates, combined with a decline of approximately $2.1 billion in gaming revenue, reflect the severity of the region's economic downturn (see **Table 3.18-1).** Although some visitor metrics reported by the LVCVA reveal signs of nominal improvement in 2010,

tourism continues to lag behind 2007 and the changes are not widely viewed as indicative of a broad economic recovery. Lay-offs, high unemployment, and the lack of job vacancies have not only stemmed the expansion, but also dramatically curtailed the flow of job seekers into the region.

Table 3.18-1 Las Vegas Tourism/Visitors Statistics, 2007 to 2010

	2007	2008	2009	2010
Visitor Volume (Millions)	39.2	37.5	36.4	37.3
Total Room Nights Occupied (Millions)	44.0	43.0	42.0	43.4
Convention Attendance (Millions)	6.2	5.9	4.5	4.5
Average Daily Room Rate	$132.09	$119.19	$92.93	$94.91
Gaming Revenue in Clark County (Billions)	$10.9	$9.8	$8.8	$8.9

Source: Las Vegas Convention and Visitors Authority 2011a.

The relative roles of natural increase and net migration in population change vary dramatically across the study area, as shown in **Table 3.18-2**. Net in-migration had been the driving force behind the growth in Las Vegas/Clark County, averaging more than 47,000 new residents per year between 2000 and 2008 and representing nearly 80 percent of the net growth. New residents have come from all states and many foreign lands. California is the most common origin of relocating residents and about 20 percent of new residents are foreign born (UNLV-CBER 2007 and U.S. Treasury 2007).

Table 3.18-2 Components of Population Change, 2000 to 2008

	Natural Change	Net International Migration	Net Domestic Migration	Total Population Change *	Migration Share of Total (percent)
Clark, Nevada	116,692	68,427	311,685	490,211	78
Lincoln, Nevada	-60	17	861	733	>100
White Pine, Nevada	-32	46	30	18	> 100
Juab, Utah	996	7	788	1,745	45
Millard, Utah **	694	331	-1,284	-323	NA

* The total change is not the sum of the preceding columns due to statistical rounding.
** See footnote 3 below regarding the state's estimates of migration.
NA – not applicable because the net change is negative.
Source: U.S. Census Bureau 2009.

Net migration into Clark County declined precipitously as the current economic recession and housing finance crisis resulted in the loss of upwards of 100,000 jobs, many in construction, and adversely affected the housing market. U.S. Census Bureau estimates report that natural increase accounted for 16,566 (70 percent) of the net population change of 23,741 from 2008 to 2009, with net migration estimated at 7,544; the latter was less than 20 percent of the historical annual average migration of 47,000. Even as unemployed residents are reported to be leaving Las Vegas, some observers suggest new residents are moving to Las Vegas, at least on a temporary basis, attracted by the large number and low cost of homes available for sale.

Net migration was responsible for all of the net population growth in Lincoln County and 45 percent of the net change in Juab County between 2000 and 2008. In White Pine County, net in-migration slightly more than offset the declines due to natural change among the local population. According to Census Bureau estimates, Millard County has experienced a substantial level of domestic out-migration since 2000[3].

Natural increase, defined as the net difference between the number of births and deaths among residents, is an important dimension of population change in Juab and Millard counties. In part, this pattern reflects the effects of a comparatively large number of younger households attracted to the area by affordable housing and the influence of the Church of Jesus Christ of Latter Day Saints (LDS) in Utah. Households affiliated with the LDS Church characteristically have higher than average birth rates and larger families. The relatively youthful population is evident in the median ages and high proportion of residents under 18 in the 2 Utah counties (**Table 3.18-3**). Among the 5 counties, White Pine County has the largest share of its population in the 18- to 64-year age category. Factors contributing to this pattern are recent increases in mining jobs, which attract a high portion of working adults, and the adult inmate population at the state prison near Ely.

Table 3.18-3 Age Distribution and Median Age of the Resident Population, 2009

County	Under 18 (percent)	18 to 64 (percent)	65 and Over (percent)	Median Age 2009	Median Age 2000
Clark, Nevada	26.3	62.9	10.7	34.5	34.4
Lincoln, Nevada	25.1	46.6	28.4	45.9	38.8
White Pine, Nevada	21.4	63.6	15.0	39.4	37.7
Juab, Utah	36.2	53.4	10.4	29.1	26.5
Millard, Utah	32.5	54.2	13.4	34.0	29.9

Source: U.S. Census Bureau 2010b, 2002a.

The countywide demographic characteristics mask a trend common in many rural counties, which is the out-migration of young adults following graduation from high school to pursue higher education or economic opportunities. Comments by local residents and educators suggest this trend holds, particularly in the portions of Juab and Millard counties located in the study area. The general aging of the population, coupled with the outflow of younger residents, also factor into declining enrollments in local schools in recent years.

Despite a tendency to associate migration to Las Vegas and other sunbelt areas with retirees, demographic data indicate that a large portion of the migrants are younger singles and households. The median age of Clark County residents in 2009 was 34.5 years, only slightly higher than in 2000, even as population climbed by over 500,000 residents. In 2009, fewer than 11 percent of Clark County residents were 65 or over, while more than 26 percent were under the age of 18.

The racial and ethnic compositions of the local populations reflect the influences of migration, historical settlement patterns, and economic factors. Clark County's resident population is about 61 percent white, with 39 percent identifying themselves as being multiracial or of other races; the latter is 15 percentage points higher than the national average. Residents identifying themselves as Hispanic or Latino comprised 29 percent of the Clark County population in 2010, which is again approximately 15 percentage points above the national average. As compared to Clark County and the national averages, whites constitute considerably higher proportions of the resident populations in each of the four rural counties (**Table 3.18-4**). At the same time, Hispanics and Latinos comprise smaller shares of the populations in the four rural counties.

[3] The basis for the estimated out-migration is not apparent and it appears inconsistent with other economic and demographic data, i.e., employment and residential construction trends. However, the differences are likely to be unrelated to changes in the portion of western Millard County in the project study area.

In 2010, American Indian and Alaskan Natives accounted for between 0.7 percent (Clark) and 4.2 percent (White Pine) of study area residents.

Table 3.18-4 Racial and Ethnic Composition, 2010

	Race (Percent of the Population)			Hispanic or Latino Ethnicity (Percent of the Population)
	White	American Indian and Alaska Native	Other Races, Two or More Races	
U.S.	75.2	0.9	23.9	13.7
Clark County, Nevada	60.9	0.7	38.4	29.1
Lincoln County, Nevada	91.1	1.1	7.7	6.2
White Pine County, Nevada	85.5	4.2	10.3	13.2
Nevada	66.2	1.2	32.7	26.5
Juab County, Utah	95.9	0.9	3.2	3.7
Millard County, Utah	87.6	1.0	11.4	12.8
Utah	86.1	1.2	12.7	13.0

Source: U.S. Census Bureau 2011b.

All or substantial portions of four American Indian reservations and colonies are located in Clark and White Pine counties: the Ely Colony, Goshute Reservation, Las Vegas Colony, and Moapa River Reservation. All four gained population between 2000 and 2010. The Ely Colony registered the largest absolute net gains, 69 residents (**Table 3.18-5**). There are four other reservations in surrounding counties, but all are quite removed from the project area.[4]

Table 3.18-5 Resident Population on American Indian Reservations In/Near the Study Area

Reservation/Colony (*Tribal Affiliation*)	1980	1990	2000	2010	Change 2000 to 2010 (Absolute)
Ely Colony, Nevada – *Shoshone*	76	79	133	202	69
Confederated Tribes of the Goshute Reservation, Nevada-Utah, *Goshute, Paiute, and Bannock*	45	99	105	143	38
Moapa River Reservation, Nevada - *Paiute*	185	375	206	260	54
Las Vegas Colony, Nevada – *Paiute*	113	80	108	154	46

Source: U.S. Census Bureau 2011c, 2002a.

Projected Long-Term Population Growth in the Study Area

Long-term population projections are presented for the five-county study area in **Table 3.18-6**. These projections primarily reflect on a continuation of historic trends, unconstrained by legal, environmental, or political factors. In other words, they are generally reflective of the future in economic development and growth influences, including those associated with Congressionally approved land disposal actions in southern Nevada, but do not reflect information or assumptions regarding specific economic activities. The projections for the two rural Nevada counties, which portray little or no growth, are viewed with skepticism locally, particularly in Lincoln County where public land sales have created an expectation of long-term growth.

[4] The Fort Mohave Reservation and Off-Reservation Trust Land, AZ--CA--NV, includes 6.2 square miles of land in extreme southern Clark County, quite removed from the project area. The Paiute Reservation is located in southwestern Utah and the Skull Valley Reservation is in west-central Utah. The Duckwater Reservation is wholly in Nye County, but the tribe is seeking to establish historic use of some lands in White Pine County.

Table 3.18-6 Population Projections to 2030 for Study Area Counties

County (Source)	2010	2015	2020	2025	2030
Clark, Nevada					
Nevada State Demographer 2006	1,796,380	2,281,997	2,718,502	3,045,813	3,344,390 (e)
Low Job Growth (Nevada State Demographer 2010)	1,902,502	1,920,674	1,905,694	1,931,160	1,979,045
High Job Growth (Nevada State Demographer 2010)	1,902,502	1,947,432	2,325,456	2,674,914	3,066,872
UNLV-CBER 2008	2,253,000	2,649,000	2,978,000	3,243,000	3,454,000
UNLV-CBER 2009	2,122,000	2,446,000	2,715,000	2,933,000	3,126,000
Lincoln, Nevada					
Nevada State Demographer 2008	4,499	4,988	5,308	5,449	5,500 (e)
Nevada State Demographer 2010	4,238	4,204	4,195	4,264	4,384
White Pine, Nevada					
Nevada State Demographer 2008	10,453	10,990	11,081	11,265	11,440 (e)
Nevada State Demographer 2010	9,495	9,162	8,779	8,475	8,259
Juab, Utah (UGOPB 2008)	10,519	12,353	14,158	16,055	18,004
Millard, Utah (UGOPB 2008)	13,863	15,404	16,868	18,343	19,682

Notes:

1) The above projections were prepared by the Nevada State Demographer, University of Las Vegas - Center for Business and Economic Research (UNLV-CBER), and Utah Governor's Office of Planning and Budget (UGOPB). The projections from the Nevada State Demographer do not include explicit assumptions regarding future development and population growth associated with the Coyote Spring or Toquop/Lincoln County Land Act projects.

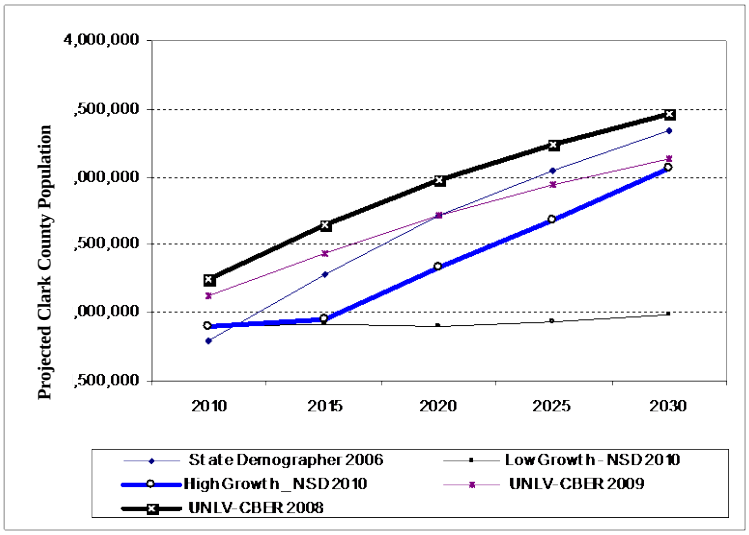
(e) = estimated by the BLM contractor in order to extend the base projections from 2028 to 2030 to provide forecasts for a consistent period.

Sources: Nevada State Demographer 2010, 2006; UNLV-CBER 2009, 2008; and UGOPB 2008.

Five series of projections are provided for Clark County (**Table 3.18-6** and **Figure 3.18-4**): three reflecting the pre-recessionary economic and demographic outlook in mid-2008 and two released in 2010. The two 2010 series reflect a perspective on the uncertainties introduced by the economic recession for long-term growth in Clark County. Under the most aggressive of these projections, prepared by the Nevada State Demographer in 2006, Clark County would gain nearly 1.55 million additional residents between 2010 and 2030. Recent projections, prepared by the Nevada State Demographer in 2010, portray potential population growth ranging between 77,000 and 1.16 million residents by 2030. The range in the Nevada State Demographer 2010 projections reflects differences in assumptions regarding the strength and timing of future economic recovery. Whereas the low growth scenario projects only limited gain, the high growth scenario effectively portrays a resumption of pre-recession growth.

Pre-recession economic and demographic projections for Clark County, prepared by the UNLV-CBER in 2008, underlie SNWA's 2009 Water Resource Plan. Those projections portrayed unabated, but slowing long-term growth, yielding a population of 3.45 million residents by 2030. The UNLV-CBER's 2009 projections reflect a more conservative perspective on future population growth, calling for a population of 3,126,000 in 2030, which is 10 percent lower than the previous projections.

Net population growth of approximately 12,000 to 15,000 residents is projected for the 4 rural counties by 2030. The range reflects differences between the Nevada State Demographer's 2008 and 2010 projections. The vast share of the net growth is anticipated to occur in Juab and Millard counties and is likely tied to the continued growth along the Wasatch Front. Whereas the earlier projections anticipated growth in both Lincoln and White Pine counties, the more recent projections call for little growth in Lincoln County and declines in White Pine County.



Sources: Nevada State Demographer 2010, 2006; UNLV-CBER 2009.

Figure 3.18-4 Projected Long-Term Population of Clark County

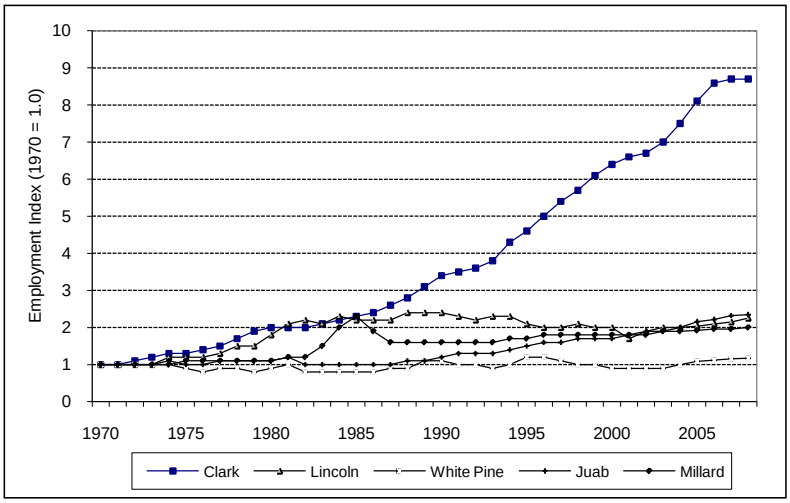
The projections for Lincoln County are noteworthy because they apparently do not include allowances for any substantial level of future development in the Lincoln County portions of the Coyote Spring development or the Toquop/Lincoln County Land Act planned unit development project in the extreme southeastern portion of the county. Lincoln County estimates that these developments could ultimately increase local population by 250,000 (Lincoln County no date). As with the Las Vegas Valley, conveyed groundwater from the northern part of Lincoln County would enable growth, but other factors such as second and retirement home development, lifestyle migration, and relocation of commuters to the Las Vegas Valley would be the likely factors that would drive population growth.

White Pine County's prospects for long-term growth are uncertain. Mining, operation of state correctional facilities, tourism, and agriculture are expected to remain essential elements of the economic base for the foreseeable future. Several White Pine County locations offer good potential for wind energy generation. The first commercial scale wind project to take advantage of that potential, the Spring Valley Wind project, is under construction in the spring of 2011. However, plans for new coal-fired generating capacity that were once anticipated have been delayed and possibly cancelled, due to air quality concerns and uncertain demand for coal-fired generating capacity in light of the recession, climate change, energy conservation efforts, and other factors.

3.18.1.3 Economic Overview

Employment and Unemployment

Economic conditions of the study area counties and the changes in such conditions over time closely mirror the previously described population trends. Total employment in Clark County increased 8-fold between 1970 and 2008 and more than doubled since 1990 (**Figure 3.18-5**), reaching 1.16 million jobs in 2008. Prior to the current economic recession, the increase in job opportunities and demand for labor had been a major influence behind the strong in-migration of residents to the region. The scale of change, as well as the absolute number of jobs in Clark County, contrasts sharply with those of the rural counties. Together, the 4 counties registered total employment of 19,019 jobs in 2007, a net increase of 3,553 jobs or 23 percent compared to 1990. The majority of the gains occurred in Juab and Millard counties and were concentrated in the eastern parts of the counties, some distance from the potentially affected areas.



Sources: U.S. Bureau of Economic Analysis 2010a, 2009a.

Figure 3.18-5 Comparative Change in Total Employment, 1970 to 2008

The economic expansion in the years prior to the recession had pushed unemployment rates to near record lows. The recession brought about a sharp reversal of fortunes, with the number of unemployed and unemployment rates rising sharply. Average annual unemployment more than tripled in Clark County between 2007 and 2010, climbing by nearly 95,000 job seekers, to more than 142,000 at the end of 2010. The number of employed residents fell by approximately 60,000 during that same period. The number of unemployed and unemployment rates increased in the other study area counties as well due to the recession, increasing from 162 to 397 between 2007 and 2010 in Millard County, for example. Lincoln County's labor force also experienced double-digit unemployment rates beginning in mid-2009 and continuing through 2010 (**Table 3.18-7**).

Table 3.18-7 Local Labor Market Conditions, 2007 to 2010

	2007	2008	2009	2010	Change 2007 to 2010
Number of Unemployed					
Clark, Nevada	44,567	91,450	117,413	139,497	94,930
Lincoln, Nevada	76	79	164	225	149
White Pine, Nevada	180	225	367	459	279
Juab, Utah	135	209	357	391	256
Millard, Utah	162	197	329	397	235
Unemployment Rate (percent)					
Clark, Nevada	4.7	6.6	12.0	14.4	+ 9.7% pts.
Lincoln, Nevada	4.4	5.4	9.6	13.2	+ 8.8% pts.
White Pine, Nevada	3.8	4.7	7.4	9.3	+ 5.5% pts
Juab, Utah	3.3	5.0	9.0	9.9	+ 6.6% pts.
Millard, Utah	2.6	3.2	5.1	6.3	+ 3.7% pts.
U.S. – National Average	4.6	5.8	9.3	9.6	+ 5.0% pts.

Source: U.S. Bureau of Labor Statistics 2011.

An adjunct of the relatively small size of the rural economies is a lesser degree of diversity, which make them more susceptible to economic distress and less resilient to adverse changes affecting one or more elements of their economic base. The lack of economic diversification and associated recognition of the limited options for expansion facing the rural counties raised concerns regarding fiscal distress from potential future cutbacks or the loss of existing employers, such as the Nevada Test Site and Robinson Mine. The national recession, its impacts on construction and tourism in Clark County, and the subsequent adverse effects on the state's fiscal health and funding for services and programs added to these concerns. In White Pine County, cutbacks in state services, including the discussion of possible closure of one or more state correctional institutions, brought about renewed urgency to efforts to retain and bolster existing businesses while actively promoting economic development. Renewable energy generation, particularly wind, second home development, and growing higher value agricultural products are among the economic development opportunities viewed locally as economically viable.

Economic Base

A driving force behind Clark County's past economic expansion and a crucial element of the vision for its future had been the successful branding and global marketing of Las Vegas as one of the world's premier entertainment, recreation, and conference/convention destinations. The gaming and hospitality industry employs many workers directly and supports an extensive service industry. Between 1990 and 2009, the lodging industry added more than 75,000 rooms, more than doubling the room inventory as the annual number of visitors climbed to 39.2 million in 2007, before declining to 36.4 million in 2009 as the economic recession took a toll on convention, conference, and discretionary personal travel. Trends in annual gaming revenue in Clark County paralleled the patterns in visitor volume, climbing to $10.9 billion in 2007 before dropping to $8.9 billion in 2010 (LVCVA 2011a,b, 2009).

The construction industry, driven by rapid economic and population growth, has been another economic cog in Clark County. Labor demand associated with commercial construction and the operations of the resort industry were another major factor in the region's economic expansion and labor force in-migration. That demand triggered yet further demand for labor to build housing and public infrastructure. A 2004 economic study estimated that every job in the construction industry supported an average of 1.08 additional jobs in the local economy (Hobbs, Ong & Associates 2004).

Consumer demands of residents and visitors to Las Vegas promoted significant expansion of retail trade, as well as health care, other personal services, public education, and other local public services. Military and other federal government agencies are another element of Clark County's economic base and local economic development efforts have been successful in recruiting light industry, financial services, and other firms, thereby providing some measure of economic diversification.

The pace of new commercial and residential construction, home sales, and sales prices subsequently weakened beginning in late 2007 and early 2008, and several ongoing or announced projects were curtailed and postponed. Thereafter, the local housing market was beset by problems associated with sub-prime mortgage lending and adjustable rate mortgages. As a result, the number of homes in or threatened by foreclosure rose to all-time highs. To some, it foreshadowed a protracted period of economic adjustment; to others it was a welcome respite, which would soon transform into the next housing shortage once the new projects were completed (Southern Nevada Homebuilders Association 2007; Economicrot 2007; Las Vegas Review Journal 2007, In Business Las Vegas 2007).

In the midst of the economic prosperity associated with growth, concerns arose regarding the susceptibility of the economy to slowdowns in the pace of new development. Such slowdowns posed potentially significant economic implications for the regional and statewide economies in terms of rising unemployment and demands for some public services at a time of declining public sector revenues. Those concerns proved well founded. More than 55,000 construction jobs have been lost over the past 3 years, driving losses in other sectors of the economy. State and local government revenues have also fallen precipitously. The incidence of these adverse fiscal effects has been statewide because Nevada's fiscal structure was heavily reliant on the gaming and construction related sales tax revenues to support various distributions to the non-metropolitan counties and public education.

Agriculture and government employment play vital roles in all four rural counties. In 2008, farm employment accounted for between 3.1 percent (White Pine) and 14.1 percent (Millard) of all employment (**Table 3.18-8**). Public

sector employment, including public education, had increased in Clark County in response to population growth and accounted for 9.7 percent of the total employment in 2008. Public sector employment accounted for 13.5 percent and 16.5 percent of all employment in Juab and Millard counties, respectively, and more than 28 percent in Lincoln and White Pine counties. The high shares of government employment in Lincoln and White Pine counties reflect the location of several state institutions in those counties, as well as a substantial federal presence associated with land and natural resource management activities.

Table 3.18-8 2008 County Employment, By Major Category

	Full and Part Time Employment by Category				Percent of Total Employment		
Geographic Area	**Farm**	**Non-Farm Private**	**Government**	**Total**	**Farm**	**Non-Farm Private**	**Government**
Clark, Nevada	244	1,052,408	112,864	1,165,516	0.0	90.3	9.7
Lincoln, Nevada	133	1,437	674	2,244	5.9	64.0	30.0
White Pine, Nevada	161	3,580	1,502	5,243	3.1	68.3	28.6
NEVADA	**4,788**	**1,460,009**	**173,207**	**1,638,004**	**0.3**	**89.1**	**10.6**
Juab, Utah	351	3,972	687	5,010	7.0	79.3	13.7
Millard, Utah	958	4,627	1,120	6,772	14.1	68.3	16.5
UTAH	**18,921**	**1,453,673**	**229,899**	**1,702,493**	**1.1**	**85.4**	**13.5**

Source: U.S. Bureau of Economic Analysis 2010b.

The dependency on agriculture and public sector employment is stronger in the Snake Valley portions of Juab and Millard counties, where it is not uncommon for a household to derive income from both sources, with one member engaged in farming/ranching and another working in education or government, for example. In fact, some residents note that having an "off-the-ranch" income is economically imperative, particularly in recent times when agricultural production and income have been adversely affected by the extended drought.

Farming and Ranching

The employment data presented above provide insights and perspectives into the economic structure of the rural counties. **Table 3.18-9** characterizes the local agriculture industry using information from the 2007 Census of Agriculture (USDA 2009a,b) and conversations with local ranchers in the area.

- Altogether, there were 1,426 farms and ranches in the 5-county study area, nearly half of which were in Millard County and more than 85 percent of which were in the 4 rural counties.
- In the 5-year period between 2002 and 2007, the number of farms and ranches declined in Clark (-60), Lincoln (-11) and White Pine (-24) counties but increased in Juab (+99) and Millard (+57) counties.
- Collectively, the farms and ranches in the five counties encompass an estimated 1.16 million acres of land, a net gain of more than 11.1 percent compared to 2002. Most of the net gain occurred in Millard County.
- About one-third of all farms and ranches in the 5-county area were smaller than 50 acres in size, while more than 40 percent were 180 acres or larger.
- About 43 percent had no sales of livestock or products or less than $5,000 in such sales, while 24 percent had annual sales of $50,000 or more.
- Forty-three percent of all operators list farming as their principal occupation, which is a decline of nearly 10 percent in the last 5 years.
- Many of the farms and ranches have one or more household members employed off the farm.
- The total amount of land in agriculture declined in Lincoln, White Pine and Juab counties between 2002 and 2007.
- About half of all farms in the five counties reported raising cattle and/or sheep, with those raising cattle outnumbering those raising sheep by about a 7-to-1 margin.

Table 3.18-9 Summary of Local Farming and Ranching, 2007

	Clark	Lincoln	White Pine	Juab	Millard
Number of Farms	193	98	97	335	703
Acres in Farms	88,381	46,271	196,986 (e)	260,444	566,692
Principal Occupation					
Farming	78	61	49	102	336
Other	115	37	48	233	367
Farms by Size					
1 to 9 acres	102	5	10	19	45
10 to 49 acres	42	30	16	72	139
50 to 179 acres	24	30	20	102	161
180 or more acres	25	33	51	142	358
Farms by Value of Sales					
Less than $5,000	125	30	30	169	253
$5,000 to $49,999	53	43	29	123	231
$50,000 and Over	15	25	38	43	219
Livestock Statistics					
Farms With Cattle/Calves	67	74	52	151	326
Head of Cattle (inventory)	5,018	16,243	22,027	18,202	74,005
Farms With Sheep/Lambs	16	2	14	30	37
Head of Sheep (inventory)	236	(D)	11,182	7,444	4,651
Land Used for Crops					
Total Cropland (acres)	6,220	17,903	23,756	65,702	153,728
Harvested Cropland (acres)	2,733	15,454	(D)	27,278	96,473
Irrigated Land (acres)	6,511	18,320	30,877	27,118	103,272

(e) – Estimated based on available information (D) – Not reported.

Source: USDA 2009b.

- Among the 5 counties, Millard County hosts the largest agriculture sector, with local farms and ranches registering more than $160 million in cash receipts from livestock, products and crop sales in 2007. Farms in Clark County registered more than $24 million in such receipts while the other three counties each registered less than $16 million in farm receipts.
- Production expenses, substantial portions of which are beyond an individual farmer or rancher's control, consumed most if not all of the receipts generated from operations.
- Although farming and ranching are not major income generators on an accounting basis, agriculture is an important element of the economic base of the four rural counties. Farming and ranching provide livelihoods for many households, contribute to the tax base supporting local government and public education, support other businesses through purchases of goods and services, and are a source of labor for other employers. Although farm income is sensitive to outside influences and varies year to year, the farm-based population tends to be connected to the land in ways that anchors it to the area more so than households associated with other elements of the economy. **Table 3.18-10** summarizes farm income and expenses in 2007 for farms in the study area. Note that the data reflect a period when the area experienced the effects of an extended drought.

Table 3.18-10 Farm Income and Expenses, 2007 (x $1,000)

	Clark	Lincoln	White Pine	Juab	Millard
1. Cash receipts from livestock and products	$21,094	$6,246	$10,270	$9,663	$110,334
2. Cash receipts from crops	$2,978	$6,198	$2,858	$6,085	$50,747
3. Other income	$1,436	$685	$727	$3,782	$8,545
4. Production expenses	$27,789	$9,684	$13,108	$18,277	$113,612
5. Value of inventory change	-$638	-$1,832	-$2,822	$455	$2,025
6. Net income of corporate farms	-$596	$474	-$68	$273	$9,919
7. Net farm proprietors income (1+2+3-4+5-6)	-$2,323	$1,139	-$2,007	$1,435	$48,120

Source: USDA 2009b.

- Energy costs, including gasoline, diesel, propane and electricity, are among the major production expenses for farmers and ranchers. These costs have risen sharply in recent years, both in terms of direct commodity costs and indirectly in terms of transportation and shipping costs, and have contributed to the rising costs of fertilizers, other chemical products, and feed. Rising feed costs is in part a reflection of shifts in production patterns and markets related to the interest in ethanol production.
- In 2007, the combined net income of individual farmers and ranchers in Clark and White Pine counties was negative. Operators in Lincoln and Juab counties had a modest positive income and those in Millard County realized a collective net income of $48 million.
- Many local ranchers rely on access to grazing on public lands to sustain their operation. Grazing on the public lands allows ranchers to use available irrigated lands to grow hay for winter feed or sale as a cash crop. Ranchers have faced reduced stocking rates on public lands to help protect rangeland health during the extended drought period affecting the Great Basin over the past decade.
- Local agriculture production was historically constrained by the availability of surface and shallow subsurface water for irrigation and livestock watering. The introduction of diesel-powered pumps and groundwater irrigation wells expanded the productive areas. More recently, crop productivity and the amount of lands in production increased following the electrification of the valley and introduction of mechanized irrigation systems.
- In some cases, higher rates of groundwater withdrawal facilitated by electric pumps have raised concerns that pumping rates exceed the general use and yield parameters in effect when wells were approved. In addition, the area has experienced a protracted drought resulting in noticeable declines in groundwater levels in irrigation wells.
- Most of the private pasture and cropland in the rural areas is situated along the streams and in the alluvial areas. A substantial share of this land is sub-irrigated by shallow subsurface water flows linked to precipitation and snowmelt in the higher elevation mountain ranges in the region.
- At a localized level, agriculture is an economic mainstay of the economies in western Juab and Millard counties and the rural areas of White Pine and Lincoln counties, particularly Spring Valley and Eagle Valley and around Panaca, Alamo, and Hiko.

The study area includes two large ranches with unique economic and social significance: the Cleveland Ranch in Spring Valley and the EskDale Dairy in Juab County. The significance of the former stems from its role in supporting the Bishop's Storehouse, a combination welfare assistance and disaster relief program operated by the LDS Church. Beef produced on the ranch is slaughtered and consigned to the Bishop's Storehouse, accounting for approximately one-half of all beef distributed through the program each year (LightPlanet 2007).

The EskDale Dairy is the principal economic enterprise supporting the EskDale community. The dairy is an integrated operation, utilizing alfalfa, corn, and other crops grown on nearby fields as feed for the herd. Milk produced at the dairy is trucked to Logan, where it is used for cheese production. The dairy herd plays a critical role in a successful, award-winning Holstein breeding program and supports veal production. The dairy, farm, and breeding programs employ

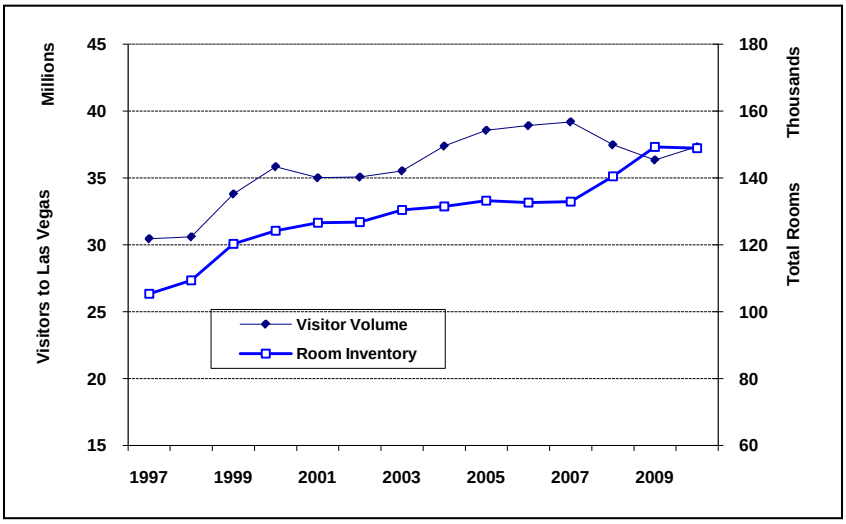
many members of the EskDale community and the revenue generated by the activities go into the "common fund" that is the primary income source for the community (Anderson 2007; EskDale Dairy 2007).

The roles of larger ranches in the economic and social structure of the region have taken on added significance over time due to the senior water rights typically associated with the land. As in other areas across the west, the rising value of the water rights generates substantial economic incentives, or pressures, to sell. Landowners without family interested in actively farming or ranching may choose to sell at prices far higher than that supported by the productive capacity of the land from an agricultural perspective. The SNWA has purchased a number of ranches in the Spring Valley. Similar sales and inquiries of interest to sell by other development interests have been reported across the region. Such sales raise economic and social concerns within the local communities, including the effects of potential exportation of appropriated water rights and implications for more junior water rights in the basin due to reduced recharge, the effects of such sales on the tax status of the lands, and a weakening of the established social structure.

Tourism and Recreation

Tourism and recreation, in its many forms, are the foundation of the Clark County/Las Vegas economy and vitally important to the state's economy and fiscal health as well. Visitor outlays on gaming, lodging, eating and drinking, other entertainment, transportation and other goods and services total in the tens of billions each year. Between 1997 and 2007 annual room tax collections more than doubled from $98.2 million to $219.7 million. Long-term growth in the number of visitors, including millions of convention attendees each year, fueled a boom in casino and resort construction, and gains in employment, and thereby contributed to a major residential construction boom.

Las Vegas' convention and tourism industry was affected dramatically by the national recession (**Figure 3.18-6**). The recessionary effects began to be apparent in mid-2008 when monthly visitor volume was more than 3.0 percent below the preceding year. Declines in monthly visitor volume of 10 percent or more, again on a year-over-year basis, were recorded in September, October, and December of 2008 and in January 2009. Total visitor volume for 2008 ended at 37.5 million, down 4.4 percent from the preceding year. Annual gross gaming revenue, which fell nearly $1.1 billion to $9.8 billion in 2008, served as another indicator of the recession's severity. Further declines in visitor volume and gaming revenue were registered in 2009. However, modest increases were posted in 2010.



Source: LVCVA 2011b.

Figure 3.18-6 Annual Visitor Volume and Total Room Inventory for Las Vegas, 1997 to 2009

A paramount interest in the Las Vegas community concerns the timing and strength of economic recovery in light of ongoing developments in the community. Several resort and commercial construction projects were undertaken on pre-recession conditions. The largest of these added nearly 6,000 rooms to the city's inventory at the end of 2009,

placing additional pressures on the market and room rates. Weaker returns and cash flows for casino properties could potentially jeopardize presently outstanding financing commitments and limit financing for other projects. Lower room rates, gaming revenues, and visitor and consumer spending have fiscal implications for local governments and other public entities statewide, including the SNWA, which derives a portion of its funding for capital improvements from sales taxes.

Outdoor recreation and tourism, both of which are dependent on public lands and access are also important elements of the rural area economies. Locally, outdoor recreation and tourism include travelers passing through the area, visitors and residents visiting one or more historic or developed recreation sites, OHV users, resident and non-resident hunters and anglers, hikers, wildlife watchers, photographers, and other outdoor enthusiasts.

Travelers passing through the area as part of a multi-part itinerary comprise a large segment of the local tourism industry. Some travelers choose routes through the area based on convenience; for example, there are limited options from northeastern Nevada to Las Vegas. In other cases, travelers follow a deliberate route based on historical, cultural, and other attractions and perhaps in part, in response to state and local tourism promotion efforts, such as following U.S. 50, "The Loneliest Highway in America." Other routes of interest in the region include the Great Basin Scenic Highway, the Great Basin National Heritage Route, Valley of Fire, and Red Rock Canyon Scenic Byways (Clark County), and the Pony Express National Historic Trail across parts of Juab County and northern White Pine County (NDOT 2007a; Benchmark Maps 2006).

Developed historic, natural resource based, and recreation sites in the region include GBNP and 11 state parks and historic sites. Congress established the GBNP in 1986, elevating the status of the former Lehman Caves National Monument, originally designated in 1922 by Presidential proclamation. The GBNP encompasses significant natural and geologic resources, expansive scenic vistas, and dark night skies serving important scientific purposes and providing visitors with opportunities for education, recreation, inspiration, and introspection. Annual recreation visits to GBNP over the past decade ranged from a high of 87,020 in 2003 to a low of 69,235 in 2008. Recreation visitation rebounded to 88,870 in 2010, which is more in line with the historical average of 80,000 to 90,000 annual visitors (National Park Service 2011). Visitors to GBNP are a vital source of customers for local cafes, RV parks, motels, and other businesses in the Baker area.

In addition to the GBNP, developed recreation areas in the region include eight state parks and historic sites in Lincoln and White Pine counties and three state parks in Clark County. The BLM and USFS have developed numerous recreation sites and areas for dispersed recreation, such as hiking and camping. Wilderness areas in the region provide opportunities for a primitive recreation. The NWRs and conservation areas in the region provide further opportunities for recreation.

The Lake Mead National Recreation Area, managed by the National Park Service, is located east of Las Vegas, some distance from the southern terminus of the proposed ROW and far removed from the five groundwater development basins associated with the SNWA's groundwater development water applications.

OHV use is an important outdoor recreation activity in the region, although estimates of such use in the study area are not available. Such use is supported by the designation of the Silver State OHV Trail as part of the LCCRDA and subsequent state legislation in Nevada allowing for the operation of OHVs on some public highways in order to reach a private or public area designated for such use. OHV use is also promoted in Utah through cooperative efforts between federal, state, and local governments under the auspices of the Utah Interagency OHV Partners. Residents of the Las Vegas and Salt Lake City metropolitan areas reportedly account for much of the OHV activity in the region, although some sponsored events draw participants from a larger area.

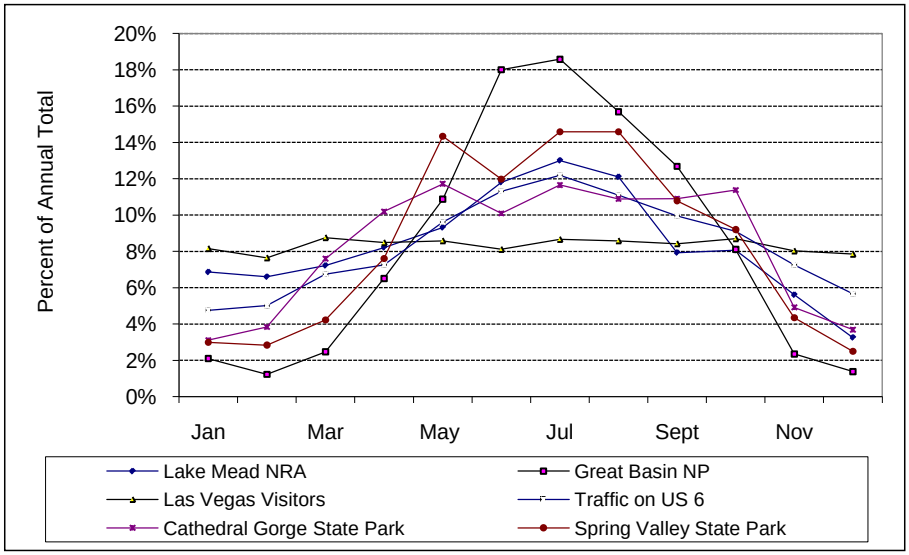
Hunting and fishing on public and private lands in the region are another source of economic contributions to the local economy. Much of the activity is by residents, but spending by non-local and out-of-state residents, including guide and outfitting fees, supports local hospitality establishments, outfitters, and private landowners.

More than one in four Nevada residents and nearly one of three Utah residents actively engage in wildlife watching as a leisure time pursuit. The importance of such non-consumptive enjoyment of wildlife is increasingly being recognized

by state wildlife management agencies, as well as local tourism and economic development agencies. Birders and other wildlife watchers who visit the NWRs and public lands in the region are recognized as an important outdoor recreation user group in the Baker/ GBNP area.

Sportsmen and wildlife watchers make significant expenditures while engaging in their pursuits. According to the 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation, average annual expenditures in Nevada ranged from $528 for wildlife watchers to $2,049 per resident hunter. Average expenditures by Utah anglers and hunters were slightly lower than those by Nevadans, but the average expenditures by Utahans engaged in wildlife watching were higher. Average expenditures by non-residents are considerably higher as a result of travel, higher non-resident license costs, and the costs of guides and outfitters. With the expenditures by non-residents, total estimated annual expenditures were $637 million in Nevada and $1.2 billion in Utah (USFWS 2007).

Tourism and recreation occur throughout the year. There is, however, a pronounced summer-fall season in the rural counties (**Figure 3.18-7**). Approximately 65 percent of annual visitation to the GBNP occurs in the 4-month period of June through September. Visitor use at the Lake Mead National Recreation Area, state parks in the area, and traffic on U.S. 6 south of Ely all exhibit seasonal peaking, though it is not as pronounced as at GBNP. Such seasonal fluctuations are in contrast to visitation patterns in Las Vegas, which show a high degree of uniformity over the year.



Sources: NPS 2007; Nevada Division of State Parks 2008; LVCVA 2007; NDOT 2007b.

Figure 3.18-7 Monthly Visitation or Traffic as A Percent of Total Annual Use or Traffic

The seasonal nature of tourism has implications for local businesses and the jobs they provide. As noted above, a sense of tenuousness exists across the rural counties regarding their economic future. Tourism and recreation, though much smaller in scale than in Clark County, are viewed as vital elements of the local economies. Many local businesses are economically dependent on tourism and recreation, at least to a degree, whether they cater to all-terrain vehicle (ATV) enthusiasts, shed hunters (collection of antlers shed by deer and elk), big game hunters, overnight visitors drawn by scenic vistas, solitude and the night skies, or part-time residents owning second homes in the region. The purchases of private ranches by non-local corporate and institutional interests, including the Southern Nevada Water Authority, and future groundwater development are seen as threatening the region's tourism and recreation industry. Potential threats include limits on historical hunter access, changes in farming and ranching practices that affect wildlife, the potential indirect effects of groundwater drawdown and soil stability that affect visibility, night skies, and travel patterns of tourists; all of these could adversely affect the level of tourism and the economic contributions it provides. Tertiary effects of the water rights appropriation process and long-term groundwater drawdown effects on wildlife and tourism

are viewed as threatening long-term second home development, which is viewed as another important dimension of economic development in the rural areas.

3.18.1.4 Personal Income and Poverty

Personal income is an important measure of economic well-being. Total annual personal income trends in the study areas reflect key economic and demographic conditions described above. During the 17-year period 1990 to 2007, Clark County registered a 379 percent increase in total personal income, from $15 to $71.6 billion (**Table 3.18-11**). General inflationary trends would account for about 16 percent of the increase and population growth another 38 percent of the change (BEA 2009; BLS 2008). The residual reflects general increases that translate into per capita income growth over time. All four rural counties have total personal income substantially below that of Clark County, with totals ranging from $103.9 million in Lincoln County to $338.7 million in White Pine County.

Table 3.18-11 Total Annual Personal Income, 1990 and 2007 ($ Millions)

	Nevada	Clark	Lincoln	White Pine	Utah	Juab	Millard
1990	$24,836.8	$14,954.6	$68.6	$157.5	$25,817.3	$68.0	$155.0
2007	$101,799.0	$71,622.4	$103.9	$338.7	$79,617.9	$214.1	$314.1
Changes 1990 to 2007							
Absolute	$76,962.2	$56,667.8	$35.3	$181.2	$53,800.6	$146.1	$159.1
Percent	310%	379%	51%	115%	208%	215%	103%
Population Change	209%	131%	16%	-3%	43%	57%	8%

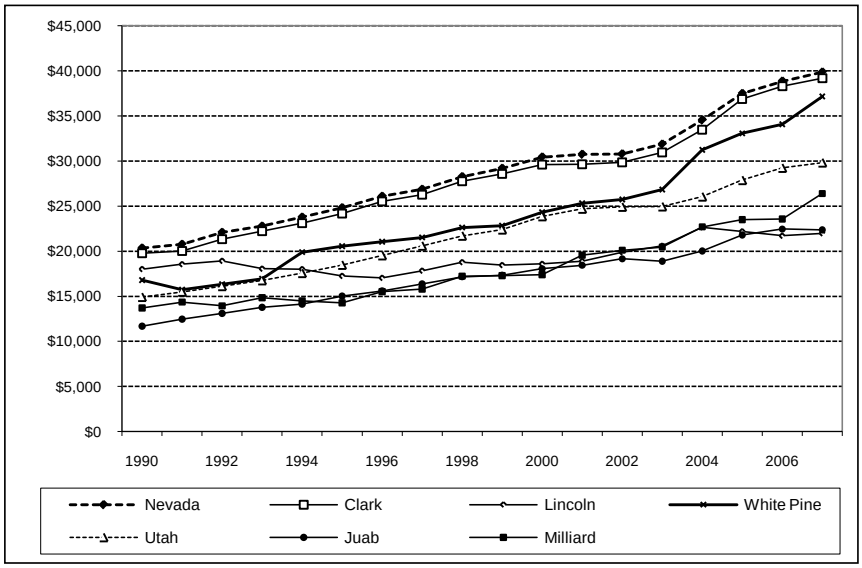
Source: U.S. Bureau of Economic Analysis 2009.

Net increases in total personal income in White Pine, Juab, and Millard counties were larger than the compounded effects of population change and inflation over the period indicating a net increase in real per capita income of residents. The growth in total personal income in Lincoln County between 1990 and 2007 was 51 percent, lagging the pace of inflation during the period (which was over 60 percent). Net population growth during the same period implies a net decline in real per capita income of local residents over time.

Trends in per capita income, including the lower per capita incomes, comparatively slower growth rates in the rural counties, and general differences in statewide averages between Nevada and Utah are shown in **Figure 3.18-8**. A sharp increase in per capita income is evident in White Pine County, tied to the reopening of the Robinson Mine near Ely.

Per capita personal incomes in 2007 ranged from $21,988 in Lincoln County to $39,853 in Clark County. Among the five counties, only Clark County exceeded the national average of $38,615. The per capita income of $37,176 in White Pine County was 96 percent of the national average. Per capita incomes in the other counties were all less than 70 percent of the national average, with that in Lincoln County of $16,627, trailing by the widest margin (**Table 3.18-12**).

The consistently lower incomes in the rural counties manifest themselves in a higher incidence of poverty and low income as measured by individual or family income relative to a defined threshold. The incidence of poverty ranged from 10.4 percent in Juab County to 16.5 percent in Lincoln County, compared to the national average of 12.4 percent.



Source: U.S. Bureau of Economic Analysis 2009.

Figure 3.18-8 Changes in Per Capita Income, 1970 to 2007

Table 3.18-12 Comparative Per Capita Income, 2007

	Per Capita Income 2007	Difference Local vs. U.S.	Local As A Percent of U.S.
U.S.	$38,615	$0	100%
NEVADA	$39,853	$1,238	103%
Clark, Nevada	$39,188	$573	101%
Lincoln, Nevada	$21,988	($16,627)	57%
White Pine, Nevada	$37,176	($1,439)	96%
UTAH	$29,831	($8,784)	77%
Juab, Utah	$22,374	($16,241)	58%
Millard, Utah	$26,397	($12,218)	68%

Source: U.S. Bureau of Economic Analysis 2009.

3.18.1.5 Housing

An area's housing supply and increases in that supply over time are important indicators of economic and population growth, or lack thereof, as well as being a precursor of potential changes in social conditions. At the time of Census 2000, housing vacancy rates of non-seasonal units in the study area ranged from 7 percent in Clark County to 22 percent in White Pine County. Vacancy rates in White Pine County reflected the economic woes affecting the local mining industry at that time.

Between 2000 and 2007, residential construction in Clark County averaged of nearly 33,000 new units per year. Buffeted by the effects of the national recession and sub-prime mortgage crisis, the pace of residential construction in Clark County declined sharply in 2008, although new residential construction continued. Building permits for 2,830 new residential units were issued in Clark County during the 6-month period of January through June 2009, which was approximately 60 percent fewer than for the corresponding period in 2008 and nearly 75 percent below the

corresponding period in 2007. Whereas nearly 90 percent of units permitted in 2007 were single-family homes, in 2009, single-family homes accounted for only about half of the total. In terms of location, 49 percent of the new units permitted in 2009, were to be built in unincorporated areas of Clark County, 22 percent in Las Vegas, 20 percent in Henderson, and the remainder in Mesquite and other communities. The net result was a gain of more than 280,000 new housing units being added in Clark County between 2000 and 2010, a net increase of 50 percent and an average of 28,000 new units per year over the decade (**Table 3.18-13**). The 2010 Census recorded an overall housing vacancy rate of 15 percent in Clark County.

Table 3.18-13 Housing Inventory, 2000 and 2010

	Census 2000 Total Housing Units	Census 2010 Total Housing Units	Net Change in Total Housing Units 2000 to 2010	Overall Housing Vacancy Rate 2010
Clark County	559,784	840,343	280,559	15%
Lincoln County	2,178	2,730	552	27%
White Pine County	4,439	4,498	59	18%
Juab County	2,810	3,502	692	12%
Millard County	4,522	4,939	417	15%

Source: U.S. Census Bureau 2011a, 2002a.

In contrast to the rapid pace of development in Clark County, new residential development since 2000 has been more modest in Lincoln and White Pine counties. The two counties registered a combined net increase of 611 units, 552 of those in Lincoln County where residential growth was driven primarily by retirees relocating to the area and households with members commuting to jobs in Clark County. The limited scale of new residential development in White Pine County, suggested by the net change in housing units, masks population growth as many incoming households were able to find existing, affordably priced housing. Vacancy rates of 27 percent and 18 percent were reported in the 2010 Census for Lincoln and White Pine counties, respectively. Future residential development is envisioned in southern Lincoln County, primarily in the Coyote Springs and Toquop planned developments, although the pace of such development hinges on the timing and strength of the economic recovery.

Substantial new residential development occurred in Juab and Millard counties since 2000, with a combined gain of more than 1,100 units. Virtually all of the new construction occurred in the eastern portion of the two counties, far removed from the indirect effects study area. Those areas are generally marketed as affordable alternatives to households economically tied to jobs in the Provo-Orem area. At the time of the 2010 Census, the overall vacancy rates were 12 percent in Juab County and 15 percent in Millard County.

Temporary private lodging, including hotel and motel rooms, guest lodges, and recreational vehicle (RV) sites, are important dimensions of the region's tourism and recreation economy. Such lodging, along with available rental housing, could also support temporary housing needs associated with GWD Project construction. Project-related needs could compete with the traditional uses and markets for those units. The potential for such competition to occur is particularly acute in Lincoln County and in the Snake Valley, due to limited availability, and in Ely due to the community's efforts to promote its tourism and convention trade. **Table 3.18-14** summarizes the lodging accommodations and the number of RV spaces, as well as a qualitative assessment of rental housing availability to meet project needs. Ely hosts the largest concentration of rooms and RV spaces in the rural area where the limited availability contrasts sharply with the more than 148,000 rooms and more than 5,000 RV spaces in Clark County.

Additional RV parking and camping opportunities are available at state parks and at federally managed developed and dispersed recreation areas in the region. However, these facilities are not included in the above inventory, as they not intended for long-term use by construction workers.

Table 3.18-14 Lodging and Rental Housing Availability

	Hotels/Motels	Total Rooms	Mobile Home / RV Parks	Total Spaces	Rental Housing Availability
Clark County	300+	148,941	33	> 5,000	Good
Lincoln County	< 10	< 100	< 10	< 100	Limited
White Pine County	25 – 30	700 – 750	10	200 - 250	Limited
Juab County	0 – local 4 – Nephi (100+ miles)	0 – local	0 – local	0 - local	Essentially None
Millard County	1 – local 4 – Delta	29	0 – local	0	Essentially None

Sources: White Pine Chamber of Commerce and White Pine County Tourism and Recreation Board 2007; LVCVA 2010, 2007a,b; Nevada Commission on Tourism 2007; Utah Office of Tourism 2007.

3.18.1.6 Public Facilities and Services and Local Government

The respective county governments are the primary units of local governance and key public service providers in the rural portion of the study area because virtually the entire area is unincorporated. Ely and Caliente are the only two incorporated municipalities in the portions of the four rural counties located near proposed project facilities or within the indirect effects study area. The county governments conduct required statutory and administrative functions for their respective jurisdictional territories, such as public recording, property assessment, law enforcement and public safety, criminal justice and courts, local road and bridge maintenance, and fiscal management. In White Pine and Lincoln counties, the counties also serve as the umbrella administrative organization for the unincorporated towns. There are no incorporated towns located in the western portions of Juab and Millard counties.

A number of special service districts exist in the rural counties, each providing one or more services or functions under the direction of a separate board or commission. Special districts may serve the entire county or a defined service area. **Table 3.18-14** lists the local governments and special districts, along with the functions of the latter, for the rural portions of the study area.

Water providers in the rural areas include municipal utilities in Ely and Caliente, Pioche Public Utilities, Panaca Farmstead Association, Alamo Water and Sewer General Improvement District (GID), Baker Water and Sewer GID, and Coyote Springs GID. All of these providers rely on groundwater wells for their water supplies and several are facing issues related to water quality standards for arsenic.

In addition to the county governments, there are 5 municipalities and more than 25 service districts in Clark County. Seven of the service districts, including the Southern Nevada Water Authority, are water districts engaged in some aspects of water development, treatment, and/or distribution. Only Clark County and the SNWA are listed in **Table 3.18-15** because the service areas for the others are quite distant from the project facilities and ROWs and/or they are unlikely to be directly affected by the project.

Law enforcement, fire suppression, and emergency medical services are among the more important public services provided to residents, businesses, visitors, and other governmental entities, These services may see project-related demands, principally during construction and also during long-term operations. Staffing levels, response times, and the type and level of service provided mirror the geographic area of coverage, population, and underlying local fiscal resource base of the counties and other providers. **Table 3.18-16** identifies the primary law enforcement agencies serving the study area and the locations and types of emergency medical service providers.

Table 3.18-15 Key Local Governments and Special Districts

Local Governments	Special Districts[1]
Clark County, Nevada	Southern Nevada Water Authority
Lincoln County, Nevada City of Caliente Town of Alamo (unincorporated) Town of Panaca (unincorporated) Town of Pioche (unincorporated)	Alamo Sewer and Water GID[2] Coyote Springs GID (water and wastewater) Lincoln County Hospital Lincoln County Regional Transportation Lincoln County Television LCWD Pahranagat Valley Fire Pioche Fire TRI GID
White Pine County, Nevada City of Ely Town of Baker (unincorporated)	Baker Water and Sewer GID White Pine County Hospital White Pine Television White Pine Tourism and Recreation
Juab County, Utah	Juab Special Service Fire District Juab Special Service District #2 (civic infrastructure)
Millard County, Utah	Millard County Fire District

[1] Many of the municipalities and special districts in Clark County could be indirectly affected by changes in future economic and growth scenarios, including those associated with alternative assumptions about water availability. However, detailed assessments of potential impacts on individual municipalities and districts are beyond the scope of the analysis.

[2] GID is an abbreviation for general improvement district, a form of special district that provides one or more types of facilities and services to a defined service area, the service territory of which may include areas in two or more counties.

Sources: Nevada Department of Administration 2007; Utah State Auditors Office 2007.

Table 3.18-16 Selected Public Service Providers in the Study Area

	Law Enforcement	Hospitals	Fire Departments	EMS / Ambulance
Clark County	Las Vegas Metro Police Nevada Highway Patrol	Las Vegas metro (multiple), Mesquite	Clark County Fire Department (paid professional in metro area) Rural stations in Moapa Valley (volunteer)	Clark County Fire Department (paid professional) Private ambulance Air ambulance
Lincoln County	County Sheriff Nevada Highway Patrol	Caliente	Pioche (volunteer) Panaca (volunteer) Caliente (volunteer) Pahranagat Valley [Alamo] (volunteer) Eagle Valley (volunteer)	Pioche (volunteer) Panaca (volunteer) Caliente (volunteer) Pahranagat Valley [Alamo] (volunteer) Eagle Valley (volunteer) Air ambulance from Las Vegas
White Pine County	County Sheriff Nevada Highway Patrol	Ely	Ely (combination) Snake Valley [Baker/Garrison] (volunteer)	Ely (volunteer) Snake Valley [Baker] (volunteer) Air ambulance in Ely or from Las Vegas or Elko
Juab County	Deputy Sheriff (jointly funded with Millard and Beaver counties)	Nephi (100+ miles) *Ely is closest*	Callao (volunteer) Granite Ranch (volunteer)	Granite Ranch (volunteer) Air ambulance from Salt Lake City or Provo
Millard County	Deputy Sheriff (jointly funded with Juab and Beaver counties)	Delta (80+ miles) *Ely is closest*	EskDale (volunteer) Snake Valley [Baker/Garrison] (volunteer)	Garrison (volunteer) Air ambulance from Salt Lake or Provo

Note: (volunteer) denotes a volunteer based service.

Sources: Clark County Fire Department 2007; Fire Departments Net 2007; Las Vegas Metropolitan Police Department 2006; Nevada Department of Public Safety (no date); Utah Department of Public Safety 2006; American MedFlight 2011.

The Nevada Highway Patrol provides coverage throughout the Nevada portion of the study area and the Utah Highway Patrol provides coverage in the Utah portion of the study area. The Nevada Highway Patrol has officers stationed in Mesquite, the Las Vegas Valley, Alamo, and Ely. There are no Utah State Patrol officers based in the Utah portion of the study area; troopers are dispatched from offices in Fillmore when necessary.

The Las Vegas Metro Police department provides law enforcement in the unincorporated areas of Clark County. The respective Sheriff's offices provide coverage in White Pine and Lincoln counties. For the former, deputies are dispatched from Ely. In Lincoln County, deputies are based in Pioche and Alamo. A single deputy, based in Garrison and jointly funded by Juab, Millard, and Beaver counties, serves the Utah portion of the study area.

Community-based acute care hospitals with emergency rooms are located in Caliente and Ely. When care requirements exceed local capabilities, trauma care facilities are located in the Las Vegas Valley or in Salt Lake City, with air ambulance service available to transport accident victims and other critically ill patients. American MedFlight has a fixed-wing air ambulance based in Ely. (American MedFlight 2011) There are no hospitals in western Juab or Millard counties. William Bee Ririe Hospital in Ely is the closest facility for most residents of the Snake Valley and Delta Community Medical Center is the nearest hospital in Utah.

The BLM and USFS provide fire suppression on the public lands they manage in the region. Local fire departments provide emergency medical response and fire suppression across most of the rural portions of the study area, often working in concert with law enforcement and local search and rescue teams. All of the rural departments rely on volunteer firefighters and emergency medical technician (EMT)/paramedics. The fire departments and ambulances are typically community-based but respond to calls in outlying areas of their respective service response territories, most of which are highway accidents. Response times vary but can be lengthy. There is a high degree of cooperation among the providers in an attempt to reduce burdens on volunteers and maintain coverage across the area. For example, an ambulance transporting a patient from the Snake Valley may meet one dispatched from Delta, transfer the patient and allow the former to return.

The Clark County Fire Department covers the rural portion of the county, as well as unincorporated areas in the Las Vegas area. It operates nearly 50 stations, including 4 in northeastern Clark County. Stations in the urban area are staffed by paid professionals while the rural stations in the northeastern portion of the county are volunteer based.

Schools serve important roles in the economic and social structures of rural communities. They provide a sense of community identity, are a focal point for community gatherings, provide jobs, and offer a degree of autonomy. Maintaining local schools in rural areas reduces the time school-age children are in transit, reduces the need to board children in town or to have a parent move into town, and in the case of children from ranch families, allows them to continue traditional ways of helping with chores.

Four school districts serve the rural areas; countywide unified school districts serve White Pine, Lincoln, and Millard counties and the Tintic School District provides public education in western Juab County. Fall enrollments in 2007 ranged from 238 in the Tintic District to 2,852 in the Millard County School District. Many schools in the study area, including those in the Snake Valley, are small, one- and two-room schools serving multiple grades. The White Pine and Millard school districts cooperate in serving the Snake Valley. Rather than operating separate schools with a single or only a few students in a class, they each operate schools with several grades and allow students living in the other district to attend. **Table 3.18-17** presents summary statistics for the public school districts and identifies the schools, location, and grades taught in or near the study area.

The Clark County School District is the largest in the state in terms of enrollment. Fall enrollment in 2007 was 308,783 students in 349 public schools. Nearly 16,000 additional students enrolled in private schools. The total is nearly 33 percent above the 231,765 students enrolled in public and private schools in the fall of 2000, and another indication of the recent population growth in the Las Vegas Valley. Ninety-nine new public schools have opened since 2000 to accommodate the growth. There are no public schools located near any of the proposed facilities.

Table 3.18-17 Public School Enrollment, Total Schools and Schools In/Near the Study Area

	Total Enrollment Fall 2007	Number of Public Schools in District	Schools In/Near The Study Area School Name (Location and Grades)
White Pine County School District	1,443	8	Baker Elementary (Baker 3-6) [School operates under a cooperative program with Millard County]
Lincoln County School District	953	9	Caliente Elementary (Caliente K-6) Panaca Elementary (Panaca K-6) Pioche Elementary (Pioche K-6) Bastian (Caliente 6-12) Meadow Valley Middle (Panaca 7-8) Pahranagat Valley Middle (Alamo 6-8) Lincoln County High (Panaca 9-12) Pahranagat Valley High (Alamo 9-12)
Tintic School District (Juab County)	238	5	Callao School (Callao K-8) West Desert Elementary (Partoun/Trout Creek K-6) West Desert High (Partoun/Trout Creek 7-12)
Millard County School District	2,852	11	Garrison Elementary (Garrison K-2) Garrison Secondary (EskDale 7-8) EskDale High (EskDale 9-12) [These schools operate under a cooperative program with White Pine County]
Clark County School District	308,783	349	None in area potentially affected by production-related drawdowns

Sources: Nevada Department of Education 2007, 2006; Utah State Office of Education 2007a,b.

The county governments in the study area rely heavily on ad valorem tax revenues, commonly referred to as property taxes, to support public services and facilities. Although assessment practices differ in Nevada and Utah, the resulting taxable valuations[5] are indicative of the underlying tax bases for the respective counties. Total taxable valuations for recent years, for each county, are shown in **Table 3.18-18**. Countywide assessed valuations in 2009-10 ranged from $194.8 million in Lincoln County to $93.9 billion in Clark County. The assessed valuation of $1.8 billion for Millard County is bolstered by the valuation on the Intermountain Power Plant located near Delta. The $382.3 million valuation for White Pine County included $185.6 million in net proceeds of mining assessment, primarily on production from the Quadra Mining Robinson Mine near Ely (Nevada Department of Taxation 2010; Utah State Tax Commission 2010). Net proceeds of mining can vary dramatically year-to-year due to changes in production rates, allowable deductions and market prices. Taxable valuations on residential and commercial real property were traditionally viewed as being relatively stable or climbing over time in response to new development and real estate appreciation. As such, ad valorem taxes provided a foundation for general government operations and long-term debt service. Effects of the recent recession, many of which persist, included lower property values, particularly in Clark County. As a result, the ad valorem tax base for Clark County fell by more than 45 percent in 2 years. The other four counties in the study area also saw declines in their tax base, but of a substantially smaller scale.

[5] The terms “taxable value” (Utah) and “assessed valuation” (Nevada), are generally equivalent to each other, referring to the base value to which the tax rate is applied. Taxable value represents the estimated market value of property, multiplied by the applicable assessment ratio for a particular class of property.

Table 3.18-18 County Ad Valorem Tax Valuations, 2003-2004 to 2010-2011 (Millions)

Tax Year	Clark County	Lincoln County	White Pine County	Juab County	Millard County
2003 – 2004	$ 45,903.4	$ 112.8	$ 126.3	$ 456.8	$ 1,887.9
2004 – 2005	$ 51,566.6	$ 97.2	$ 115.6	$ 541.0	$ 1,833.9
2005 – 2006	$ 68,132.6	$ 111.1	$ 171.4	$ 632.0	$ 1,811.5
2006 – 2007	$ 94,658.2	$ 163.8	$ 410.1	$ 675.3	$ 1,833.6
2007 – 2008	$ 110,310.2	$ 181.3	$ 404.9	$ 737.1	$ 1,890.2
2008 – 2009	$ 118,805.5	$ 190.0	$ 370/8	$ 759.3	$ 1,943.3
2009 – 2010	$ 93,874.5	$ 212.8	$ 382.3	$ 711.3	$ 1,801.0
2010 - 2011	$ 63,926.3	$ 194.8	$ 373.4	N/A	N/A

Sources: Nevada Department of Taxation 2010; Utah State Tax Commission 2010.

Property taxes levied on the local tax bases go to support the general funds of the counties. Other taxing jurisdictions, including school districts, municipalities, and service districts, also may realize revenues from levies imposed on the assessed valuation within their respective service areas (though not all service providers impose property taxes). Under Nevada statutes, SNWA is not authorized to levy an ad valorem tax. SNWA is funded by a combination of operating and non-operating revenues, the former derived primarily from wholesale water delivery charges to its purveyor members. SNWA's major non-operating revenue sources include connection charges, proceeds from a ¼-cent sales tax on taxable sales in Clark County, funding made available under the provisions of the Southern Nevada Public Lands Management Act, regional commodity and reliability charges, and miscellaneous other charges (SNWA 2011).[6]

Intergovernmental revenues, including distributions of state-shared revenues, and other taxes, licenses, fees, and earnings also support the county general funds. The rural counties generally realize a higher share of their total revenues from property taxes than does Clark County. Clark, Juab, and Millard counties each realize more than 45 percent of their general fund revenues from other sources. In the case of Clark County, the diversity reflects both the options and perhaps necessities of tapping into additional revenues to address the needs in a large metropolitan area during periods of rapid growth. Lincoln and White Pine counties are more dependent on intergovernmental transfers than are the other three counties. In the case of Juab and Millard counties, the increased use of other revenues, at least in comparison to White Pine and Lincoln counties, reflects many factors including underlying differences in local government finance between the states.

In recent years, a substantial portion of the receipts underpinning the state-shared revenues in Nevada were derived from taxes and fees associated with new residential and commercial construction in Clark County and from gaming revenues. The declines in such revenues that accompanied the slowdown in new development in the wake of the national economic recession have contributed to budgetary pressures on the state and local governments and public education across the state.

The purchases of private ranches by the SNWA and the prospects of the development and transbasin diversion of groundwater have raised fiscal concerns for some of the local governments in the rural areas. The concerns include:

- The removal of the real property from local tax rolls and reduction in sales tax receipts related to farm operations due to SNWA's tax exempt status,
- Potential indirect adverse effects on local businesses operating revenues and taxes if SNWA uses its institutional procurement programs to buy supplies outside the region that historically had been purchased locally, and

[6] Additional information regarding SNWA's financial structure and condition can be found on SNWA's internet site: http://www.snwa.com/html/about_index.html.

- The potential effects of transbasin diversions in constraining local economic development, the loss of future public sector fiscal support associated with foregone development, and the effect of SNWA's groundwater development project in increasing the costs to develop remaining waters reserved by the State Engineer for local needs.

To address the first of these concerns, the SNWA and White Pine County have an agreement under which the SNWA will make "in lieu of tax" payments to offset some of the tax revenue reductions. The latter two issues are more difficult to address. The former involves trade-offs between the SNWA's interests in managing costs for its purveyor members and what some see as a modest marginal cost to the SNWA to provide fiscal support for local governments that may be adversely affected by the project, particularly given the overall project costs and benefits to accrue to the Las Vegas Valley. The latter also involves trade-offs between SNWA's right to pursue cost-efficient development of public water appropriated to it by the State Engineer and the general public interest in maintaining economically and socially viable rural communities.

3.18.1.7 Social Organization and Conditions

This section describes relevant social conditions in the geographic area potentially affected by the Proposed Action and alternatives. The focus of this section is on the areas containing and surrounding the ROWs and proposed groundwater development areas although social conditions in the Las Vegas Valley pertaining to the groundwater development project are also discussed. Information for this section was obtained from the draft Proposed Ely RMP/Final EIS (BLM 2007), review of the EIS scoping record, NSE hearing exhibits, attendance at and records of public meetings, newspaper and magazine articles and editorials concerning the proposed project, and from personal interviews and secondary sources as cited. Individuals interviewed as part of this assessment included local elected and appointed officials and staff, economic development officials, ranchers, business owners and managers, individuals associated with organized recreation user groups, and others. Additional information on the historical context for settlement and development in the study area "communities of place,"[7] current social trends, affected populations and interest groups, attitudes and opinions within the socioeconomic study area and the ongoing social effects of the proposed project can be found in **Appendix F3.18**.

From a social standpoint, "communities" include not only settlements, towns and cities, but also the social linkages associated with economic activities (e.g., ranching, tourism, and recreation services) as well as social institutions (e.g., local governments, schools and churches) and settings that provide forums for social interaction and community dialogue regarding important issues. In many instances, social and economic effects of various actions and policies that occur across the landscape in outlying rural areas manifest themselves in local communities. Communities in Clark, White Pine, and Lincoln counties in Nevada and Millard and Juab counties in Utah may be indirectly affected economically and socially by the Proposed Action and alternatives. However, the following communities in the rural portion of the study area are most likely to experience measurable short-term social and economic effects related to construction or long-term effects associated with groundwater drawdown: Ely and Baker in White Pine County, Caliente; Pioche, Panaca, and Alamo in Lincoln County; and Garrison and EskDale in Millard County. Baker, Garrison, EskDale and the settlements of Callao, Trout Creek, and Partoun (all located in Juab County) collectively comprise the area commonly referred to as the "Snake Valley" community. Some of the direct and indirect social and economic effects of the proposed project would also manifest themselves in the Las Vegas Valley. Much of the material, construction support services, and construction labor for the pipeline and ancillary facilities would come from the Las Vegas Valley. Expansion of Las Vegas Valley's water supply is necessary to support growth and development in the Las Vegas Valley in the future. However, while lack of water would be a constraint to growth, water availability, in and of itself, would not be the underlying cause of future growth. Brief descriptions of each of these communities follow (see **Appendix F3.18** for additional information about communities within the study area).

Ely. Ely is the White Pine County seat and largest community in the rural portion of the study area (2010 population of 4,255). Ely is the regional commercial and service center for the ranching and mining communities in east central Nevada and provides essential medical, emergency, law enforcement, retail, and hospitality services to residents and

[7] A place where people live, work, or otherwise routinely interact.

travelers alike. McGill and Ruth, two unincorporated communities near Ely, share Ely's history linked to mining and are unlikely to be affected by the project.

The Ely Colony. The Ely Colony is the tribal reservation for the Ely Shoshone tribe. The reservation consists of 3 separate parcels, totaling approximately 111 acres, within and near the city of Ely. About half of the estimated 500 members of the tribe reside on the reservation. More than 60 residences for tribal members are located on these lands, as are the tribe's administrative and housing offices, a preschool, clinic, and community center.

Confederated Tribes of the Goshute Indian Reservation. The reservation encompasses nearly 113,000 acres in northeastern White Pine County, Nevada and neighboring Tooele and Juab counties in Utah. The confederated tribes of the Goshute include the Goshute (a Shoshonean people), Paiute and Bannock peoples. Following contact with settlers and Mormon missionaries, the Goshute became active in farming and ranching. The Tribal Center is located in the community of Ibapah, Utah, approximately 65 miles (linear) northeast of Ely but many of the tribal members reside on farms and ranches dispersed across the reservation (Confederated Tribes of the Goshute 2010).

Snake Valley (Nevada and Utah). The Snake Valley straddles the Nevada - Utah border, includes portions of White Pine County in Nevada and Millard and Juab counties in Utah, and is relatively remote and distant from large population centers. Baker, Nevada and the Utah communities of Garrison, Border, and EskDale, and settlements in Gandy, Partoun, Trout Creek, and Callao are located in the valley. These are the only communities within an affected hydrographic basin and Snake Valley and Spring Valley are the only inhabited hydrographic basins associated with the Proposed Action. Although separated by considerable distances over unpaved roads and nominally divided by state and county boundaries, Snake Valley residents consider themselves one community in some respects.

Ranching, grazing, and associated cultivation of hay and other feed crops have been the traditional agricultural activity in Snake Valley. Early visitors to Lehmann Caves began a tradition of tourism and recreation use of the area that has since been bolstered by the designation of nearby GBNP and designation of a segment of U.S. Highway 50 through Millard and White Pine counties as the GBNP Route. Many residents of neighboring Spring Valley, to the west of the mountains in between the two valleys, have social ties to Snake Valley through churches, schools, and other organizations.

Spring Valley, Nevada. Spring Valley is located west of Snake Valley between the Schell Creek and Snake mountain ranges. There are no towns or government facilities in Spring Valley and the sole retail business is an RV park/convenience store and bar located on the west side of the valley along U.S. 6 and 50. As noted above, Spring Valley residents, primarily ranchers and ranch employees, have social linkages to Snake Valley and Ely. Children of Spring Valley residents attend school in Snake Valley or Ely, or in some cases, are home schooled.

There is a history of agricultural land consolidation in Spring Valley; most of the existing ranches in the valley are assemblages of parcels from prior homesteads. Recently, SNWA acquired a number of ranches in the southern and central portions of the valley. The purchase by SNWA of ranches in Spring Valley has accelerated social change in the valley. Some ranchers and ranch employees have left the area, some remain in retirement, while others remain to manage or lease SNWA-owned ranches. More recently, meteorological conditions in Spring Valley have made it a node for wind energy development.

Caliente. Caliente is the only incorporated town in Lincoln County and is centrally situated in the county in a north-south context. U.S. 93 runs through the town, linking Caliente with Panaca, Pioche, and Ely to the north and Alamo and the Las Vegas Valley to the south. Initially a ranching center, Caliente became a railroad town during the early 1900's. The Union Pacific mainline still operates in Caliente, linking Salt Lake City, Las Vegas, and Los Angeles. Tourism, state and local government services, and commercial trade comprise other elements of the town's economic base and factor heavily in the community's social structure. Geothermal hot springs in the town have long been an attraction for residents and travelers. Caliente may eventually develop the strongest intra-county links to the Toquop energy project and planned unit developments in southern Lincoln County due to the existing road corridor provided by Nevada 317 and county roads.

Panaca. The unincorporated town of Panaca was founded in the 1860's as an agricultural community by members of the LDS Church. Panaca is said to be the oldest surviving town in Nevada (Lincoln County Chamber of Commerce 2007). Agriculture plays a central role in the community, anchored by several large ranches. The town has a small but active commercial sector. Travel/tourism are important in the local economy, as the town is situated at the intersection of two major highways linking Panaca to Cedar City, St. George, and the I-15 corridor in Utah. Like Caliente, Panaca benefits from being centrally located in a cluster of six state parks, one of which, Cathedral Gorge, is located just north of town.

Pioche. The unincorporated town of Pioche is the Lincoln County seat. It was a mining center and the largest town in Southern Nevada during the early 1870's, with a population of 10,000 (Lincoln County Chamber of Commerce 2007). Currently, the economic mainstays in Pioche are county and state government, travel/tourism, and commerce supported by the local farming and ranching community. Outdoor enthusiasts, including big game hunters, OHV users, campers, mountain bikers, and others traveling to the nearby Echo Canyon and Spring Valley state parks and other public recreational use areas administered by the BLM and USFS also support local commerce.

Alamo/Pahranagat Valley. The unincorporated town of Alamo is about 100 miles north of Las Vegas on U.S. 93 and is 54 miles southwest of Caliente. Alamo is the business and social center of the Pahranagat Valley, which also houses the settlements of Ash Springs and Hiko. In addition to ranching, economic activities in the Pahranagat Valley include tourism/recreation/travel oriented business as serving highway travelers and visitors to the Pahranagat NWR, nearby ghost towns, and Native American petroglyphs. Local government and education play important roles in the local economy. While serving local needs, U.S. 93 is an important major north-south commercial trucking corridor and an important route for tourists traveling to/from Las Vegas, underscoring the importance of the highway network to supporting the gaming and hospitality industry. Alamo is the nearest community to the Coyote Springs development on the Clark County/Lincoln county line.

Coyote Springs. Coyote Springs is an emerging master-planned community being developed in Clark and Lincoln County east of the junction of U.S. 93 and Nevada 168 and northwest of the community of Moapa and the Moapa Indian Reservation. The Coyote Springs master plan includes multiple golf courses, a range of housing options, and retail and other commercial development. At full build out, which was envisioned to occur over the next half-century, Coyote Springs could have upwards of 200,000 residents (Las Vegas Review Journal 2007). The recent economic recession and collapse of the market for new residential and commercial development prompted the project's master developer of Coyote Springs to position approximately 9,000 acres as a renewable energy center to take advantage of transmission line capacity and proximity to markets. To date, a lease agreement has been completed with BrightSource Energy and marketing of sites for additional projects continues (Coyote Springs Land 2009; BrightSource Energy 2009).

Las Vegas Valley. Clark County encompasses approximately 8,091 square miles of land area. The majority of the county's existing development and resident population are located in the Las Vegas Valley, which encompasses the cities of Las Vegas, North Las Vegas, Henderson, nearby Nellis AFB, and master planned communities and urban scale development in unincorporated areas. The Las Vegas Valley is an evolving, dynamic, full-service and diversified metropolitan area, adding 1.2 million new residents between 1990 and 2010. From the perspective of many residents community leaders and outside observers, the Las Vegas Valley is unique in a way that is fundamental to the community's self and external images. The Las Vegas Valley has been characterized as "the manifestation of American capitalism," "a city of economic opportunity and dreams," "having a much higher risk tolerance than is common across America", and "a city where what other cities would see as constraints are viewed as challenges." The area's achievements in addressing challenges over time have become a source of civic pride and a general feeling of "having arrived", as is echoed on by the banner "World Class City….Global Appeal" on the cover of the 2007 Las Vegas Perspective (Metropolitan Research Association 2007).

Another dimension of the Las Vegas Valley as a community of place is captured in the oft-noted refrain, "as goes [Clark County/Las Vegas/the Valley], so goes Nevada." Although reaction to this perspective ranges from disdain to pride, informed observers describe it as a fundamental recognition of Nevada's economic and fiscal realities. The Las Vegas Valley is home to more than 70 percent of Nevada's residents and accounts for an even larger share of the state's economic activity. The state's tax structure is heavily reliant on gaming and sales and use taxes, the latter including those generated by new construction. Prior to the recession, those three sources together typically accounted for 75 to

80 percent of the state's general fund revenues, and are important to funding local government and education. The reliance on these revenues is a legacy of tax reforms in the 1980s and the integration of tax law into the state's constitution. An implication of the latter is that it imposes a "very purposeful inflexibility" on Nevada's tax structure (Nevada Governor's Task Force 2002). Consequently, the reality of reduced rates of growth or stagnant or declining levels of tourism visitation triggers fiscal concern with statewide reverberations. From the Las Vegas Valley perspective, these fiscal linkages provide the basis for why Nevadans outside the valley have a stake in the health of the local economy (Nevada Governor's Task Force 2002).

Las Vegas Paiute Colony and Reservation. Home to the Las Vegas Tribe of Paiute Indians, the colony initially consisted of 10 acres of land near downtown Las Vegas deeded to the tribe by ranch owner Helen Stewart. In 1983, an act of Congress returned 3,800 acres to Paiute possession in an area known as the Snow Mountain Reservation. That land is located on the northwest outskirts of the Las Vegas metropolitan area. A portion of the Snow Mountain Reservation land is now the Las Vegas Paiute Golf Resort. Tribal enterprises provide the Tribe with a source of employment and an independent source of revenues to support Tribal operations and other economic development endeavors.

Northeastern Clark County. A segment of the proposed project right-of-way, along with the treatment and main water storage facilities, would be located in northeastern Clark County, outside the immediate Las Vegas Valley. The immediate area around the location of these facilities is largely undeveloped. Nearby development includes the APEX industrial complex, zoned for light and heavy industry, located to the west and southwest of the proposed ROW and ancillary facility locations and a major BLM multiple-use transmission corridor located south of the proposed ROW. The Silverhawk natural-gas fired power plant is located in the APEX complex. Other nearby development includes a portion of the Nellis AFB flight range located northwest of the proposed ROW.

The City of Mesquite and nearby unincorporated communities of Bunkerville, Logandale, Glendale, Overton, Moapa and the Moapa Indian Reservation, with a combined population of approximately 30,000 residents, are located in northeastern Clark County, which is more distant from the project right-of-way. Mesquite is a growing retirement and destination resort community, 80 miles from Las Vegas, near the Nevada-Utah state line, and bordering more than 13,000 acres of lands disposed of by the BLM pursuant to the Lincoln County Land Act of 2000 and the LLCRDA. The land is slated for mixed residential, commercial and resort development. Nearby the Valley of the Fire State Park and Lake Mead National Recreation Area also are important elements of the local economies.

Moapa River Indian Reservation. Home to the Moapa Band of Paiute Indians, the reservation encompasses approximately 72,000 acres straddling I-15 in northeastern Clark County. The Moapa Band of Paiutes offers a wide range of social, housing, cultural, education and health care programs in addition to Tribal administration, law enforcement, and court functions. A small portion of the Tribal lands is utilized for farming. The principal economic enterprise for the Tribe is the Moapa Paiute Travel Plaza located at exit 75 on I-15 (Moapa Band of Paiutes 2010). There are about 300 enrolled Tribal members, approximately two-thirds of whom live on the reservation, along with about 250 non-members.

Populations and interest groups who may be affected by the Proposed Action and alternatives include not only the residents of the communities listed above but also people who reside outside the study area but have a connection to the area due to economic interest, resource use, familial ties, land ownership, prior residency or more general public policy or environmental concerns. The interests of Native Americans, particularly as they pertain to historic use of the area and traditional values, are addressed in Section 3.17 of this EIS.

In addition to Native Americans, affected populations generally include the following:

- Ranchers, farmers, and grazing permittees operating within the study area;
- Current, former, and prospective residents of the study area, including those who place a high value on scenic, environmental, recreational, and social amenities;
- Individuals and groups who give a high priority to resource protection;
- Outdoor recreation users with interest in the study area;

- Tourism and outdoor recreation oriented businesses within the rural portion of the study area;
- Other businesses and economic development interests within the rural portion of the study area;
- Residents of the Las Vegas Valley concerned about future availability of water;
- Las Vegas Valley residents concerned about the public cost of the water importation project and the effects of growth that could be enabled by additional water supplies;
- Businesses and economic development interests within the Las Vegas Valley; and
- Utah residents and communities, including those on along the Wasatch Range, concerned about the allocation of Snake Valley water among the states and effects on air quality and other environmental resources.

Note that individuals may be associated with more than one group. For example, some ranchers may also place high value on scenic, environmental, recreational, and social amenities and may also be outdoor recreationists.

Water plays a critical role in the social and economic development of the region. Consequently, events and actions related to water attract public attention and scrutiny, becoming focal points for discourse and debate, both informally among individuals and in more public and formal settings, such as "letters to the editor" in local newspapers, testimony given during Nevada State Engineer water right application hearings and discussions in local county commission proceedings. In this instance, the prior filings of water rights applications, the implications of those filings on regional water development, use and economic development, and SNWA's property acquisitions in the region have given rise to well-formed attitudes and opinions regarding the proposed project that are integral to existing baseline social conditions. The attitudes and opinions regarding the proposed project are complex and vary in specifics across locales and interests and among organizations, groups, and individuals. However, certain general attitudes and opinions tend to be associated with the rural portions of the study area and others with the Las Vegas Valley. A discussion of attitudes and opinions in both portions of the study area can be found in Section 3.18.8.5 of **Appendix F3.18**.

Social conditions in the assessment area have already been substantially affected by both the proposed project and the SNWA water rights applications in Lincoln and White Pine counties. Current effects of the proposed project provide insights into potential effects of implementation of the Proposed Action and Alternatives. The following summarizes some of the current social effects that are described in the Socioeconomic Technical Report of **Appendix F3.18**.

1. Social effects of proposed groundwater exportation began with the 1989 LCWD water rights filings in Lincoln, White Pine and other rural Nevada counties. Subsequent events, including SNWA's active efforts to pursue these water right applications, passage of the LCCRDA, initiation of this EIS, the Nevada State Engineer's earlier rulings granting water rights in Spring, Cave, Dry Lake, and Delamar valleys to SNWA, and the issuance of the draft Utah/Nevada Agreement for Management of the Snake Valley Groundwater System, have signaled to some affected parties that the proposed project was moving forward. More recently, the January 2010 court rulings on the water rights applications and subsequent suspension of negotiations on the Utah/Nevada agreement by the governor of Utah have signaled to some that the GWD Project may be at risk, or potentially scaled back in scope, should insufficient water rights be appropriated to support the project. These signal events have helped shape the attitudes and opinions of the affected parties.

2. Attitudes and opinions in the rural areas and in the Las Vegas Valley are based on the affected parties' perceptions of risk associated with the project. For many residents of the affected rural areas, which include southwestern Millard County and a portion of extreme western Beaver County in Utah as well as Lincoln and White Pine counties in Nevada, the perceived risks include adverse effects on the physical and biological environment and resident quality of life, health and livelihood. Among residents of the Las Vegas Valley, perceived risks include an inadequate supply of water to support future growth and serve as a buffer against the diminishing supply of Colorado River water under persistent or severe drought in the Colorado River system.

3. Substantial disagreement exists among various hydrogeologists regarding the extent of drawdown associated with the groundwater development project and the effect on surface waters (see **Section 3.3.1**) and about the reversibility or ability to mitigate higher than acceptable levels of groundwater depletion in the hydrologic basins. Such divergent expert opinions emerged in the NSE hearings for the SNWA water rights applications in the

affected hydrologic basins, through newspaper, magazine and journal articles, on websites, and in publications of various advocacy groups with an interest in the project (see Section 3.3.7.2, Water Resources).

4. In the rural portions of the socioeconomic assessment area, the divergent opinions and uncertainties serve to reinforce existing beliefs regarding the lack of available "surplus" groundwater, derived in part through local experience with groundwater depletion associated with agricultural use. Local beliefs regarding potential adverse effects of water exportation are also traced to the Owens Valley experience in California, despite the differences between that example and the proposed SNWA groundwater development project.

5. For many residents of the rural part of the assessment area, the uncertainty, divergent expert opinion and strongly held local beliefs about water resources have led to the position that the proposed project presents an unacceptable risk to their quality of life, health and livelihood for themselves, their children, and future generations. For some, particularly the residents of the Snake and Spring valleys, which are the only appreciably inhabited hydrogeographic basins and to ranching and grazing interests within and adjacent to the other three hydrogeographic basins, offsetting benefits have yet to emerge that would make these risks acceptable.

6. For some people, commercial interests, and governmental entities in the Las Vegas Valley, including those that view the risk of water shortages and curtailed growth as unacceptable, the proposed project represents the most practical and viable option to provide an additional safeguard against future Colorado River water shortages and to support continued growth.

7. Social effects of the proposed project to date include political conflict, social dissension, community discord and personal distress. Political conflict and social dissension have occurred at the interstate level between Nevada and Utah, at the intrastate level between various interest groups, between the rural counties and SNWA/Las Vegas Valley, and at intra-community level, between groups and individuals within the rural counties in Nevada and within the Las Vegas Valley. Community discord has occurred within both Lincoln and White Pine counties between groups and individuals supporting unyielding opposition to the proposed project and those believing that implementation of the project is inevitable and a negotiated settlement with SNWA would be more beneficial. Within Clark County, community discord has occurred between groups and individuals that support continued growth and those that oppose growth at recent levels and the perceived detrimental environmental and social effects of such growth. The potential cost of the proposed project and the associated effects of those costs on ratepayers and taxpayers has also been a source of community discord within the Las Vegas Valley.

8. The proposed project has generated substantial levels of personal distress in the rural parts of the assessment area, as evidenced by scoping comments, statements at public meetings, letters to the editor in local news media, comments on internet sites and personal interviews. Evidence of personal distress in the Las Vegas Valley has been less prevalent but has emerged in some of the same venues around concern for water availability, as well as concern for the effects of continued high levels of growth.

9. Over the years, the social effects of potential transbasin diversion of groundwater include the formation of advocacy organizations, local government committees, and regional authorities. Among the more tangible effects to date of the proposed project on the social context of the rural part of the assessment area are SNWA's purchase of seven ranches in Spring Valley and the subsequent relocation of some of the ranching families whose properties were acquired. Residents of Snake Valley also cite the inability to obtain commercial water rights due to the SNWA water filings as a dampening effect on growth and development in the valley.

3.18.1.8 Environmental Justice

Overview

Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (CEQ 1997). EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, tasks "each Federal agency [to] make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high adverse human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations."

The memorandum accompanying EO 12898 identifies four important ways to consider environmental justice under NEPA.

a) "Each Federal agency should analyze the environmental effects, including human health, economic, and social effects of Federal actions, including effects on minority populations, low-income populations, and Indian tribes, when such analysis is required by the NEPA.

b) Mitigation measures identified as part of a NEPA assessment or a ROD, should address, whenever feasible, significant and adverse environmental effects of proposed federal actions on minority populations, low-income populations, and Indian tribes.

c) Each Federal agency must provide opportunities for effective community participation in the NEPA process, including identifying potential effects and mitigation in consultation with affected communities and improving the accessibility of public meetings, crucial documents, and notices.

d) Review of NEPA compliance (such as EPA's review under Section 309 of the Clean Air Act) must ensure that the lead agency preparing NEPA analyses has appropriately analyzed environmental effects on minority populations, low-income populations, or Indian tribes, including human health, social, and economic effects" (CEQ 1997).

The minority and low-income status of populations within the socioeconomic study area are described in the following section. It also discusses potentially affected Indian Tribes and directs the reader to sections of the EIS describing the BLM's community and Native American participation initiatives. The analyses of potential environmental justice effects of the Proposed Action and alternatives are included in the Environmental Consequences section as are mitigation measures for potential effects on minority and low-income populations and Indian Tribes.

Minority, American Indian, and Low Income Populations

Table 3.18-19 provides information comparing the percentages of racial and ethnic minorities residing in the socioeconomic study area, as reported by the 2000 Census, to the percentages of racial and ethnic minorities in Nevada, Utah and the U.S. as a whole. The prevalence of racial and ethnic minorities in each of the four rural counties was substantially lower than that of their respective states. At 39.9 percent, the percentage of racial and ethnic minorities in Clark County was higher than Nevada as a whole (34.9 percent). Most of the minority population resides in the Las Vegas Valley, which is some distance from the sparsely populated portion of Clark County within the proposed pipeline corridor and associated groundwater development basins, although the western boundary of the Moapa Indian Reservation lies several miles east/northeast of the southern terminus of the pipeline and water treatment facility.

Regarding racial and ethnic minority populations[8], Juab, Millard, and Lincoln counties had lower percentages of populations than did their respective states. The American Indian and Alaskan Native population in White Pine County was 3.4 percent of total population (312 persons) as compared to the Nevada statewide average of 1.1 percent. Most of the American Indian population in White Pine County resided in the Ely Colony near the City of Ely.

No tribally owned lands or mineral resources or lands or minerals held in trust for Indian Tribes by the federal government are located within or near the pipeline corridor or within the Native American Traditional Values analysis area considered for this assessment. All or substantial portions of four Native American reservations or colonies are located in White Pine or Clark counties. Populations increased between 1990 and 2000 on three of the four reservations, with the number of inhabitants ranging from 105 on the Goshute Reservation to 206 on the Moapa River Reservation in 2000 (see **Table 3.18-5** for information on the resident populations on American Indian Reservations in and near the study area). However, many tribal members affiliated with those reservations, as well as members of other tribes, live outside the reservation boundaries.

[8] Black or African American, Hispanic or Latino, American Indian and Alaskan Native, Asian or Native Hawaiian or other Pacific Islander.

Table 3.18-19 Racial and Ethnic Population Composition in Select Counties and Geographic Comparison Areas, 2000

Geographic Area	Percentage of Total Population	
	Total Racial and Ethnic Minorities	Difference in the Percent Minority Population Above/Below the State Average
U.S.	30.9	NA
Clark County	39.9	5.0
Lincoln County	9.9	-25.0
White Pine County	20.6	-14.3
Nevada	34.9	NA
Juab County	4.8	-9.9
Millard County	9.5	-5.2
Utah	14.7	NA

Notes: Racial minorities include all persons identifying themselves in the census as a non-white race, including "Black or African American," "American Indian and Alaska Native," "Asian," "Native Hawaiian and Other Pacific Islander," "Some other race alone," and "Two or more races." Ethnic minorities include persons who identify themselves as Hispanic or Latino. Persons of Hispanic or Latino origin can identify themselves as part of any race (including white) and as persons of Hispanic or Latino origin or an ethnic minority. The racial group of White Alone does not include persons of Hispanic or Latino origin.

Source: U.S. Census Bureau 2002b.

A small portion of the Fort Mohave Reservation is located in extreme southern Clark County, quite removed from the study area, and three other reservations are located in surrounding counties in Nevada and Utah. Other tribes have historic cultural interests in the area. Those interests are described in additional detail in sections 3.16 and 3.17 of this EIS, which address Cultural Resources and Native American Traditional Values.

The 1999 incidence of low income and poverty, as reported by the U.S. Census Bureau, was higher in the rural counties than in Clark County, with many of the affected residents also being retired and on fixed incomes (**Table 3.18-20**). Persons living in poverty in Lincoln County in 1999 were six percent higher, when expressed as a percent of total population, than the Nevada statewide average. In Millard County, the percentage of population living in poverty was about four percent higher than the Utah statewide average. The economic circumstances of these individuals tend to make them less mobile in terms of being able to relocate in response to adverse economic and/or social changes.

Table 3.18-20 Incidence of Poverty, 1999

Geographic Area	Share of Population: Below Poverty Level (%)	Share of Population: Below 200% of Poverty Level	Percent of Population Below Poverty Above the State Average	Percent of Population Below 200% of Poverty Above the State Average
United States	12.4	29.6	NA	NA
Clark County	10.8	28.0	0.3	0.4
Lincoln County	16.5	37.1	6.0	9.4
White Pine County	11.0	31.2	0.5	3.5
Nevada	10.5	27.7	NA	NA
Juab County	10.4	34.3	1.0	6.6
Millard County	13.1	38.6	3.7	10.9
Utah	9.4	27.7	NA	NA

Source: U.S. Census Bureau 2002b.

Opportunities for Effective Community Participation in the NEPA Process

Section 1.4 of this EIS details the Public Scoping process conducted for this EIS. Section 3.17 (Native American Traditional Values) details the ongoing government-to-government consultation and other Native American consultation efforts undertaken by the BLM as part of this NEPA effort.

3.18.2 Environmental Consequences

3.18.2.1 Rights-of-way

Issues

The following issues for socioeconomic resources are considered as part of the assessment of impacts of pipeline and ancillary facility construction and operation. Socioeconomic effects related to groundwater development and pumping actions that are subject to additional NEPA and future decisions (subsequent tiers) are addressed programmatically in the next section, Section 3.18.3.

- The employment, income, and population/migration effects related to temporary work force requirements to build the major facilities.
- The employment, income, and population/migration related to permanent work force requirements to maintain and operate the major facilities.
- The magnitude and timing of project-related demand for temporary housing during construction and permanent housing during operation and maintenance of the pipeline and ancillary facilities.
- Demands on local infrastructure and public facilities and services during construction, operation, and maintenance of the pipeline and ancillary facilities.
- Fiscal effects associated with project construction, operation, and maintenance of the pipeline and ancillary facilities.
- Effects on social organization and conditions associated with construction and operation of the pipeline and ancillary facilities.
- The potential for construction and operation of the pipeline and ancillary facilities to result in disproportionate and adverse effects on low-income and minority populations.

Assumptions

- The project construction timetable and direct construction employment assumptions are those outlined in SNWA's POD along with supplemental information provided by SNWA, delineated by major facility component (roads, power lines, pipelines, other facilities).
- SNWA's POD specifies a range of diameters for the main pipeline with the final design contingent upon the expected volume of quantity of water to be conveyed. This analysis assumes that the direct work force requirements for construction would not be appreciably affected by the final design and pipeline diameters.
- Direct long-term facility operating and maintenance employment will be consistent with the estimates outlined in the POD.
- Construction activities on the pipeline, transmission line and ancillary facilities will occur on a year-round basis.
- Construction on the pipeline and transmission line will generally occur in tandem/parallel, e.g., occur concurrently in the same general location.
- The development and operation of one or more temporary construction worker facilities are contemplated in Lincoln County during the period of construction of the pipeline and transmission lines. Potential implications of that action are addressed qualitatively.
- Potential short-term and long-term indirect effects of pipeline and ancillary facility construction on grazing are addressed based on the range resources assessment conducted for this EIS.
- Potential short-term and long-term indirect effects of pipeline and ancillary facility construction on public recreation are addressed based on the recreation assessment conducted for this EIS.
- Indirect potential for disproportionate and adverse effects on Native American populations are addressed based on cultural and Traditional Native American Values assessments conducted for this EIS.

Methodology for Analysis

The assessment process for project-related effects on social and economic values includes review and analysis of existing conditions and trends in population and demographics, migration, economic activity, employment, labor force participation, earnings and income, poverty, land use, housing, local government facilities, services and fiscal conditions, social structure and attitudes, opinions and lifestyles. Information was compiled from available secondary sources, augmented by interviews with local officials and residents. Additional information for the social assessment was obtained from BLM scoping documents, attendance at scoping and other public meetings, review of NSE water rights hearings filings and exhibits, and ongoing review of media coverage and communications on interest group websites.

The primary driver of future socioeconomic impacts associated with construction and maintenance of the pipeline and ancillary facilities is the number of jobs associated with project construction. These jobs, the workers who fill them, and the earnings they receive, along with the capital investment made in infrastructure, initiate events, actions, and other responses that reverberate through the affected social and economic environment in the region. Effects associated with construction would be primarily short-term, while those associated with maintenance would be long-term. Given the anticipated size of the work force for these two different activities, concerns regarding potential social and economic concerns arise more in conjunction with the construction activity than with facility maintenance. Unlike many natural resource impacts, which occur within or adjacent to the ROW corridors and in the groundwater development basins, social and economic effects would also occur along the major transportation access routes and in nearby communities.

For this assessment, potential social and economic effects were identified by review and extrapolation of information contained in SNWA's POD and considered the location and timing of construction activity and size of work force employed in the context of existing social and economic conditions and community and housing capacities. The assessment was further informed by community experience with other construction projects, both within the study area and in other locations. Potential revenues associated with the construction and operation of the GWD Project were considered for their potential to offset public costs of providing services to the construction and operating work forces.

Construction and maintenance of the pipeline and ancillary facilities under the Proposed Action or Alternatives are not anticipated to have substantial effects on long-term population or economic change in the region. Such effects, to the extent they are foreseen, are addressed under the discussions of potential growth effects of construction, operation, and maintenance of the future facilities and the associated operation of the pipeline in Section 3.18.2.8.1. That section also presents a discussion of the role of imported groundwater in enabling growth in the Las Vegas Valley and in Lincoln County, which is applicable to all project alternatives. Additional details and supporting information regarding the socioeconomic assessment is presented in **Appendix F.3.18**.

3.18.2.2 Proposed Action, Alternatives A through C

Construction

The timing, duration, and location of construction activities are important parameters in the assessment. The SNWA's project schedule calls for on-site development activity to begin in 2012,[9] with construction of the pipeline connection to the SNWA's existing system in Clark County accelerating in 2013 and 2014 with the construction of the buried storage reservoir and water treatment facility, and overall project construction extending into 2023 (SNWA 2011). The primary locus of construction is expected to proceed south to north over time. Direct construction employment is projected to peak at 932 workers in 2015 when construction of the main pipeline, main power line, water treatment facility, and other facilities in the southern portion of the project area would occur concurrently (**Table 3.18-21**). Short-term fluctuations in direct employment are common on large construction projects. This assessment is based on average direct employment equal to 85 percent of the peak to account for such variability. Construction activities would continue year-round, although seasonal wildlife stipulations may preclude activity in specific locations during certain periods.

[9] Based on the current proposed schedule, 2012 is the earliest construction could begin. The actual schedule would be determined later depending on various factors including future permitting, environmental studies, projected availability of Colorado River water, future demand and market conditions, and project financing.

Table 3.18-21 Projected Annual Incremental Employment Associated with Construction of the Pipeline and Ancillary Facilities, Proposed Action and Alternatives A through C

	Year											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Project-Related Jobs	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
A. Project Direct – Peak	5	224	767	932	913	608	454	283	71	272	415	266
B. Project Direct – Average	4	190	650	787	772	515	384	240	60	231	353	226
C. Indirect/Induced Jobs[1] - Average	3	127	436	527	517	345	257	161	40	155	237	151
Total Project-Related – Annual Average (B + C)	**7**	**317**	**1,086**	**1,314**	**1,289**	**860**	**641**	**401**	**100**	**386**	**590**	**377**

[1] Indirect and induced jobs based on a 0.67 jobs multiplier.

Economic data for Nevada, specifically Clark, Lincoln and White Pine counties, indicates that each direct construction job on the project would support approximately 0.67 indirect and induced jobs in the region through the circulation of incomes, business profits, rents, and economic linkages between local industries.[10] Applying that employment multiplier to average annual direct employment estimates for the proposed GWD Project yields total peak projected employment of 1,314 jobs in year 4 for the Proposed Action and Alternatives A through C. Direct construction employment is estimated at more than 4,400 total job-years during the construction period.[11] Purchases by SNWA, its contractors and their employees would support nearly 3,000 job-years of indirect and induced employment in the region. Many of the indirect and induced jobs would be located in Clark County throughout the project construction period due to many major construction service companies and suppliers based there and the many Clark County residents expected to fill jobs supported by the project.[12]

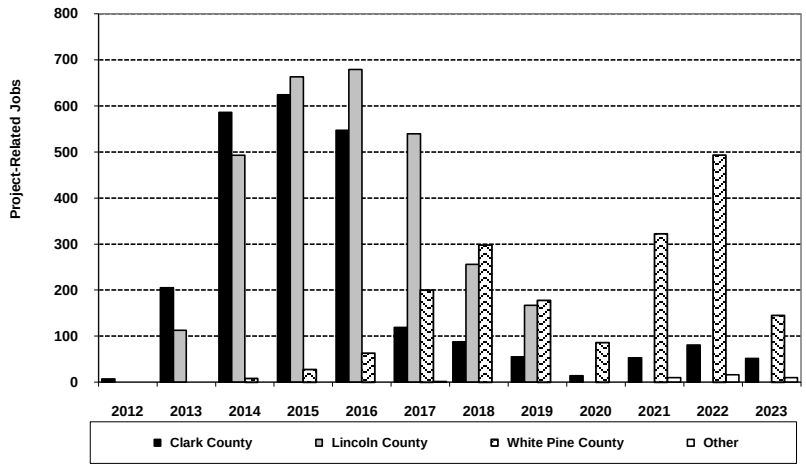
The geographic distribution of the project-related jobs would shift over time as the locus of construction activity moves, again generally from south to north. Many of the indirect and induced jobs, however, would remain in Clark County. The share of indirect and induced jobs based in Clark County is higher in the earlier years, decreasing over time as construction moves northward. The changing geographic distribution of project-supported jobs is shown in **Figure 3.18-9**.

Residents of the region would fill most of the construction jobs associated with development of the Proposed Action and Alternatives A through C, as well as those supported indirectly by the project. Workers relocating to the area would fill the remainder, resulting in temporary population gains as well. Such population gains would be lowest at the outset of the project when construction of the buried storage reservoir and water treatment facility would draw on the extensive labor pool in Clark County. For this assessment, it is assumed that Clark County residents would fill 70 percent of the jobs over the period of project construction, residents of the rural areas would fill 10 percent, and non-local workers who relocate temporarily would fill the remaining 20 percent.

[10] The 0.67 employment multiplier was derived using IMPLAN, a professionally recognized and accepted regional economic impact model. The multiplier is based on 2007 economic data for Clark, Lincoln and White Pine counties. Data for Millard and Juab counties in Utah were not included in the derivation of the multiplier because of the limited availability of retail trade and services in Snake Valley.

[11] Based on average annual employment at 85 percent of the annual peak employment presented in the POD.

[12] In this context, indirect employment includes jobs supported by SNWA and contractor purchases of goods and services from local and regional businesses. Although SNWA will purchase some goods and services in the rural areas, most will come from Las Vegas or outside the region, e.g., pipe manufacturers. Induced employment includes jobs created by employee spending of GWD project-related income and by business, local government and school district spending in response to increased demand.



** Reflects the average annual direct, indirect and induced jobs associated with the Proposed Action and Alternatives A - C.

Figure 3.18-9 Geographic Distribution of GWD Project-related Jobs, Proposed Action and Alternatives A through C

Work force availability is more constrained in the rural areas and economic opportunities are relatively scarce so that construction projects like the GWD Project tend to expand the labor force, creating temporary opportunities and generally raising wage rates in the prevailing economy. Most non-local workers employed on transmission lines and pipelines are anticipated to be single or married but not accompanied by spouses or families. However, to account for the extended duration of the construction phase, temporary population is estimated assuming 1.5 persons per non-local worker. These assumptions result in peak migration of 240 workers and a temporary population gain of up to 360 during project construction (**Table 3.18-22**). Population gains during the early years would be of little consequence within the context of the overall metropolitan population and large numbers of visitors that Las Vegas hosts annually.

Table 3.18-22 Projected Temporary Population Gains Associated with Construction of the Pipeline and Ancillary Facilities, Proposed Action and Alternatives A through C

	Year											
	1	2	3	4	5	6	7	8	9	10	11	12
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project-Related Temporary Population Gains	2	74	276	353	360	296	221	138	35	132	203	15

As construction on the pipeline and power line moves into the Delamar Valley and then the other more northern valleys, commuting distances from Las Vegas would increase, prompting some non-local workers to relocate, resulting in short-term population impacts to communities in the rural area; this would occur first in Alamo, later in Caliente, Panaca, Pioche, and eventually Ely and Baker/Snake Valley communities. Limited availability of temporary living quarters in the larger Lincoln County communities could result in some workers seeking temporary housing in other, smaller outlying communities, such as Moapa, Logandale, Overton (2014 thru 2016) and Ursine (2016 and 2018) or on private lands through informal agreements with landowners. By 2023, the temporary population gains attributable to the Proposed Action or Alternatives A through C would cease to be a factor within the region.

Caliente, Pioche and Panaca may experience concurrent temporary economic and population effects associated with construction of the main pipeline, transmission line, and exploratory drilling and future facilities development (see Section 3.18.3).

The communities of Ely, Pioche, Panaca and Baker/Snake Valley would experience short-term population impacts again when the Snake Valley laterals are completed. The duration of temporary population impacts would range from just a few weeks to a year or longer. Although most of these communities have prior experience hosting temporary populations associated with tourism, outdoor recreation and other construction projects, the temporary gains associated with the Proposed Action or Alternatives A through C would represent major increases in resident population for all but Ely.

Rural communities in Lincoln and White Pine counties would experience temporary population gains from another source as project construction moves northward. Over time, workers from Clark County who initially commute to a work site on a daily basis would likely find the daily commute to be too long and would seek temporary housing closer to the work site. In such instances, workers typically commute to the work site at the beginning of the workweek, staying over and becoming weekday residents, but returning to their permanent residence on the weekend. Given the area's proximity to the Las Vegas area, more than 500 such workers could reasonably be expected to be employed in conjunction with the Proposed Action from 2016 through 2018, with nearly 300 such workers anticipated again in 2022 during construction of the Snake Valley lateral and facilities (**Figure 3.18-10**). During construction of the Snake Valley laterals, some of the temporary workers residing in the area during the workweek could reside in Millard County, Utah.

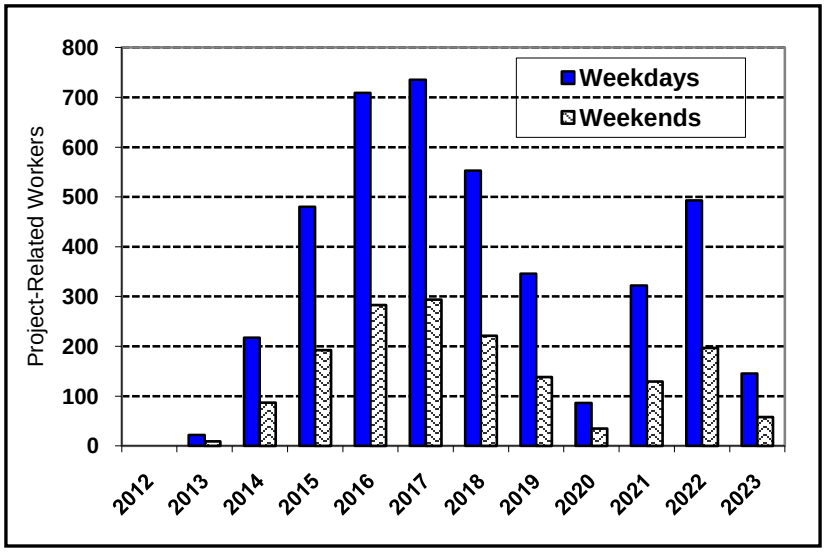


Figure 3.18-10 Project-Related Weekday versus Weekend Population Impacts in the Rural Areas During Project Construction, Proposed Action and Alternatives A through C

As construction of the various component facilities is completed, released workers and any spouses, relatives or friends who accompany them likely would leave to return to their permanent place of residence or wherever their next job is located. Consequently, little or no long-term population impacts are expected in conjunction with the construction of the main pipeline and ancillary facilities.

Construction of the Proposed Action or Alternatives A through C would result in increased demand for housing in nearby communities. Temporary housing needs would peak at 876 units in 2015, averaging 730 units within the 3-county study area between 2014 and 2019. However, the needs are not "stationary" in terms of location, but shift northward over time. The total projected housing requirements, by general location, are shown in **Table 3.18-23**.

The housing need in Clark County consists of that associated with resident construction workers, those filling indirect and induced jobs supported by the project, and workers relocating to the area to work on the project. Individuals

relocating to the Las Vegas area to work on the project would create incremental housing demand, but the scale of that need is small considering the existing housing inventory and availability of temporary accommodations. Some relocating construction workers may initially seek out temporary lodging, including RV parking spaces in Moapa and Logandale, until construction progresses into Lincoln County. These workers would be inclined to shift their residence as project development progresses into Lincoln County, and eventually to White Pine County.

Table 3.18-23 Demand for Temporary Housing Associated with Construction of the Pipeline and Ancillary Facilities, Proposed Action and Alternatives A through C

Project-Related Housing Needs[1]	Year											
	1	2	3	4	5	6	7	8	9	10	11	12
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Clark County[2]	5	197	579	556	387	82	59	37	9	35	54	35
Lincoln County[3]	0	15	140	301	430	357	171	112	0	0	0	0
White Pine County	0	0	5	19	42	133	198	119	58	215	329	97
Other	0	0	0	0	0	1	0	0	0	7	10	7
Total	**5**	**212**	**724**	**876**	**859**	**573**	**428**	**268**	**67**	**257**	**393**	**139**

[1] Based on an average occupancy of 1.5 workers per unit.
[2] Most, if not all, of the housing requirement in Clark County would be filled by the then existing housing inventory.
[3] Numbers for 2012 through 2014 reflect jobs located in Lincoln County and filled by Clark County residents.

As project development progresses into Lincoln County, project-related housing demand, which peaks at 430 units, is substantially in excess of the inventory of approximately 250 motel rooms and RV parking spaces in the entire county. That demand would result in upward pressure on housing prices and may stimulate investment in new lodging, although the project's relatively short duration may not support such investment. The year-round nature of project-related housing demand would compete with seasonal demand from tourists and business travelers through the area. To the extent that such competition displaces tourists during the peak season, it may be viewed by some as an adverse impact, yet be viewed as a benefit during periods of traditionally low tourism and travel.

Over time, the demand for temporary housing would shift northward into White Pine County, peaking at over 390 units in 2022. Temporary housing in White Pine County includes approximately 1,000 motel rooms and travel trailer/RV spaces, mostly in Ely, which could potentially serve a substantial portion of the need. However, Ely is a 1-to-1.5-hours commute, each way, from the southern portion of Spring Valley and Snake Valley. Project-related demand would compete temporarily with seasonal demands for tourists, conference and other special event attendees, business travelers and outdoor recreationists, likely supporting higher rates for lodging benefiting both the lodging establishments and local government.

Short-term demand for temporary housing associated with construction of the Snake Valley laterals would exceed the limited temporary housing existing capacity in the Baker area. Demand for housing associated with the Proposed Action could trigger development of additional RV sites and motel rooms, some of which could be located in Millard County, Utah.[13] It is not clear whether proprietors in Snake Valley would choose to expand given the relatively short-term (two to three years) duration of the anticipated demand.

State parks with camping facilities and BLM campgrounds in both Lincoln and White Pine counties would see increased demand and use, thereby creating potential conflicts with traditional recreation users. The availability of these facilities to serve project-related demand would be limited by length of stay limitations and seasonal closures.

[13] The Border Inn, one of a handful of retail and consumer service oriented businesses in the Snake Valley, is a combination convenience store, fueling station, café, casino, and motel/RV campground that straddles the Utah/Nevada border. The inn's RV sites are in White Pine County while the motel rooms are in Millard County, Utah. Similarly, the Border Inn's gaming area is in Nevada, and the retail/restaurant/gas sales components are in Utah. This unique situation creates potential impacts that could stress local capabilities and require additional coordination between state and local government agencies on both sides of the border.

Development of a temporary construction worker housing facility (TCWF) offers a means to address shortages in short-term housing in the rural portions of the study area, particularly in Lincoln County. Operated by a contractor, TCWFs typically are modular facilities that can be put in place relatively quickly. TCWFs can offer a range of services, ranging from very basic sleeping arrangements to full service operations offering sleeping, dining, mail, internet access, laundry, and recreation/leisure time facilities. Depending on the size, expected duration of use, and local development codes, a TCWF may use temporary tanks for potable water and wastewater, whereas in others, the camps are connected to municipal systems. Some social and economic tradeoffs are associated with the use of a TCWF. For example, there are trade-offs between jobs associated with its operation versus jobs that may have otherwise been created within the community, or reducing the pressures on local housing costs and rents at the possible expense of opportunities for local residential building contractors and landlords.

The temporary housing needs associated with the GWD Project may warrant one or more TCWFs, although the SNWA has not decided on whether to require such of its contractor(s). Considering the pipeline and transmission line locations, the size of communities and commuting distances involved, and housing needs outlined above, one TCWF is assumed in this assessment; that facility would be developed on private lands in central Lincoln County, become operational in 2014 with an operating staff of 30 management and housekeeping staff, and house up to 200 workers.[14] Some of the TCWF staff may be hired locally, but others would be non-local and be among those residing at the TCWF. For this analysis, the facility is assumed to operate through 2017 as GWD Project construction proceeds through northern Delamar, Dry Lake, and Cave valleys and into southern Spring Valley.

The job, population and housing effects related to construction of the pipeline and ancillary facilities would result in many other short-term effects on social and economic resources in the study area. There would be a high correlation between the location of construction activity, number of construction workers employed on the project, and the timing, location and intensity of most of these effects. Key dimensions of the related effects associated with construction of the pipeline and ancillary facilities under the Proposed Action or Alternatives A through C are summarized in **Table 3.18-24**.

Table 3.18-24 Summary of Socioeconomic Effects from Construction of the Main Pipeline and Ancillary Facilities, Proposed Action and Alternatives A through C

• The overall distribution of temporary job effects related to the Proposed Action or Alternatives A through C over the project construction schedule is estimated as follows: Clark County – 33 percent, Lincoln County – 40 percent, and White Pine County – 27 percent. *[**Note:** for the remainder of this section the term "Proposed Action" will refer to the Proposed Action or Alternatives A through C.]*
• Implementation of the Proposed Action would generate, directly and indirectly, about $642 million in additional personal income in the region over the 12-year project development schedule. The majority of that income would accrue to Clark County residents.
• Direct temporary employment over the 12-year development timeframe is estimated at more than 4,400 total job-years.[15] In addition, purchases by SNWA, its contractors and their employees would support nearly 3,000 job-years of indirect and induced employment in the region, averaging about 270 jobs over the 12-year project schedule.
• Local construction workers and contractors could benefit directly by working on the project or indirectly by working to meet community-based needs for housing, utility expansion, commercial development, and public sector needs stimulated by the project.
• A portion of project-related earnings would be spent locally for food and drink, housing, fuel, gaming and other entertainment, and other miscellaneous purchases, but a large portion of earnings ultimately would flow to a worker's permanent place of residence. In the rural areas, the Proposed Action would support business revenues and personal income for local business owners and local workers. Households would benefit from additional job availability for local residents and upward pressures on local wages, although the effects would be temporary.

[14] An alternative concept would be to see a TCWF operating in the southern portion of Lincoln County for several years, with it subsequently relocated to the northern portion of the county to support construction in the Cave, Spring, and Snake valleys.

[15] Based on average annual employment at 85 percent of the annual peak employment presented in the POD.

Table 3.18-24 Summary of Socioeconomic Effects from Construction of the Main Pipeline and Ancillary Facilities, Proposed Action and Alternatives A through C (Continued)

• In Clark County, the economic effects related to construction would be virtually undetectable within the context of the established economy; however, they would be quite noticeable in the rural economies. The most pronounced effects would be in the local hospitality industry (motels, restaurants/cafes, and bars), and convenience retail (gas stations and convenience stores).
• Increased demands on general government services, e.g., the county clerk, and on county and municipal utilities would be modest.
• Few school age children are likely to accompany the nonlocal temporary construction work force. Consequently, public school districts serving the region would experience little direct impact due to the project.
• The NDOT, county road and bridge departments, and the BLM could experience increased road maintenance demand.
• Some public water and wastewater systems in the rural area would face short-term increases in demand associated with construction. In some instances, the incremental demand would represent a substantial increase over current demand. To the extent that construction workers reside in existing housing (motels, mobile home and RV parks, rental housing), these demands are presumably served by and accounted for in water and wastewater system capacities. Construction of new temporary housing would increase demand on system capacities.
• Construction of the pipeline and ancillary facilities through northern Clark County and southern Lincoln County could result in demand on temporary housing resources, law enforcement and emergency services in northeastern Clark County, including the communities of Moapa and Logandale. Local businesses in those communities would see temporary increases in business volume.
• The temporary project-related population influx would increase demand and pressure on local law enforcement/criminal justice, emergency response and emergency medical care systems, particularly in Lincoln and White Pine counties. Demands on emergency services would be concentrated along the pipeline and power line corridors and ancillary facility worksites, at the TCWF (if developed), in communities where construction workers reside and recreate, and along highways and roads accessing these areas. Major construction contractors typically provide some first response capabilities, but the extent of such capabilities in conjunction with the Proposed Action is unknown at this time. The Nevada State Patrol and local law enforcement provide coverage over large areas and much of the emergency response network consists of community-based volunteers. The Lincoln County Sheriff might seek to hire additional deputies for a 4-to-5 year period when construction is most active in the county. The County would incur recruiting, training, and payroll costs for these officers, along with outlays for patrol vehicles and other equipment. White Pine County law enforcement is based in Ely. Given the distance from Ely to the worksites and the relatively large size of the construction work force working in the Spring and Snake valleys for about 5 years, additional law enforcement/criminal justice would likely be required to accommodate service demand from the project.
• Emergency medical response by community-based organizations to project-related calls would temporarily reduce coverage and increase response times to other calls in the communities. Service providers commonly seek to increase staffing levels in response to increased demand on services. In some instances, additional response vehicles and other facilities and equipment could also be warranted. Meeting such needs can be difficult for volunteer based organizations in rural areas. Temporary construction workers typically rely on local hospital emergency rooms for their health care needs, increasing demands on emergency room resources and staff. The increases in services generate more revenue for the facilities, but they also can experience increases in uncollected fees. In the rural areas, hospitals are located in Caliente, Ely and Delta (eastern Millard County). The Dils Medical Center (Caliente) provides 24-hour emergency room services and operates clinics in Alamo and Pioche. Consequently, the Center could experience a substantial increase in service demand over a multi-year period, supporting increases in professional and allied health care staffing levels, Emergency response times could be lengthy to rural locations where project-related construction would occur, particularly in Spring and Snake valleys where emergency services are provided by a small cadre of volunteers. In the event of serious or life-threatening injuries, local emergency medical response could be augmented by air ambulance transport (helicopter or fixed-wing), dispatched from the Las Vegas Valley or transport to Ely to access fixed-wing air ambulance service.
• The Baker community responds to emergency services needs associated with tourists, park visitors and other highway travelers but such needs currently do not overtax capabilities. Given the distance between Ely and the Snake Valley and the limited law enforcement and emergency response capabilities present in Baker, project-related increases in highway accidents, medical emergencies or other incidents would place a substantial burden on local volunteer agencies and on county services during the periods when a large construction workforce would be working in Spring and Snake valleys.

Table 3.18-24 Summary of Socioeconomic Effects from Construction of the Main Pipeline and Ancillary Facilities, Proposed Action and Alternatives A through C (Continued)

• Development of a TCWF in Lincoln County would potentially reduce demand for community infrastructure and facilities associated with construction workers residing in communities.
• Based on preliminary project cost estimates by SNWA, purchases of materials and supplies used in the construction of the future facilities would generate an estimated $48 to $59 million in state and local sales and use taxes. Such taxes are an important source of revenues to support government operations and public education. The state's general fund, public education, and local governments would benefit from such taxes. The distribution of revenues would depend on where a vendor is licensed to do business (i.e., in-state versus out-of-state and where) and designated place of delivery. Having major vendors establish a place of business in Lincoln and/or White Pine counties can increase the share of sales and use tax revenues accruing in those counties.
• State and affected county governments also would realize sales tax revenue from local retail expenditures by workers and incremental revenues from other taxes, fees, and charges for services.
• Whether the incremental tax revenues and fees would be adequate to offset the incremental public service costs in Lincoln and White Pine counties, or whether the timing of those revenues would coincide with demands for higher public service costs is unknown.
• Ranchers with grazing permits for public lands encompassing and near the ROWs and access roads may experience temporary reductions in income due to construction-related loss of forage due to disturbance, diminished forage quality due to dust and reduced access to water resulting in reduced weight gain, injury, or death of livestock, increased injury or loss due to vehicle – livestock collisions, and the requirement for more active management.
• Outdoor enthusiasts, including OHV users, anglers and big game hunters, and local businesses that are supported by these outdoor recreationists could experience temporary impacts associated with construction, such as short-term changes in access.
• Rural portions of the study area would experience an influx of a relatively large, predominately single-status work force into the existing small, relatively cohesive and stable social settings.
• Non-local construction workers would shop, recreate, and find lodging in nearby towns, increasing revenues for some businesses, also potentially could disrupt established social settings, including the few restaurants, bars, casinos, and other commercial and recreational settings found in the smaller rural communities.
• Some residents in these communities may focus on perceived benefits of this influx, such as welcoming the economic boost it provides; however, other residents are likely to be dissatisfied with the change in these commercial, social and recreational settings.
• Opposition to the water development project may add to resident dissatisfaction in the rural areas, creating potential for conflict between construction workers and community members in some rural social and recreational settings.
• As the status of the project transitions from prospective to real, the initiation of construction of the pipeline and transmission line would be a "signal" event with potentially widespread and long-term concerns for quality of life and outlook for the future for many residents of the rural areas.
• The initiation of construction would be well-received by those who support the project because they could begin to see the prospect of additional water within a foreseeable time horizon.
• There would be increased potential for temporary, short-term increases in certain types of crime in rural communities, such as alcohol and drug-related offenses and minor assaults such as bar fights.
• Depending on the location, the amenities provided and the management policies, a TWCF can become a source of social disruption if large numbers of construction workers from a TWCF frequent dining and recreation establishments in nearby towns. This could be particularly true in communities where resentment toward the Proposed Action and alternatives is high.
• With the exception of Spring and Snake valleys, most of the ROW is located in uninhabited areas and no high concentrations of minority, low income, or Indian Tribes have been identified in those two valleys. Thus, no direct environmental justice effects would be anticipated.
• The temporary, short-term effects related to construction traffic and construction workers would occur throughout affected communities and not result in disproportionately high and adverse impacts to minority or low-income populations or Indian Tribes.
• Sections 3.16 (Cultural Resources) and 3.17 (Native American Traditional Values) describe measures to avoid and mitigate potential construction-related impacts to known and currently unidentified sites of importance to Indian Tribes.

Facility Maintenance

The completion of construction and subsequent transition to operation would signal a marked change in the project's influence on social and economic conditions in the region. Given the high level of automation and technology involved in the operations of the pipeline and transmission line facilities, SNWA anticipates that fewer than 20 full-time staff would be required to oversee routine operation and maintenance of the entire transmission and groundwater production system. SNWA staff would be augmented by service vendors and contractors retained to perform non-routine maintenance, deliver supplies, and provide other support services. These jobs would continue over the operational life of the project, representing long-term beneficial effects of the Project. Although a staffing plan identifying the number of jobs, by location, is not presently available, it would be reasonable to expect many of these jobs to be based at one or two locations in the rural portion of the study area.

The small size of the long-term work force would result in limited and virtually imperceptible, changes in employment, unemployment, personal income, resident population and demographics, housing demand, and demand on public facilities and services. The scale of projected growth would be insufficient, in and of itself, to require additional staff or infrastructure capacity at local government entities and other public service providers in the rural areas.

Secondary, long-term, albeit minor social and economic effects associated with the long-term operations and maintenance of the pipeline, power line and ancillary facilities include the following:

- Local governments would realize long-term, but minor gains in revenues, principally from property taxes on residential development, sales taxes on consumer purchases, and miscellaneous fees and charges for services associated with staff and contractor expenditures supported by the project and by contractors.
- Retail purchases by SNWA and real property owned by SNWA are exempt from sales, use and property taxes. SNWA has negotiated a payment-in-lieu of taxes agreement with White Pine County to offset a loss of revenues following SNWA's purchase of private ranches in White Pine County. Similar agreements are not currently in place with other local governments or public entities with respect to the Proposed Action.
- Population-related social impacts associated with long-term facility maintenance and operations would be negligible.
- Opposition to the water development project among residents in Lincoln and White Pine counties could increase the potential for conflict between operations workers and other community members, particularly in communities and among individuals that believe they would experience only adverse effects of the project.
- No Environmental Justice impacts would arise in conjunction with project operations due to the limited scale of surface activities associated with operations of the Proposed Action, limited human inhabitation near the ROW corridors, and absence of high concentrations of minority, low income, or Indian populations in the inhabited portions of the study area.

Conclusion. Construction of the GWD Project would result in short-term economic and social effects across the study area. The effects would include beneficial economic effects, including jobs, income, and tax revenues. Short-term effects would include increased demand for temporary housing and for local services, particularly law enforcement and emergency services. Such project-related effects would be initially concentrated in the Las Vegas Valley, which has adequate capacity to meet these needs, shifting northward over time into the rural areas where capacity to meet the project-related needs is more limited. Project-related pressures on temporary housing and local services would be particularly high in conjunction with construction activity through central and northern Lincoln County.

Local governments could incur additional costs to meet project-related needs, while realizing additional tax revenues and fees. Sales and use taxes levied on the materials used in the construction of major projects would be substantial, representing an important revenue source for local governments. Whether the geographic distribution and timing of these revenues coincides with the additional project-related service costs is unclear. Long-term demands for services on local governments would likely be relatively limited.

Long-term direct and indirect economic effects from project operations would be limited due to the small numbers of workers employed on the project. Local governments and school districts would not benefit from long-term property taxes assessed on the project due to SNWA's tax-exempt status.

Short-term social effects would arise from construction of the GWD Project, primarily in conjunction with the temporary influx of construction workers into established community, recreation and other social settings in the smaller communities. The development and operation of one or more TCWF could reduce the level of disruption.

Applicant Committed Measures and Recommended Additional Mitigation Measures:

Applicant committed protection measures include the following that are a pertinent to socioeconomics, planning, and permitting.

- (ACM-A.8.1) Applicant coordination in advance of construction with BLM and grazing permit holders that will be affected, to minimize access conflicts and ensure continued use of the range.
- (ACM-A.8.2) Documentation of range improvements to facilitate repair if such improvements are temporarily removed or damaged as a result of project construction.
- (ACM-A.8.3) Compensation, at market value, to owners if livestock is injured or killed by a vehicle directly associated with construction activities.
- (ACM-A.8.4) Provision of alternative water source(s) if access to livestock watering sources or facilities is temporarily restricted during construction and repair of such watering sources or facilities if they are damaged during construction.
- (ACM-A.12.1) Hiring local companies and utilizing local community resources as available for construction management support services. Bidding of work or services will be in compliance with NRS 332 and 338.
- (ACM-A.12.2) SNWA will pay White Pine County for property taxes and other lost revenue associated with private property that it has purchased in Spring Valley, as identified in an August 2008 agreement. Under that agreement, SNWA will make a one-time $77,000 payment for real-property transfer tax; $69,000 annually for property tax; and $10,000 annually, indexed for inflation to replace any additional foregone revenues.
- (ACM-A12.1, 3, and 4) A Project Labor Agreement will be used to cover the construction of the pipeline. The agreement will require contractors to pay Clark County prevailing wage rates and a ratio of use of union employees as defined. SNWA will work with labor unions and rural governments to encourage development of trade apprenticeship programs, with the objective of developing a local skilled trade base that could be utilized during construction of the project.

The BLM NEPA Handbook (H-1790-1) states that:

> *In an EIS, all "relevant, reasonable mitigation measures that could improve the project are to be identified," even if they are outside the jurisdiction of the agency (see Question 19b, CEQ, Forty Most Asked Questions Concerning CEQ's NEPA Regulations, March 23, 1981).*
>
> *Socioeconomic impacts are usually indirect and largely fall on communities and local government institutions, by definition located outside BLM-managed lands. While some mitigation strategies are within the BLM's control, (such as regulating the pace of mineral exploration and development to minimize rapid, disruptive social change), most mitigation strategies require action by other government entities—typically cities, counties, and State agencies. In supporting local and State efforts to mitigate socioeconomic impacts, you "may provide information and other assistance, sanction local activities, encourage community and project proponent agreements, and cooperate with responsible officials to the fullest extent feasible."*

The following additional mitigation measures are recommended to help avoid, minimize, rectify and compensate for potentially adverse, primarily short-term socioeconomic impacts.

SE-1: To Address Local Law Enforcement Staffing and Equipment Needs. The SNWA would work with the boards of county commissioners of Lincoln, White Pine and Millard counties to develop an Emergency Management Plan (see V-2 in Vegetation) – including provision of multi-year grants for staff recruiting, training, payroll and purchases of patrol vehicles, and communications equipment. Effectiveness*:* This measure would be moderately to highly effective, since pre-construction coordination with local jurisdictions would identify emergency service deficiencies and provide for training and equipment to meet these potential deficiencies. Effects on other resources: None.

SE-2: To Address Local Emergency Response Needs. The SNWA would work with the boards of county commissioners of Lincoln, White Pine and Millard counties to develop an Emergency Management Plan (see V-2 in Vegetation) – including providing grants for training, purchases of ambulances and other equipment. Some needs could also be addressed via requirements for contractor-provided on-site first response capabilities Effectiveness*:* This measure would be highly effective, since the development of an emergency response plan with local jurisdictions provides for the development of a unified emergency strategy, early identification of emergency service requirements, and provides for training and equipment to meet these potential requirements. Effects on other resources: None.

SE-3: To Address Local Government Fiscal Needs. The SNWA would negotiate and provide "payments in lieu of taxes" to Lincoln and White Pine counties for the local sales, use and property taxes foregone because of SNWA's tax-exempt status. The negotiated payments should be estimated in advance for the upcoming construction year, with adjustments made the following year for variances in actual outlays. Effectiveness*:* This measure would be highly effective and beneficial, providing revenues for local jurisdictions. Effects on other resources: None.

SE-4: **To Address Temporary Housing Needs In The Rural Areas**. In the event that one or more temporary construction worker facilities are not developed in Lincoln County during the construction of the main pipeline and transmission line, the SNWA and its major contractors should work cooperatively with the Board of County Commissioners to develop temporary housing resources, e.g., providing direct funding or occupancy commitment for one or more RV parks. Effectiveness*:* This measure would be highly effective and beneficial, providing revenues for local jurisdictions to support and develop temporary housing. Effects on other resources: None.

SE-5: **To Assist Local Counties and Communities Planning Efforts**. The SNWA and its contractors would prepare and distribute an annual socioeconomic monitoring report summarizing its construction activities during the past year, planned activity over the next two years, and key characteristics of its work force, e.g., level of employment (low, peak, average), residency patterns, turnover rates, and impacts on local communities. Effectiveness*:* This measure would be moderately effective in communicating the socioeconomic effects of the project. Benefits from this report would require action on the report's findings. Effects on other resources: None.

Residual impacts include:

- There would be few residual social and economic effects associated with the Proposed Action following the completion of construction, operation start-up, and reclamation. Foreseeable effects would include new residential, commercial, and industrial development and public infrastructure put in place in response to needs associated with the project. Residual effects may include a small number of jobs, associated income, and additional residents, primarily in the rural areas.

3.18.2.3 Alternative D

Construction

Alternative D would involve the construction and operation of a main pipeline and the associated power lines, but it would be limited to only BLM-granted ROWs in Clark and Lincoln counties. The northern terminus of those systems would be in rural Lincoln County, south of the shared boundary between Lincoln and White Pine counties. Pioche would be the closest community, but Panaca, Caliente, Ely, Baker, and Garrison would be within a reasonable daily commuting distance.

SNWA's project schedule calls for on-site development activity to begin in 2012, with construction of the buried storage reservoir and water treatment facility in Clark County, and then the level of activity accelerates in 2013. Construction of the main pipeline and ancillary facilities would be completed in 2019. The primary locus of construction is expected to proceed south to north over time. Direct construction employment is projected to peak at over 900 workers in 2015/2016 when construction of the main pipeline, main power line, water treatment facility, and other facilities in the southern portion of the project area would occur concurrently (**Table 3.18-25**). Direct employment would be much lower and decline markedly over the final three years of construction. Secondary employment supported by the project would exceed 500 jobs at the peak of construction.

Direct construction employment is estimated at nearly 3,400 total job-years when summed across the entire construction period. The direct employment and other project-related needs for services, materials, and supplies would support nearly 2,300 additional job-years of indirect and induced employment elsewhere in the region.[16]

The geographic distribution of the project-related jobs shifts over time as the locus of construction activity moves from south to north. Many of the indirect and induced jobs, however, would be located in Clark County through the project construction period because there are many major construction service companies and suppliers based there and Clark County residents are expected to fill many jobs supported by the project.

Construction activities would continue year-round, although seasonal wildlife stipulations may preclude activity in specific locations during certain periods. The final year of construction of the main pipeline and power line would overlap with the initial year of future facilities development in the Delamar, Dry Lake, and Cave valleys (effects of future facilities development are addressed in Section 3.18.3).

Table 3.18-25 Projected Annual Incremental Employment Associated with Construction of the Pipeline and Ancillary Facilities, Alternative D

	Year										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Project-Related Jobs	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
A. Project Direct - Peak	5	224	767	932	913	608	412	151	0	0	0
B. Project Direct – Average (85% of Peak)	4	190	650	787	772	515	350	128	0	0	0
C. Indirect/Induced Jobs - Average	3	127	436	527	517	345	235	86	0	0	0
Total Project-Related – Annual Average (B + C)	**7**	**317**	**1,086**	**1,314**	**1,289**	**860**	**585**	**214**	**0**	**0**	**0**

Note: Assumptions by the AECOM EIS Team.

Projected population gains would be lowest at the outset of the project when construction of the buried storage reservoir and water treatment facility would draw on the extensive labor pool in Clark County. Over the period of project construction, Clark County residents are assumed to fill 70 percent of the jobs, residents of the rural areas would fill 10 percent, and non-local workers who relocate temporarily would fill the remaining 20 percent. Most non-local workers employed on transmission lines and pipelines are anticipated to be single or married but not accompanied by spouses or families.

The number of non-local workers and the associated net increase in population would increase over time until it peaks at 240 workers and a temporary population gain of 360 additional residents in year 4 (2015) (**Table 3.18-26**).[17] Population gains during the early years would be of little consequence given the proximity of the construction sites to the Las Vegas metropolitan area.

[16] Based on average annual employment at 85 percent of the annual peak employment presented in the POD.
[17] Assuming an average of 1.5 persons per non-local worker.

Table 3.18-26 Projected Temporary Population Gains Associated with Construction of the Pipeline and Ancillary Facilities, Alternative D

	Year										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**7**	**8**	**10**	**11**
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Project-Related Temporary Population Gains	2	74	276	353	360	276	200	74	0	0	0

Temporary population gains would occur in Lincoln County and to a much lesser degree in White Pine County as project construction moves northward. As project construction moves into central Lincoln County, many workers from Clark County who initially commute to a work site would likely seek temporary housing closer to the work site. In such instances, it is common for workers to commute to the work site at the beginning of the workweek, returning to their permanent residence on the weekend. Given the area's proximity to the Las Vegas area, more than 500 such workers could reasonably be expected to be employed in conjunction with Alternative D from year 5 through year 7 (2016 through 2018).

Little or no long-term population impact is expected in conjunction with the construction of the main pipeline and ancillary facilities because most of the construction workers and any spouses, other relatives and friends who accompany them would likely leave the area as they are released, returning to their permanent place of residence or wherever their next job is located.

Construction of Alternative D would result in increased demand for temporary housing in nearby communities. Housing needs would average more than 800 units in the 3-year period 2014 to 2016 (year 3 through year 5). However, much of that "need" is associated with residents of Clark County, whose housing needs would already be met. As the project moves northward, the housing needs would migrate into Lincoln County where the available inventory is much more limited. The total projected housing requirements, by general location, are shown in **Table 3.18-27**.

Table 3.18-27 Demand for Temporary Housing Associated with Construction of the Pipeline and Ancillary Facilities, Alternative D

Project-Related Housing Needs[1]	Year										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Clark County[2]	5	197	579	556	387	77	53	19	0	0	0
Lincoln County[3]	-	15	140	301	430	386	304	112	0	0	0
White Pine County	-	-	5	19	42	71	31	11	0	0	0
Other	-	-	-	-	-	1	-	-	0	0	0
Total	**5**	**212**	**724**	**876**	**859**	**535**	**388**	**142**	**0**	**0**	**0**

[1] Based on an average occupancy of 1.5 workers per unit.
[2] Most, if not all, of the housing requirement in Clark County would be filled by the then existing housing inventory.
[3] Numbers for 2012 through 2014 reflect jobs located in Lincoln County and filled by Clark County residents.

Some construction workers who relocate to the area to work on the project may initially seek out temporary lodging in Moapa and Logandale, shifting their residence as project development progresses northward into Lincoln County. Project-related housing demand peaks at 430 units in Lincoln County, exceeding the inventory of approximately 250 motel rooms and RV parking spaces in the entire county. That demand would result in upward pressure on housing prices, compete with seasonal demand from tourists and business travelers, and may stimulate investment in new lodging. Competition with tourist demand may be viewed by some as an adverse impact, yet be viewed as a benefit during traditionally periods of low tourism and travel.

Construction of the main pipeline and main power line in southern Spring Valley under Alternative D would also create demand for temporary housing in White Pine County. Temporary housing in White Pine County includes sufficient capacity to accommodate this demand; however, because most of that capacity is in Ely, a 1-to-1½ hour commute from the southern portion of the Spring Valley, other resources, such as state parks with camping facilities and BLM campgrounds in both Lincoln and White Pine counties could see increased demand and use. Such use would create potential conflicts with traditional recreation users. The availability of these facilities to serve project-related demand would be limited by length of stay limitations and seasonal closures.

Development of a temporary construction worker housing facility (TCWF) offers a means to address the projected shortages in short-term housing in Lincoln County. TCWFs are typically modular facilities that can be put in place relatively quickly. Although the SNWA has not reached a decision regarding such a facility, one such camp is assumed in this assessment. That camp is assumed to be developed on private lands in central Lincoln County, will become operational in 2014, operate through 2017, and house up to 200 workers with an operating staff of 30 employed as management and housekeeping staff.[18]

The job, population and housing effects related to construction of the pipeline and ancillary facilities under Alternative D would result in other short-term effects on social and economic resources in the study area. There would be a high correlation between the location of construction activity, number of construction workers employed on the project, and the timing, location and intensity of most of these effects. Key dimensions of the related socioeconomic effects associated with construction of the pipeline and ancillary facilities for Alternative D would be similar to those identified for the Proposed Action and Alternatives A through C in **Table 3.18-24**. The primary differences in the social and economic effects under Alternative D from those under the Proposed Action and Alternatives A through C are presented in **Table 3.18-28**.

Table 3.18-28 Summary of Socioeconomic Impacts from Construction of the Main Pipeline and Ancillary Facilities, Alternative D

• Direct construction employment is estimated at nearly 3,400 total job-years over the 8-year timeframe. Purchases by SNWA, its contractors, vendors and their employees would support nearly 2,300 job-years of secondary indirect and induced employment in the region.
• Implementation of Alternative D would generate, directly and indirectly, approximately $490 million in additional personal income in the region over the 8-year project development schedule. The majority of that personal income would accrue to Clark County residents.
• The project-related effects on employment and income would be approximately 25 percent less than under the Proposed Action and Alternatives A through C, which reflect the reduced scope and cost of the project.
• Alternative D would support higher personal income for local construction workers and contractors and other business owners and workers. The most pronounced effects would be in the local hospitality industry (motels, restaurants/cafes, and bars), and convenience retail (gas stations and convenience stores). These effects would be virtually undetectable in Clark County; however, they would be quite noticeable in Lincoln County. Business establishments and workers in White Pine County would realize fewer economic benefits from project construction under Alternative D, as compared to the Proposed Action and Alternatives A through C.
• The temporary project-related population influx would increase demand and pressure on local law enforcement/criminal justice, emergency response, and emergency medical care systems in northeastern Clark County and in Lincoln County. The Nevada State Patrol and local law enforcement provide coverage over large areas and much of the emergency response network consists of community-based volunteers.
• White Pine County law enforcement, headquartered in Ely, would likely experience little increase in project-related demand under Alternative D.
• Impacts on White Pine and Lincoln County law enforcement and emergency responders associated with construction, operation and maintenance of the Snake Valley Lateral would not occur under Alternative D.

[18] An alternative concept would be to see a TCWF operating in the southern portion of Lincoln County for several years and then being relocated to the northern portion of the county to support construction in the Cave, Spring, and Snake valleys.

Table 3.18-28 Summary of Socioeconomic Impacts from Construction of the Main Pipeline and Ancillary Facilities, Alternative D (Continued)

• Direct construction-related demands for emergency response in northern Lincoln County would be served by the Lincoln County Sheriff or the Nevada State Patrol, and supported by volunteer services based in Pioche, Panaca, Caliente or Ely. Given the distances to these communities, increases in highway accidents, medical emergencies or other incidents associated with the project could place a substantial burden on these volunteer agencies.
• Temporary construction workers typically rely on local hospital emergency rooms for their health care needs, increasing demands on emergency room resources and staff. Under Alternative D, the Dils Medical Center in Caliente would experience the largest increase in demand for services, extending over a multi-year period. The increase in demand would likely warrant increases in professional and allied health care staffing levels.
• Ranchers with grazing permits on public lands encompassing and near the ROWs and access roads in northern Lincoln County may experience temporary reductions in income due to construction related loss of forage due to disturbance, diminished forage quality due to dust and reduced access to water resulting in reduced weight gain, injury, or death of livestock, increased injury or loss due to vehicle – livestock collisions, and the requirement for more active management. Grazing on allotments in White Pine County is at lower risk for adverse impacts.
• Outdoor enthusiasts, including OHV users, anglers and big game hunters, and local businesses that are supported by these outdoor recreationists could experience temporary impacts associated with construction, such as short-term changes in access.
• Whether the incremental tax revenues and fees generated indirectly by the project would be adequate to offset the incremental public service costs in Lincoln County or whether the timing of those revenues would coincide with demands for higher public service costs is unknown.
• Communities in the rural portions of the study area, primarily Alamo, Caliente, Panaca and Pioche, would experience an influx of a relatively large, predominately single-status work force into the existing small, relatively cohesive and stable social settings.
• The presence of relatively large numbers of construction workers would increase revenues for some businesses but could potentially disrupt social settings including the few restaurants, bars, casinos and other commercial and recreational settings in these small communities.
• Some residents in these communities may focus on perceived benefits of this influx, such as welcoming the economic boost it provides; however, other residents are likely to be dissatisfied with the change in local commercial, social and recreational settings.
• Opposition to the water development project may add to resident dissatisfaction in Lincoln County, creating potential for conflict between construction workers and community members in some social and recreational settings.
• Construction of Alternative D would occur primarily in uninhabited areas, where no concentrations of minority, low income, or Native Americans reside. Thus, no direct environmental justice effects would be anticipated.
• The temporary, short-term effects related to construction traffic and construction workers would occur throughout affected communities and would not result in disproportionately high and adverse impacts to minority or low-income populations or Indian Tribes.
• Sections 3.16 (Cultural Resources) and 3.17 (Native American Traditional Values) describe measures to avoid and mitigate potential construction-related impacts to known and currently unidentified sites of importance to Indian Tribes.

Facility Maintenance

Completion of project construction and subsequent transition to operations would be accompanied by changes in the project's influence on social and economic conditions in the region. Under Alternative D, the SNWA likely would employ fewer than 20 full-time staff to oversee routine operation and maintenance of the entire transmission and groundwater production system, with its own staff of service vendors and contractors retained to perform non-routine maintenance, deliver supplies, and provide other support services. The small size of the operations and maintenance work force would result in limited changes in employment, unemployment, personal income, resident population and demographics, housing demand, and on public facilities and services, comparable to those that would occur under the Proposed Action (see the discussion under Facility Maintenance in 3.18.2.2). The scale of projected growth would be insufficient, in and of itself, to require additional staff or infrastructure capacity at any of the local government entities and other public service providers in the rural areas. These effects would continue over the operational life of the project. The principal difference under Alternative D would be the virtual elimination of effects in White Pine County.

Conclusion. Construction of the GWD Project would result in short-term economic and social effects across the study area, similar to those under the Proposed Action. The effects would include beneficial economic effects, including jobs,

income, and tax revenues. Short-term effects would also include increased demand for temporary housing and for local services, particularly law enforcement and emergency services. Such project-related effects would be initially concentrated in the Las Vegas Valley, which has adequate capacity to meet these needs, but shift northward into Lincoln County where capacity to meet the project-related needs is more limited. Project-related pressures on temporary housing and local services would be particularly high in conjunction with construction activity through central and northern Lincoln County.

Local governments could incur additional costs to meet the needs, while realizing additional tax revenues and fees. Sales and use taxes levied on materials used in the construction of major projects are typically an important revenue source for local governments. Such revenues would not be generated on materials and equipment used in the pipeline and power lines due to the SNWA's tax-exempt status as a quasi-governmental entity.

Social and economic effects on the Baker/Snake Valley community associated with project construction and maintenance would be avoided under Alternative D.

Long-term direct and indirect economic effects from project operations would be limited due to the small numbers of workers employed on the project. Local governments and school districts would not benefit from long-term property taxes assessed on the project due to the SNWA's tax-exempt status.

Short-term social effects would arise from construction of the GWD Project, primarily in conjunction with the temporary influx of construction workers into established community, recreation and other social settings in the smaller communities. The development and operation of one or more temporary construction worker camps could reduce the level of disruption.

Applicant Committed Measures and Recommended Additional Mitigation Measures:

Applicant committed protection measures include the following that are pertinent to socioeconomics, planning and permitting.

- (ACM-A.8.1), (ACM-A.8.2), (ACM-A.8.3), (ACM-A.8.4), (ACM-A.12.2), and (ACM-A12.1, 3, and 4).

Per guidance provided by the BLM NEPA Handbook (H-1790-1), the following additional mitigation measures, defined in Section 3.18.2.2 above, are recommended to help avoid, minimize, rectify, and compensate for potential socioeconomic impacts under Alternative D: SE-1, SE-2, SE-3, SE-4, and SE-5. The monitoring and mitigation measures identified for the Proposed Action would apply in Alternative D, but would be focused on Lincoln County because the main pipeline would not extend into White Pine County. Consultation and coordination should involve White Pine County in the last 2 years of construction due to potential temporary service demand impacts from workers residing in White Pine County.

Residual impacts include:

- There would be few residual social and economic effects associated with Alternative D following the completion of construction, operation start-up, and reclamation. Foreseeable effects would include new residential, commercial, and industrial development and public infrastructure put in place in response to needs associated with the project. Residual effects may include a small number of jobs, associated income, and additional residents, primarily in the rural areas.

3.18.2.4 Alternative E

Construction

Alternative E would involve the construction and operation of a main pipeline and the associated power lines on BLM-granted rights of ways in Clark, Lincoln, and White Pine counties. The northern terminus of those systems would be in the Spring Valley in White Pine County. Alternative E would not include lateral pipeline and groundwater production development in Snake Valley. The SNWA's project schedule calls for on-site development activity to begin in 2012.

Construction of the main pipeline and ancillary facilities would be completed in 2020, with construction generally proceeding south to north over time. Direct construction employment would peak in 2015/2016 when construction activity of the main pipeline, main power line, water treatment facility, and other facilities in the southern portion of the project area would occur concurrently (**Table 3.18-29**). Following peak activity, direct employment would decline as the project moves northward. Secondary employment supported by the project would exceed 500 jobs at the peak of construction.

Construction of Alternative E would create nearly 3,600 total job-years of direct employment during the construction period, supporting nearly 2,400 job-years of indirect and induced employment elsewhere in the region. Under Alternative E, the geographic distribution of the project-related direct, indirect and induced jobs shifts northward over time, although many of the indirect and induced jobs would be located in Clark County through the project construction period. Over the period of project construction, Clark County residents are assumed to fill 70 percent of the jobs. Most non-local workers employed on transmission lines and pipelines are anticipated to be single, or if married, not accompanied by spouses or families.

Table 3.18-29 Projected Annual Incremental Employment Associated with Construction of the Pipeline and Ancillary Facilities, Alternative E

	Year										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Project-Related Jobs	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
A. Project Direct – Peak	5	224	767	932	913	608	454	283	71	0	0
B. Project Direct – Average (85% of Peak)	4	190	650	787	772	515	384	240	60	0	0
C. Indirect/Induced Jobs – Average	3	127	436	527	517	345	257	161	40	0	0
Total Project-Related – Annual Average (B + C)	**7**	**317**	**1,086**	**1,314**	**1,289**	**860**	**641**	**401**	**100**	**0**	**0**

Note: Assumptions by the AECOM EIS Team.

Construction activities would continue year-round, although seasonal wildlife stipulations may preclude activity in specific locations during certain periods. The final two years of construction of the main pipeline and power line would overlap with development of future facilities in the Delamar, Dry Lake, and Cave valleys (effects of future facilities development are addressed in Section 3.18.3).

Projected population gains would be lowest at the outset of the project when construction of the buried storage reservoir and water treatment facility draws on the extensive labor pool in Clark County. The number of non-local workers and the associated net increase in population would increase over time, eventually peaking at 240 workers, with an associated temporary population gain of 360 additional residents in year 4 (2015) (**Table 3.18-30**). Population gains during the first several years would be of little consequence given the proximity of the construction sites to the Las Vegas metropolitan area.

Table 3.18-30 Projected Temporary Population Gains Associated with Construction of the Pipeline and Ancillary Facilities, Alternative E

	Year										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Project-Related Temporary Population Gains	2	74	276	353	360	296	221	138	35	0	0

Temporary population gains would occur in Lincoln and White Pine counties as project construction moves northward. Over time, many resident workers from Clark County who initially commute to work daily would likely seek temporary housing closer to the work site, commuting to the work site at the beginning of the workweek, then returning home on the weekend. Given the area's proximity to the Las Vegas metropolitan area, more than 500 such workers could reasonably be expected to be employed in conjunction with Alternative E from year 5 and 6 (2016 and 2017).

Little or no long-term population impact is expected in conjunction with the construction of the main pipeline and ancillary facilities because most of the construction workers and any spouses, other relatives and friends who accompany them would likely leave the area as they are released, returning to their permanent place of residence or wherever their next job is located.

Construction of Alternative E would result in increased temporary housing demand in nearby communities. Housing needs would average more than 800 units in the 3-year period 2014 to 2016 (year 3 through year 5). Much of that "need" occurs in Clark County, where an inventory of housing exists. As the project moves northward, the housing needs would migrate into Lincoln and White Pine counties where availability is more constrained. The total projected housing requirements, by general location, are shown in **Table 3.18-31**.

Table 3.18-31 Demand for Temporary Housing Associated with Construction of the Pipeline and Ancillary Facilities, Alternative E

Project-Related Housing Needs[1]	Year										
	1	2	3	4	5	6	7	8	9	10	11
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Clark County[2]	5	197	579	556	387	82	59	37	9	0	0
Lincoln County[3]	0	15	140	301	430	357	171	112	0	0	0
White Pine County	0	0	5	19	42	133	198	119	58	0	0
Other	0	0	0	0	0	1	0	0	0	0	0
Total	**5**	**212**	**724**	**876**	**859**	**573**	**428**	**268**	**67**	**0**	**0**

[1] Based on an average occupancy of 1.5 workers per unit.
[2] Most, if not all, of the housing requirement in Clark County would be filled by the then existing housing inventory.
[3] Numbers for 2012 through 2014 reflect jobs located in Lincoln County and filled by Clark County residents.

Project-related housing demand peaks at 430 units in Lincoln County, exceeding the available inventory of motel rooms and RV parking spaces. That demand would result in upward pressure on housing prices, would compete with seasonal demand from tourists and business travelers throughout the area, and may stimulate investment in new lodging. Competition with tourist demand may be viewed by some as an adverse impact, yet be viewed as a benefit during periods of traditionally low tourism and travel.

Demand for temporary housing in White Pine County would result under Alternative E in conjunction with construction activities in Spring Valley. Short-term demand would peak at nearly 200 units in year 7 (2018). Sufficient temporary housing exists in White Pine County to accommodate this demand. However, because most of that capacity is in Ely, a 1-to-1½ hour commute from Spring Valley, some workers may seek temporary housing opportunities elsewhere. State parks with camping facilities and BLM campgrounds in both Lincoln and White Pine counties would see increased demand and use, thereby creating potential conflicts with traditional recreation users. The availability of these facilities to serve project-related demand would be limited by length of stay limitations and seasonal closures.

Alternative E could also result in limited temporary housing demand and population gains in the Baker/Snake Valley during construction of the Spring Valley segments because Ely offers a larger base of lodging, retail and service establishments at about the same commuting distance as Baker.

Development of a temporary construction worker housing facility (TCWF) offers a means to address the projected shortages in short-term housing in Lincoln and White Pine counties.

The job, population, and housing effects related to construction of the pipeline and ancillary facilities under Alternative E would result in many other short-term effects on social and economic resources in the study area. There would be a high correlation between the location of construction activity, number of construction workers employed on the project, and the timing, location and intensity of most of these effects. Key dimensions of the related socioeconomic effects associated with construction of the pipeline and ancillary facilities for Alternative E would be similar to those identified for the Proposed Action and Alternatives A through C in **Table 3.18-24**. The primary differences in the social and economic effects under Alternative E from those under the Proposed Action and Alternatives A through C are presented in **Table 3.18-32**.

Table 3.18-32 Summary of Socioeconomic Impacts from Construction of the Main Pipeline and Ancillary Facilities, Alternative E

• Direct construction employment is estimated at more than 3,600 total job-years over the construction period. Purchases by SNWA, its contractors and their employees would support nearly 2,400 job-years of secondary indirect and induced employment in the region.
• Implementation of Alternative E would directly and indirectly generate about $524 million in additional personal income in the region over the project development schedule. The majority of that personal income would accrue to Clark County residents.
• The project-related effects on employment and income would be approximately 20 percent less than under the Proposed Action and Alternatives A through C, which reflect the reduced scope and cost of the project.
• Alternative E would support higher personal income for local business owners and local workers. In Clark County, these effects would be virtually undetectable within the context of the established economy; however, they would be quite noticeable in Lincoln County. The most pronounced effects would be in the local hospitality industry (motels, restaurants/cafes, and bars), and convenience retail (gas stations and convenience stores).
• A portion of project-related earnings would be spent locally for food and drink, housing, fuel, gaming and other entertainment, and other miscellaneous purchases, but a large portion of earnings ultimately flows to a worker's permanent place of residence. Households would benefit from additional job availability for local residents and upward pressures on local wages, although the effects would be temporary.
• The temporary project-related population influx would increase demand and pressure on local law enforcement/criminal justice, emergency response and emergency medical care systems in northeastern Clark and in Lincoln and White Pine counties. The Nevada State Patrol and local law enforcement provide coverage over large areas and much of the emergency response network consists of community-based volunteers. Local law enforcement provides coverage over large areas and much of the emergency response network consists of community-based volunteers. Response to project-related needs would reduce coverage and increase response times for residents in communities. The increased demand would support additional staffing, response vehicles and other facilities and equipment, which can be difficult to secure for volunteer based organizations in rural areas. The increased demands would occur over a period of years, shifting as the project moves northward.
• White Pine County law enforcement is headquartered in Ely. Given the distance from Ely to the worksites and the relatively large size of the construction work force working in the Spring Valley for about five years, additional law enforcement/criminal justice likely would be required to accommodate service demand from the project.
• The Baker/Snake Valley might experience some increase in demands for emergency response support from construction activities in the Spring Valley, but not as much as would have occurred with the construction of a lateral pipeline and groundwater production well field in the valley.
• Direct construction-related demand would occur in Spring Valley where emergency response services are currently provided by community-based services, staffed by volunteers. Due to the distances between Spring Valley and current service providers, increases in highway accidents, medical emergencies or other incidents associated with the project would place a substantial burden on these volunteer agencies. During the 2 to 3 years when industrial activity and a large construction workforce would be present, additional emergency response capabilities would be desirable.
• Impacts on White Pine and Lincoln County law enforcement and emergency responders associated with construction, operation and maintenance of the Snake Valley Lateral would not occur under Alternative E.

Table 3.18-32 Summary of Socioeconomic Impacts from Construction of the Main Pipeline and Ancillary Facilities, Alternative E (Continued)

• Temporary construction workers typically rely on local hospital emergency rooms for their health care needs, increasing demands on emergency room resources and staff. The increases in services generate more revenue for the facilities, but they also can experience increases in uncollected fees. Within the affected rural areas, hospitals are located in Caliente and Ely. Under Alternative E, the Dils Medical Center in Caliente would experience the largest increase in demand for services, extending over a multi-year period. The increase demand would likely warrant increases in professional and allied health care staffing levels. Emergency response times to rural locations where project-related construction would occur could be lengthy. In the event of serious or life-threatening injuries, local emergency medical response could be augmented by air medical ambulance transport dispatched from the Las Vegas Valley.
• The NDOT, county road and bridge departments, and the BLM could experience increased road maintenance demand.
• Ranchers with grazing permits on public lands encompassing and near the ROWs and access roads in northern Lincoln County and the Spring Valley portion of White Pine County may experience temporary reductions in income due to construction related loss of forage due to disturbance, diminished forage quality due to dust and reduced access to water resulting in reduced weight gain, injury, or death of livestock, increased injury or loss due to vehicle – livestock collisions, and the requirement for more active management. Grazing on allotments in the Snake Valley portion of White Pine County is at low risk for adverse impacts.
• The presence of relatively large numbers of construction workers could potentially disrupt social settings including the few restaurants, bars, casinos and other commercial and recreational settings in these small communities.
• Some residents in these communities may focus on perceived benefits of this influx, such as welcoming the economic boost it provides; however, other residents are likely to be dissatisfied with the change in these commercial, social, and recreational settings.
• Opposition to the water development project may add to resident dissatisfaction in the rural areas, creating potential for conflict between construction workers and community members in some social and recreational settings.
• By moving the status of the project from prospective to real, construction of the pipeline and transmission would be a “signal” event with potentially widespread and long-term concerns for quality of life and outlook for the future.
• There would be increased potential for temporary, short-term increases in certain types of crime in rural communities, such as alcohol and drug-related offenses and minor assaults such as bar fights.
• With the exception of Spring Valley, most Alternative E construction would occur in uninhabited areas and no high concentrations of minority, low income, or Native Americans reside in that Valley. Thus, no direct environmental justice effects would be anticipated.
• The temporary, short-term effects related to construction traffic and construction workers would occur throughout affected communities and would not result in disproportionately high and adverse impacts to minority or low-income populations or Indian Tribes.
• Sections 3.16 (Cultural Resources) and 3.17 (Native American Traditional Values) describe measures to avoid and mitigate potential construction-related impacts to known and currently unidentified sites of importance to Indian Tribes.

Facility Maintenance

Completion of project construction and subsequent transition to operations would be accompanied by changes in the project’s influence on social and economic conditions in the region. Under Alternative E, SNWA would likely employ fewer than 20 full-time staff to oversee routine operation and maintenance of the entire transmission and groundwater production system, with its own staff of service vendors and contractors retained to perform non-routine maintenance, deliver supplies, and provide other support services. The small size of the operations and maintenance work force would result in limited changes in employment, unemployment, personal income, resident population and demographics, housing demand, and on public facilities and services, comparable to those that would occur under the Proposed Action (see the discussion under Facility Maintenance in 3.18.2.2 above). The scale of projected growth would be insufficient, in and of itself, to require additional staff or infrastructure capacity at any of the local government entities and other public service providers in the rural areas. These effects would continue over the operational life of the project. The principal difference under Alternative E would be the virtual elimination of effects in the Snake Valley portion of White Pine County.

Conclusion. Construction of the GWD Project would result in short-term economic and social effects across the study area, similar to those under the Proposed Action. The effects would include beneficial economic effects, including jobs, income, and tax revenues. Short-term effects would also include increased demand for temporary housing and for local services, particularly law enforcement and emergency services. Such project-related effects would be initially concentrated in the Las Vegas Valley, which has adequate capacity to meet these needs, but shift northward into Lincoln and White Pine counties where capacity to meet the project related needs is more limited. Project-related pressures on temporary housing and local services would be particularly high in conjunction with construction activity through central and northern Lincoln County.

Social and economic effects on the Baker/Snake Valley community associated with project construction and maintenance would be avoided under Alternative E.

Long-term direct and indirect economic effects from project operations would be limited due to the small numbers of workers employed on the project. Local governments and school districts would not benefit from long-term property taxes assessed on the project due to the SNWA's tax-exempt status.

Short-term social effects would arise from construction of the GWD Project, primarily in conjunction with the temporary influx of construction workers into established community, recreation and other social settings in the smaller communities. The development and operation of one or more temporary construction worker camps could reduce the level of disruption.

Proposed mitigation measures:

Applicant committed protection measures include the following that are pertinent to socioeconomics, planning and permitting.

- (ACM-A.8.1), (ACM-A.8.2), (ACM-A.8.3), (ACM-A.8.4), (ACM-A.12.2), and (ACM-A12.1, 3, and 4).

Per guidance provided by the BLM NEPA Handbook (H-1790-1), the following additional mitigation measures, defined in Section 3.18.2.2 above, are recommended to help avoid, minimize, rectify and compensate for potential socioeconomic impacts under Alternative E: SE-1, SE-2, SE-3, SE-4, and SE-5. The monitoring and mitigation measures identified for the Proposed Action would apply for Alternative E, but would be more focused on Lincoln County. Consultation and coordination should involve White Pine County in the last two years of construction due to potential impacts from temporary workers residing in White Pine County.

Residual impacts include:

- There would be few residual social and economic effects associated with Alternative E following the completion of construction, operation start-up and reclamation. Foreseeable effects would include new residential, commercial, and industrial development and public infrastructure put in place in response to needs associated with the project. Residual effects may include a small number of jobs, associated income, and additional residents, primarily in the rural areas.

3.18.2.5 Comparison of Alternatives

Construction, operation, and maintenance of all of the action alternatives would result in short-term social and economic effects across the socioeconomic study area. Differences between the alternatives primarily reflect differences in the scale of the project, as defined in terms of miles of pipeline and power lines built and the costs associated with those differences. In fact, this assessment assumes the same level and timing of employment for the first 6 years of project development, e.g., no significant adjustments in capacity of the water treatment/storage facility or construction employment. Differences beyond 6 years relate primarily to the lengths and locations of pipeline and power line construction. As construction advances northward, the basic types of social and economic impacts continue, but the group of affected communities and the intensity of effects experienced in a particular community change. Consequently, the primary differentiation among the alternatives would be the extent of effects in White Pine County, particularly with respect to Baker/Snake Valley – see **Table 3.18-33**.

Table 3.18-33 Socioeconomic Impact Summary for Construction of the Main Pipeline and Ancillary Facilities, Proposed Action and Alternatives A through E

	Proposed Action and Alternatives A through C	Alternative D	Alternative E
Total Job-years of Construction-Related Temporary Employment	~ 7,400 over 12 years	~ 5,700 over 8 years	~ 6,000 over 9 years
Incremental Personal Income Generated in the Region	$ 642 Million	$ 490 Million	$ 524 Million
Noticeable Social and Economic Effects in Clark and Lincoln Counties? [Relative ranking / differences]	Yes [Base Case]	Yes [same in Clark County, higher in Lincoln]	Yes [same in Clark County, lower in Lincoln]
Noticeable Social and Economic Effects in White Pine County? In Baker/Snake Valley?	Yes / Yes	No/ No	Yes / No

3.18.2.6 Alignment Options 1 through 4

Alignment Options 1 through 4 would involve changes in pipeline and/or transmission line alignments, along with associated changes in ancillary facility design, such as addition of another pump station, to achieve the necessary engineering and design parameters. Each alignment option would result in minor differences in employment, timing, or other linkages to social and economic effects in the region, as compared to the Proposed Action or other alternatives. The assessment of the net implications of these is presented below (**Table 3.18-34**).

Table 3.18-34 Socioeconomic Impact Summary for Construction and Operations, Alignment Options 1 through 4

Alignment Option 1 In this option, the Humboldt-Toiyabe power line would parallel an existing transmission line between Spring Valley and the Gonder Substation. Due to the location of the affected segment of the transmission line, Alignment Option 1 would not result in social and economic impacts, including those related to environment justice in Clark and Lincoln County. Alignment Option 1 would be approximately 8 miles shorter, but cross steeper terrain than the alignment included under the Proposed Action. These differences likely result in some offsetting implications in terms of their effects on the number of construction workers involved, duration of construction activity, and construction costs. Although the net effect of these differences is unclear, the scale of the changes would not be expected to result in appreciably different short-term, construction related social and economic impacts in White Pine County from those anticipated under the Proposed Action. The ROW for Alignment Option 1 would involve lands managed by the USFS and some private land, whereas only public lands are associated with the ROW for the Proposed Action. Long-term social and economic effects related to pipeline and ancillary facility operations and maintenance, assuming the implementation of Alignment Option 1, would include limited scale for direct and secondary employment, population, housing demand, demands on public facilities and service, fiscal effects, and additional social interactions. These effects would not be significant in the context of current conditions or future conditions given implementation of the remainder of the project. Social and economic effects associated with the Future Facilities would be unaffected by Alignment Option 1.

Table 3.18-34 Socioeconomic Impact Summary for Construction and Operations, Alignment Options 1 through 4 (Continued)

Alignment Option 2 This option would change the location of the main pipeline and associated power line in North Lake Valley, collocating more of the project facilities within the Highway 93 corridor. Implementation of this option would require an additional pump station, allow another pump station to be smaller, alter the pipeline and power line requirements in portions of North Lake Valley, and increase the total length of the main pipeline by approximately 5 miles. Due to the location of the affected segment of the transmission line, Alignment Option 2 would not result in social and economic impacts, including those related to environment justice, in Clark County. Construction of the added length of pipeline and pump station would require a larger work force, employed for a slightly longer duration in Lincoln County. Those effects would be offset by reducing the level of construction associated with another pump station, power lines, and the pipeline for the North Valley lateral. The latter changes would be accomplished by either employing a smaller work force, reducing the duration of activity, or some combination thereof. The net effects of the differences are unclear, and while likely not significant, would result in minor changes in effects within Lincoln County and the communities of Pioche, Panaca and Caliente. Long-term social and economic effects related to pipeline and ancillary facility operations and maintenance, assuming the implementation of Alignment Option 2, would include limited scale for direct and secondary employment, population, housing demand, demands on public facilities and service, fiscal effects, and additional social interactions. These effects would be relatively inconsequential in the context of current conditions or future conditions given implementation of the remainder of the project. Social and economic effects associated with the Future Facilities would unaffected by Alignment Option 2.
Alignment Option 3 This option eliminates the proposed main power line between Spring Valley and the Gonder substation, providing an alternative connection to another major regional power line in northern Lincoln County. No such alternative presently exists. Consequently, the potential to implement Alignment Option 3 is contingent upon development of another power line. Implementation of Alignment Option 3 would eliminate the need for 34 miles of transmission line and allow use of a 138 kV main power line. A new substation would be built, as would an intertie between the substation and the main power line. Due to the location of the affected segment of the transmission line, Alignment Option 3 would not result in social and economic impacts, including those related to environment justice, in Clark County. Construction of the substation would require a larger work force, employed for a slightly longer duration in Lincoln County. That effect would be offset by reducing the level of construction in White Pine County, either by employing a smaller work force, reducing the duration of activity, or some combination thereof. The net effects of the differences are unclear, and while not likely to be significant, would result in minor shifts in the incidence of effects; slightly higher/increased/longer in Lincoln County and the communities of Pioche, Panaca and Caliente, and slightly lower/decreased/shorter in White Pine County and the city of Ely. Long-term social and economic effects related to pipeline and ancillary facility operations and maintenance, assuming the implementation of Alignment Option 3, would be limited in scale for direct and secondary employment, population, housing demand, demands on public facilities and service, fiscal effects, and additional social interactions. These effects would not be significant in the context of current conditions or future conditions given implementation of the remainder of the project. Social and economic effects associated with the Future Facilities would unaffected by Alignment Option 3.
Alignment Option 4 Alignment Option 4 would realign a segment of the main pipeline and power line through the Delamar Valley. The realigned segment would be approximately 2 miles shorter, but involves traversing an elevation grade that requires construction of an additional pump station. Due to the location of the affected segment of the transmission line, Alignment Option 4 would not result in social and economic impacts, including those related to environment justice, in Clark or White Pine counties. The shorter length of main pipeline and additional pump station associated with Alignment Option 4 likely would result in some changes in workforce and/or changes in construction activity duration in Delamar Valley and would affect project costs. To some extent, the effects associated with these changes would offset each other. Although the net effects of these differences on short-term, construction-related social and economic impacts would occur in Lincoln County, they likely would be negligible with the context of the overall project. Any effects would be temporary, the incidence of which would be focused on the communities of Alamo and Caliente. The ROW for Alignment Option 4 would involve only public lands, whereas the ROW for the segment included in the Proposed Action would involve public, State and some private land. Long-term social and economic effects related to pipeline and ancillary facility operations and maintenance, assuming the implementation of Alignment Option 4, would include limited scale for direct and secondary employment, population, housing demand, demands on public facilities and service, fiscal effects, and additional social interactions. These effects would not be significant in the context of current conditions or future conditions given implementation of the remainder of the project. Social and economic effects associated with the Future Facilities would be unaffected by Alignment Option 4.

3.18.2.7 No Action

Under the No Action Alternative, the proposed project would not be constructed or maintained. No project-related effects on employment, population, housing demand, demands on public facilities and services, fiscal effects, or social conditions would occur. Social and economic conditions in the region would continue to be influenced by national and international events and policies beyond local control, climate change, and local actions and events taken by public agencies, private enterprises, and individuals. Some of the actions and events would occur on public lands managed per directions set forth in the Ely and Las Vegas RMPs.

3.18.2.8 Groundwater Development and Groundwater Pumping

Subsequent to decisions by the NSE approving the SNWA's applications for water rights, the SNWA would embark on a groundwater exploration and development program. That program is anticipated to result in the completion of between 83 and 174 production wells in the 5 groundwater production basins. The wells would be completed over time, with the specific locations and development to be determined in the future. The ROW applications for those wells, along with associated collector pipelines, power lines and other future facilities, will be subject to additional NEPA analysis (subsequent tiers).

Issues

- The short and long-term employment, income, and population/migration related to the construction and operation of the future facilities, including the groundwater production wells.
- Demand for short-term and permanent housing during construction and operation of the future facilities.
- Demands on and potential risks to local infrastructure and public facilities and services, including municipal/public water systems, associated with construction and operations of future facilities, groundwater pumping and drawdown.
- Potential indirect effects of groundwater drawdown on agriculture and resources affecting tourism and outdoor recreation.
- Potential indirect effects on agricultural activities outside of the region due to loss of agricultural outputs from the region.
- Potential direct and indirect fiscal effects related to groundwater production and drawdown.
- Potential effects on social organization and conditions associated with the development and operation of the groundwater production fields and drawdown.
- The potential for further fragmentation of the agricultural community if "wheeling", a fee-based arrangement for the transport of non-SNWA water through the main pipeline, beyond the current contractual obligations with the LCWD, is allowed.
- Concern that urban attitudes towards the project discount effects on locally affected populations in the rural areas.
- Potential effects of groundwater production fields and drawdown on property/real estate values and related fiscal effects.
- Effects of groundwater drawdown on quality of life, lifestyle, and long-term cultural heritage.
- Concerns regarding potential indirect effects of drawdown on air quality and other environmental resources contributing to quality of life effects, particularly for Utah residents and communities along the Wasatch Range.
- Potential effects of future facility development, production, and drawdown on low-income and minority populations.
- Potential effects of climate change on socioeconomic conditions. Refer to Air Resources, Section 3.1.3.2, for a discussion of how climate change could contribute to groundwater development pumping effects on socioeconomic conditions in the region.

Assumptions

- The assessment uses programmatic assumptions regarding the development timing of production wells, with such timing consistent with the groundwater pumping scenarios.
- The assessment uses programmatic assumptions regarding the direct employment requirements associated with the development of production wells and the associated access roads, power lines, collector pipelines, and other facilities.

- Programmatic assumptions are made regarding the development of one or more temporary construction worker camps as to location, period of use, and range of services provided.
- Potential short-term and long-term indirect effects of project ROWs and facilities on grazing are addressed based on the range resources assessment conducted for this EIS.
- Potential short-term and long-term indirect effects of project ROWs and facilities on public recreation are addressed based on the recreation assessment conducted for this EIS.
- Indirect potential for disproportionate and adverse effects on Native American populations are addressed based on the cultural and Traditional Native American Values assessments conducted for this EIS.
- Potential long-term effects on local agricultural production are based on projected groundwater drawdown effects in the areas with irrigated pasture and croplands.
- Only water owned by the SNWA or conveyed on behalf of the LCWD would be transported through the pipeline, i.e., the SNWA would not engage in "wheeling" – the provision of transportation capacity to other parties on a for fee basis. Note that the BLM has no authority over this facet of pipeline operations.
- Assumptions about the potential changes in future groundwater availability from groundwater pumping do not incorporate additional assumptions about the effects of climate change because specific long term effects of climate change are not presently known, and the incremental contribution of climate change effects to project effects cannot be reasonably estimated. A general discussion of climate change effects is provided in Section 3.1.3.2, Climate Change Effects to All Other Resources.

Methodology for Analysis

The primary drivers of future socioeconomic impacts associated with future facilities are: 1) the number and location of groundwater production wells, 2) the number of construction workers employed on the project and duration of that employment, and 3) the areal extent, timing and magnitude of groundwater drawdown on the region's environmental resources and the risks such drawdown poses to economic resources and social conditions and structure. Construction of the future facilities would result primarily in short-term effects, whereas drawdown related effects would be long-term, materializing and increasing over time. Unlike many natural resource impacts which occur within or adjacent to the ROW corridors and in the groundwater production basins, social and economic effects also would occur in the surrounding communities and along the major transportation access routes.

The timing, duration, and location of construction activities are important parameters in the assessment. SNWA's project schedule calls for construction activity on the main pipeline and ancillary facilities to begin in 2012 (year 1), with completion by 2023 (year 12) (SNWA 2011). Development of groundwater production wells and collector systems is scheduled to coincide with the availability of conveyance capacity in a particular groundwater production basin. Thus, exploration drilling and production well development would begin in Delamar Valley and progress northward. Well development activities are assumed to continue year-round and could involve the deployment of multiple drilling rigs that move to new locations as wells are completed. After wells are tested and found to be suitable for use as production wells, other construction crews would install the necessary pumps, collector pipelines, power lines, and other facilities. Seasonal wildlife stipulations could preclude activity in specific locations during certain periods.

The SNWA's anticipated groundwater needs would influence the well development schedule. Pumping assumptions defined as part of the groundwater modeling conducted for this EIS portray a multi-phase schedule to produce and convey water to the Las Vegas Valley to meet the SNWA's demand projections, assuming continued availability of Colorado River water. Under those assumptions, future production in Snake Valley is not envisioned to achieve full production quantities until around the middle of the century. Drought, affecting water availability from other sources, could accelerate the development of the future facilities and onset of water production, up to quantities approved by the NSE and subject to any conditions contained in other agreements.

Construction of the future facilities under the Proposed Action or Alternatives would not have substantial direct effects on long-term population or economic growth in the region. No substantial long-term effects on the region's economic and social resources and structure are foreseen in conjunction with the maintenance of the future facilities and the

associated operation of the pipeline. Long-term effects, to the extent that they would occur, are discussed in Section 3.18.3.

Potential project-related social and economic effects of groundwater drawdown are assessed based on review of projected drawdown areas and range of drawdown for each alternative considering existing land use and economic activities within those areas and the social and economic linkages to the broader assessment area. The social assessment includes a review of current and historic attitudes and opinions toward groundwater pumping and drawdown, associated social effects for each affected public in the rural and metropolitan parts of the assessment area, and potential future effects based on the location, timing and extent of projected groundwater drawdown.

The relationship between groundwater production and conveyance and its role in enabling future growth in the Las Vegas metropolitan area is discussed under the Proposed Action.

Future Facilities development and pumping profiles would be unaffected by the Alignment Options. Therefore, the Alignment Options are not addressed in this section.

Climate Change, Section 3.1.3.2, in Air Resources discusses the potential effects of climate change in the region. Climate change-related effects could occur in the same time frame as those related to the groundwater development pumping. However, given the current scientific knowledge regarding climate change, its potential implications on a regional/localized level, and the timing of future changes, it is not possible to relate potential effects associated with climate change to those related to specific pumping alternatives analyzed in this draft EIS.

3.18.2.9 Proposed Action

Groundwater Development Areas

SNWA is planning to conduct exploratory drilling in each groundwater basin in which the NSE grants it water rights. The results of that drilling program will be used by SNWA to determine the number and location of production wells to be developed. SNWA anticipated between 144 and 174 production wells, yielding a maximum annual production of 176,555 afy. Future groundwater production facility development would occur in four periods: years 5 thru 8 (2016 to 2019) in Delamar, Dry Lake and Cave valleys; years 14 thru 16 (2025 thru 2027) in southern Spring Valley; years 31 thru 33 (2042 thru 2044) in northern Spring Valley; and years 36 thru 38 (2047 thru 2049) in Snake Valley. These assumptions are consistent with the assumptions regarding the initiation of pumping and water conveyance used in the groundwater modeling performed for this project (see Section 3.3, Water Resources). Under these assumptions, SNWA plans its capital investment associated with future facilities development based on projected need, but would be at risk of short-term constraints on water availability until the remaining proposed production wells are completed.

The assumed development schedule for future facilities in Delamar, Dry Lake, and Cave valleys implies concurrent development with construction of the latter phases of the Proposed Action in northern Lincoln County. Such concurrent development could exacerbate short-term demands on housing and public services in the area. Development of future facilities in Spring and Snake valleys would occur years after the completion of construction of the Proposed Action.

Each phase of groundwater production well field development would result in a series of short-term construction and development activities. Construction employment, including the indirect and induced effects, for the future facilities would average about 137 jobs for 4 years during development in Delamar, Dry Lake and Cave valleys; 125 jobs for each of the two 3-year development phases in Spring Valley; and 105 jobs when development occurs in Snake Valley (**Table 3.18-35** and **Figure 3.18-11**). Approximately 60 percent of these short-term jobs would be directly associated with well field development. Each period of future facility development would be characterized by a temporary population influx into nearby communities, the extent of which reflects the number of non-resident workers employed on the project and filling jobs supported indirectly by the project. Given the rural nature of the groundwater development areas, this analysis assumes that Clark County residents could fill approximately 35 percent of the direct, indirect and induced jobs associated with future facilities, with residents of the rural areas filling another 35 percent, and non-locals temporarily relocating to the area filling the remaining 30 percent.

Table 3.18-35 Short-term Employment Effects, Future Facilities Development for the Proposed Action

	Delamar, Dry Lake, and Cave Valleys	Spring Valley	Snake Valley
Number of Production Wells	Up to 33 total	Up to 93 total	Up to 48
Timing of Exploratory Drilling	2014	2020 to 2022 (South) 2038 to 2039 (North)	2043 to 2044
Timing of Production Well and Collector Pipeline Development	2016 to 2019	2025 to 2027 (South) 2042 to 2044 (North)	2047 to 2049
Temporary Employment Effects – Average			
Direct employment	82	75 per phase	63
Indirect/Induced Jobs[1]	55	50 per phase	42
Total Temporary Jobs, Future Facilities	**137**	**125 per phase**	**105**

[1] Based on a jobs multiplier of 0.67 indirect and induced jobs per direct job.

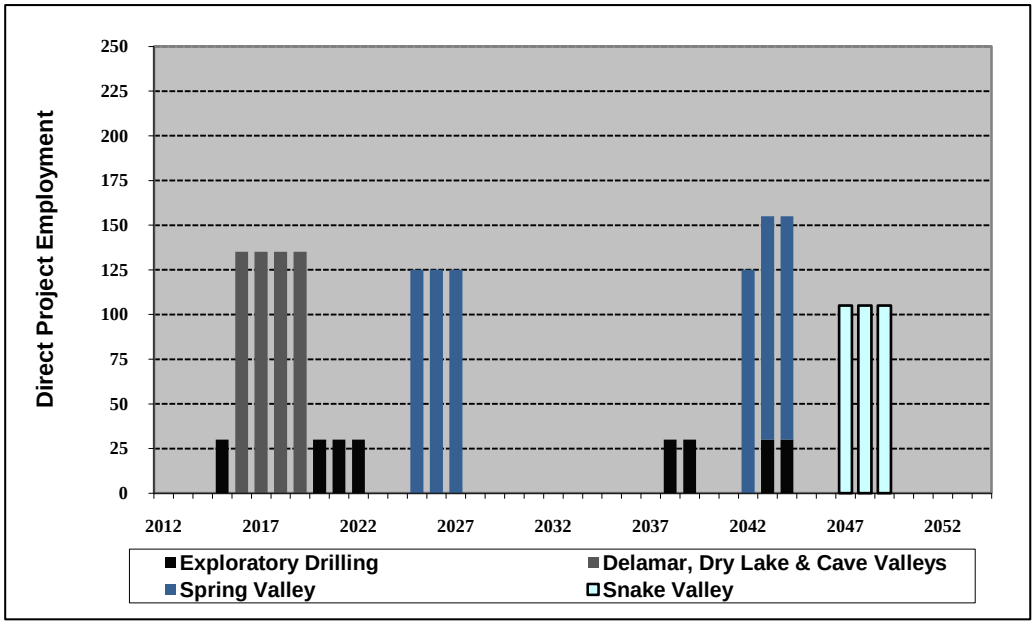


Figure 3.18-11 Direct Short-Term Employment - Future Facilities Development Associated with the Proposed Action

Caliente, Panaca, and Pioche may experience concurrent temporary economic and social effects, including demands on temporary housing and public facilities and services from pipeline construction and exploratory drilling and future facilities development in the Delamar, Dry Lake, and Cave valleys. Such effects could occur in the 2016 to 2018 timeframe.

Communities affected by the temporary population influx would likely experience a larger presence of workers on weekdays than on weekends because some non-local workers would return home on weekends and holidays. The estimated short-term population effects arising in conjunction with production well field development in the Delamar, Dry Lake and Cave valleys, range from 77 on weekends to 155 on weekdays, affecting primarily communities in Lincoln County. Comparable temporary population effects would be associated with each phase of future facility

development in Spring Valley. The short-term incremental population impacts associated with future facility development in Snake Valley would be lower, ranging from about 140 during the workweek to 80 on weekends (**Table 3.18-36**).

Table 3.18-36 Short-term Population Effects, Future Facilities Development for the Proposed Action

	Delamar, Dry Lake, and Cave Valleys	Spring Valley	Snake Valley
Timing of Production Well and Collector Pipeline Development	2016 to 2019	2025 to 2027 (South) 2042 to 2044 (North)	2047 to 2049
Total Temporary Jobs, Future Facilities - Average	137	125 per phase	105
Incremental Temporary Population			
Weekdays[1]	155	140 per phase	119
Weekends[2]	77	80 per phase	66
Temporary Housing Demand (Units)	91	83 per phase	69

[1] Weekday population would depend on the locations of indirect and induced jobs supported by future facilities development.
[2] Assumes 1.5 persons per each non-resident worker.

The economic and population influx associated with future facility development would result in other effects on social and economic conditions. Most of these would be temporary, dissipating quickly after well field development is completed and the nonlocal workforce has left the area (**Table 3.18-37**).

Table 3.18-37 Socioeconomic Effects, Future Facilities Development for the Proposed Action

• Construction of the future facilities would directly and indirectly generate an estimated $100 to $150 million in additional personal income in the region over the course of the four phases of development.
• Increased demand for general government services, e.g., the county clerk, and on county and municipal utilities, would generally be modest in Clark and White Pine counties. Public services and facilities in Lincoln County may be affected concurrently by demand associated with pipeline and transmission line construction and exploratory drilling and future facility development.
• The NDOT, county road and bridge departments, and the BLM could experience increased road maintenance demand.
• Demand for temporary housing is estimated at 91 units in conjunction with the Delamar, Dry Lake, and Cave valleys phase of the future facilities, 83 units for the two Spring Valley phases, and 69 units with the Snake Valley phase. The total need includes demand for RV parking/hookups and motel rooms for non-resident workers who would return to their homes on weekends. A segment of the housing demand associated with indirect and induced jobs would be located in Ely, Las Vegas and other communities that are removed from the immediate development area.
• Motels, hotels, RV campgrounds and other temporary housing resources in Clark and Lincoln counties, including new resources developed to serve the temporary demand from the Proposed Action, and those within reasonable commuting distance from the job sites, could accommodate much, if not most of the temporary demand.
• Depending on the timing of exploratory drilling and future facilities development, the short-term housing demand associated with the Delamar, Dry Lake and Cave valleys phase of the future facilities may support continued operation of a TCWF in central Lincoln County, should such a facility have been developed for the Proposed Action and still be operational.
• Short-term housing impacts in Baker/Snake Valley could be acute, depending on the availability of temporary housing at the time and level of seasonal tourism demand associated with nearby GBNP and other recreational, scenic and historic attractions in the area. Local business establishments would benefit from the additional demand and spending, although the competing demands may also give rise to additional social conflict.
• Temporary population influxes from the project would increase demand and pressure on local law enforcement/criminal justice, emergency responders and emergency medical care capabilities. The increased demands would occur over a period of years, shifting location as the project moves northward.

Table 3.18-37 Socioeconomic Effects, Future Facilities Development for the Proposed Action (Continued)

• Law enforcement coverage is stretched thinly over the vast geographic area and most of the emergency medical and fire responder network consists of community-based volunteers. Thus, responses to project-related needs may be lengthy and would reduce coverage and increase response time to residents in the event of another call concurrent with the first. Given the small scale of future facilities construction, law enforcement and emergency response demands are likely to be modest.
• Based on SNWA's preliminary project development costs, purchases of materials and supplies used in the construction of the future facilities would generate an estimated $11 to $14 million in state and local sales and use taxes. The state general fund, public education, and governments would benefit from such taxes. The distribution of revenues would depend on where a vendor is licensed to do business, i.e., out-of-state versus in-state, and where if the latter, and the designated place of delivery. Having major vendors establish a place of business in Lincoln and/or White Pine counties can increase the share of sales and use tax revenues accruing in those counties.
• The state and affected county governments would realize increases in sales tax revenue from local retail expenditures by workers and incremental revenues from other taxes, fees, and charges for services.
• Few school-age children are likely to accompany the temporary construction work force.
• Ranchers with grazing permits for public lands may experience temporary reduction in income due to construction related effects on grazing due to loss of forage, diminished quality due to dust, injury or death of livestock, and the requirement for more active management.
• The effects of future facility development on community social and economic conditions would be most pronounced in the Baker/Snake Valley community, due to the level of activity relative to the size of the community, proximity of such development to the community, and the area's remoteness from other communities. Snake Valley is the only future facility development area encompassing a community. Consequently, the social and economic effects of future facility development would be more pronounced in the Snake Valley than in other locations, because more people's lives would be directly affected. Moreover, the Snake River Valley communities are relatively stable and socially cohesive, and most of the residents are strongly opposed to groundwater development, which would likely exacerbate conflict and the adverse social effects of Future Facility development.
• Rural portions of the study area would experience an influx of a single-status, predominately working–age male work force into the existing small, relatively cohesive and stable social settings. Several of the communities have prior, though not necessarily contemporary experience accommodating and adjusting to temporary population influx associated with other construction projects and/or natural resource development.
• Some conflicts in social settings and increases of certain types of crime could occur. Opposition to the project would increase the potential for conflict between residents and individuals working on the project.
• The absence of population in most of the groundwater development areas and absence of high concentrations of minority or low-income populations and Indian Tribes in the inhabited groundwater development areas effectively preclude disproportionately high and adverse future facilities development-related impacts to minority or low-income populations and Indian Tribes; therefore, no Environmental Justice impacts would be anticipated.

Groundwater Pumping

Potential long-term effects of groundwater production and drawdown are generally of greater concern in the rural areas than are the direct effects. Much of the economic activity in the rural areas is directly or indirectly reliant on groundwater, or on seeps and springs replenished by precipitation occurring in higher elevations of the Great Basin range. The groundwater modeling performed for this assessment produced forecasts of drawdown over an extended time horizon. The pattern and extent of drawdown reflect the timing and volume of pumping, expanding in areal extent and vertical extent/elevation over time (Section 3.3).

Some effects of pumping would have surface manifestations, e.g., changes in flows in springs, seeps and streams. Although not visible, subsurface effects would also have manifestations bearing on social and economic conditions in the region. For instance, groundwater drawdown poses long-term risks to the existing agricultural sector in the rural areas through short and long-term effects on grazing on public lands, increasing costs of irrigation and well development costs, and changes in stream flows and seeps that serve as livestock water supplies. Long-term drawdown also poses risks to public water systems that rely on groundwater.

Potential social and economic impacts related to the pumping effects are inherently long-term, materializing over time as pumping and groundwater drawdown continue. Furthermore, due to the natural processes involved, the incidence of social and economic effects could materialize at some distance from the groundwater production locations and may continue long-term even if production ceases. Within that paradigm of delayed physical effects resulting in delayed social and economic effects that are not readily reversible or even stabilized, lie two critical dimensions of the pumping effects as they pertain to social and economic conditions: risk and uncertainty. Although the groundwater simulation examined effects at discrete points in time and across a wide geographic area, the actual incidence of changes in groundwater would occur continually across the time, such that the timing of effects within a given area or affecting an individual rancher is unknown. Because of differences in existing well depths and productive groundwater zones for an individual well, groundwater drawdown would also affect individual property owners differentially. Farmers and ranchers owning these lands could experience diminished land values as a result. **Table 3.18-38** summarizes the foreseeable and potential impacts on social and economic conditions associated with pumping effects under the Proposed Action.

Table 3.18-38 Socioeconomic Effects Associated with Long-Term Pumping, Future Facilities with the Proposed Action

- Socioeconomic effects of declining groundwater levels could include:
  - Higher future individual water well development and pumping costs in and near the groundwater development areas
  - Increased pumping and irrigation costs for farms and ranches, resulting in lower agricultural productivity, lower land value of farms and ranches from agricultural pursuits, and diminished long-term financial viability of agricultural operations.
  - Some landowners, principally those having senior surface or groundwater water rights, could see higher property values based on the value of water.
  - Customers of the Baker public water system could experience higher water rates over time
  - Uncertainty regarding water supplies as groundwater levels drop, potentially discouraging second home investment, retirement and lifestyle migration and other forms of economic development
  - Disincentives to future economic development in some rural areas, including development on public lands identified for potential disposal in the Ely RMP.
- Socioeconomic effects associated with impacts on vegetation could include:
  - Adverse impacts on ranch income and ranch values due to changes in forage type and availability, potentially affecting grazing on public lands and increasing the costs for hay from private lands and/or leasing pasture.
  - Changes in vegetation types affecting forage for wildlife, including big game species, which could potentially affect hunting and other outdoor recreation.
- Socioeconomic effects associated with impacts on wildlife populations could include:
  - Long-term reductions in hunting, fishing and wildlife watching, with reductions in recreation expenditures in communities
- Potential indirect socioeconomic effects associated with increases in airborne dust/reductions in air quality could include:
  - Reduced palatability of forage, adversely affecting wildlife populations and livestock grazing.
  - Minor effects on air quality in communities downwind from the assessment area.
  - Minor effects on general visibility and night-skies that may adversely impact tourism, including visitation to GBNP.

Table 3.18-38 Socioeconomic Effects Associated with Long-Term Pumping, Future Facilities with the Proposed Action (Continued)

- There are an estimated 24,600 acres of private agricultural lands in Spring and Snake valleys, approximately 75% of which are in Snake Valley.
- Energy use and costs related to irrigation and domestic use increase as pumping depth increase. In some instances, drawdown could require installation of large pumps and/or new replacement wells, involving additional capital investment, with no assurances that a new supply could be developed. Increased irrigation costs may result in reductions in the amount of land irrigated, which would result in lower overall crop or livestock production and thereby lower farm income.

  The groundwater simulations indicate that 64+ percent of the total (15,792 acres) would be affected by vertical drawdown in excess of 10 feet at the end of the full build out plus 75 year, following system completion and full production.

  Of the affected lands, nearly 6,100 acres overlie areas having projected drawdown of 20 to 49 feet, with nearly 8,600 additional acres overlying areas with projected drawdown of 50 to 99 feet – see the following table.

Acres of Private Agricultural Lands Affected By Long-Term Drawdown, Proposed Action

Private Agriculture Lands	Spring Valley			Snake Valley			Combined Total			
	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out Plus 200 Years
	6,111 acres			18,489 acres			24,600 acres			
Drawdown Interval	Acres Within Interval			Acres Within Interval			Acres Within Interval			% of Total
Unaffected to <10'	4,905	1,405	931	18,489	7,403	6,477	23,394	8,808	7,408	30.1%
10' - 19'	1,206	866	949	-	265	891	1,206	1,131	1,840	7.5%
20' - 49'	-	3,083	1,023	-	3,014	890	-	6,097	1,913	7.8%
50' - 99'	-	757	2,562	-	7,807	5,257	-	8,564	7,820	31.8%
100' - 200'	-	-	646	-	-	4,973	-	-	5,619	22.8%
200' or more	-	-	-	-	-	-	-	-	-	0.0%
Total Affected	1,206	4,706	5,180	-	11,086		1,206	15,792	17,192	69.9%
% of Total	19.7%	77.0%	84.8%	0.0%	58.8%	63.7%	4.9%	64.2%	69.9%	-

- The combined area of private agricultural land affected by drawdown of 10 feet or more increases to 17,192 acres when the groundwater pumping simulation is extended to full build out plus 200 years. Furthermore, the severity of the drawdown effects increases such that the areal extent of agricultural lands affected by drawdown of 50 feet or more increases to 13,439 acres, nearly 54 percent of all private agricultural lands in the Spring and Snake valleys.

- Projected long-term groundwater drawdown would occur under 4,918 acres of public lands identified for potential disposal in the Ely RMP. Approval of the GWD Project, with its potential implications on drawdown and water availability could have adverse effects on the utility of those lands for community development, the likelihood of disposal, and associated effects on the BLM in terms of management.

- The transfer of groundwater produced from White Pine and Lincoln counties to Clark County under the Proposed Action would generate up to $1.77 million annually in interbasin water transfer fees under N.R.S. 533.438; the amount would vary in response to the actual quantities of water conveyed and assumes that Lincoln County would waive such fees for intra-county transfers of water conveyed in the pipeline. Proceeds from such fees are to be deposited in a trust fund, the balance of which must be used for economic development, health care, and education.
- Completion and operation of the pipeline under the Proposed Action could allow SNWA to convey an additional 8,000 afy of groundwater that is presently produced for agricultural use in White Pine County. Up to $80,000 per year in additional interbasin water transfer fees would result from such transfers.

Table 3.18-38 Socioeconomic Effects Associated with Long-Term Pumping, Future Facilities with the Proposed Action (Continued)

• Monies collected from the interbasin transfer fees would be distributed between Lincoln and White Pine counties in pro rata share to the quantity of water produced from each county. The distribution shares are subject to review and approval by the NSE, taking into consideration the likely source of water in hydrographic basins located in two or more counties.
• The value of some agriculture land in the rural counties might be reduced due to higher irrigation costs, reduced production, and/or reductions in herd size associated with changes in forage for grazing on public lands. Diminished value of agricultural lands could adversely affect local government revenues and any long-term loss of population in rural counties could adversely affect intergovernmental revenue transfers and PILT.
• Any future purchases of private property by the SNWA, to obtain additional water for use in environmental mitigation or to compensate current owners for adverse effects on agricultural operations, would remove additional property from local property tax rolls.
• Potentially higher value of some private lands, particularly those with senior water rights, may occur after the pipeline is completed.
• Long-term losses of agricultural production from the rural counties associated with groundwater drawdown and increases in production costs could have long-term indirect impacts on suppliers and customers; as an example, other ranchers and feedlots that purchase hay produced in the Snake Valley would need to find alternative sources of feed or cut back on the numbers of animals fed.
• Effects of groundwater drawdown could threaten the long-term viability of agriculture in the Snake Valley, and thereby the broader Snake Valley community by diminishing the economic support for the already limited retail and service base in and around Baker. Losses sufficient to result in closure of one or more of these establishments would in turn adversely affect the quality of life for staff and visitors at the GBNP who rely on those establishments for some essential goods and services.
• The real and perceived effects of groundwater drawdown may constrain long-term economic development and diversification in the rural areas, by limiting investment in second and retirement homes, discouraging lifestyle migration, and hampering new business recruitment.
• Long-term effects of groundwater drawdown include surface subsidence within the production areas with the extent of long-term subsidence generally correlated to the level of drawdown. Potential effects of subsidence include damage to roads and highways, fences, structures (e.g., cracked walls and foundations), and buried utility systems. Potentials for damage would be highest in the Snake Valley due to the density of and proximity to development, given that the most severe drawdown outside of Snake Valley would occur in uninhabited or lightly settled areas. (See Section 3.2.2 for additional discussion of subsidence risks).
• A major accident or structural failure involving the pipeline or transmission line, particularly at or near a crossing of a major regional highway, would impact local law enforcement and other first responders and potentially disrupt highway traffic. Depending on the location and severity, such a disruption could result in substantial economic costs, inconvenience to the traveling public, and fiscal effects on the responding agencies.
• Long-term effects on population, employment, labor force and economic structure stemming indirectly from groundwater drawdown would have corollary effects on social organization and conditions in the affected communities.
• Continuation of existing project-related attitudes, opinions and associated social effects including political conflict, social dissension, community discord and personal distress.
• Social and economic effects would stem from manifest effects, perceived risks and benefits of the GDW Project for the various affected parties and could in turn affect local population, economic and employment conditions.
• Issuance of the ROD, followed by project construction and the onset of groundwater pumping, would cause increasing distress for many residents of the rural portion of the assessment area. Distress would stem from their perception of the risks of damage to the physical and biological environments and associated concern for detrimental long-term effects on their health, quality of life and livelihoods, and those of their children, grandchildren, and successive generations. For some residents of the rural assessment area, particularly those in Snake and Spring Valleys, personal distress would stem from the risk of loss of a valued rural way of life.
• Some residents, organizations and community leaders in Lincoln County may view the benefits of the Proposed Action, groundwater pumping, and future residential and commercial development and other economic activities as partially or wholly offsetting the potential social and economic risks of groundwater drawdown.
• For some Las Vegas Valley residents, organizations, community and political leaders, and development interests, initiation of groundwater pumping may provide a measure of assurance that water will be available to enable growth in the Las Vegas Valley and provide a buffer against future water shortages due to episodic drought or climate change.
• Residents of the Las Vegas Valley are likely to remain divided on their support for the groundwater development project because of the implications of continued growth in the Las Vegas Valley for the areas' environment and quality of life, concern about the project's cost and concern about the equity and environmental consequences of groundwater pumping for the rural areas.

Table 3.18-38 Socioeconomic Effects Associated with Long-Term Pumping, Future Facilities with the Proposed Action (Continued)

• Some residents of communities located downwind from the affected areas would be concerned about potential indirect effects from long-term pumping on air quality.
• The drawdown associated with groundwater production would generate long-term adverse social and economic effects in the rural areas. However, these effects would occur throughout the socioeconomic study area and would be unlikely to result in disproportionately high and adverse impacts to a minority or low-income population or Indian Tribes.
• A key concern among tribal representatives participating in the government-to-government consultations was the potential for groundwater development to affect the springs and streams in and adjacent to the basins in which pumping would occur. **Table 3.3.2-6** describes potential reductions in spring and stream flows forecast to occur under the Proposed Action. Such flow reductions could affect Native American traditional values, but the extent and manner of such effects are not known. Also unknown is the extent to which the strategies recommended to address the effects of pumping on surface water (see **Table 3.3.2-6**) would alleviate, reduce, or avoid potential effects on Native American traditional values. With respect to effects on Native American traditional values, the CEQ environmental justice guidelines do not identify thresholds, scales, or appropriate comparisons to determine whether the effects on such traditional values would have an adverse impact on affected Indian Tribes that would exceed those effects on the general population.

Operation of the groundwater production fields are included in the effects associated with operation of the Proposed Action, with up to 20 SNWA staff positions. Those jobs would represent long-term beneficial effects of the Project. The low number of direct long-term jobs associated with the project would translate to limited effects on total employment, unemployment, personal income, resident population and demographics, housing demand, and on public facilities and services. The scale of projected growth would be insufficient, in and of itself, to require additional public sector staffing or facility capacity, although the growth could contribute to needs arising from other sources.

Relationship of the GWD Project to Potential Growth Inducing Effects

CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act contain the following regarding the effects to be addressed in an EIS:

> *"Effects include…(b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems." (40 CFR1508.8)*

CEQ Regulations provide no specific guidance on how to identify or assess the potential for growth inducing effects. Direct, indirect, and induced employment associated with the Proposed Action would result in short term-temporary growth in the affected counties and communities during construction and limited long-term growth during project operations and maintenance. Construction, operation, and maintenance of future facilities would have similar growth effects.

Direct Population and Economic Growth Effects of the Proposed Action and Alternatives

The Proposed Action and Alternatives would result in temporary population growth during construction of the pipelines, pumping stations, regulating tanks, electrical power lines, electrical substations, the water treatment facility and the underground water storage facility. Construction-related growth effects are anticipated to be short-term and temporary and would occur primarily in Lincoln and White Pine counties, although some secondary economic and employment benefits would occur in the Las Vegas Valley and elsewhere in the state and nation. Many construction workers would be anticipated to be drawn from the resident Clark County workforce and therefore, would generate little, if any, growth effects in that county. Long-term direct growth effects associated with the operation and maintenance of these facilities would be minimal and would occur primarily in Lincoln and White Pine counties. Section 3.18.2 above describes the potential direct employment and population effects associated with construction, operation, and maintenance of Proposed Action-related water conveyance facilities. Construction-related growth effects of the water conveyance facilities would vary somewhat in location and timing, depending on the alternative, but

growth effects of operation and maintenance of water conveyance facilities would be similar across all pumping alternatives.

Indirect Population and Economic Growth Effects of the Development of Future Facilities

Indirect effects, similar to those associated with construction and operation of the water conveyance facilities, would occur, during construction, operation, and maintenance of the future facilities including groundwater production wells, water collection pipelines and power facilities. Development-related population effects of future facilities would be temporary and occur primarily in Lincoln and White Pine counties. Operations and maintenance effects would be minimal but long-term in nature and again occur primarily in Lincoln and White Pine counties although secondary economic and employment benefits would occur in the Las Vegas Valley and elsewhere in the state and nation. Future facilities construction-related growth effects would vary somewhat in location and timing, depending on the alternative, but growth effects of operation and maintenance of future facilities would likely be similar across all action alternatives.

Indirect Growth Effects of Groundwater Production and Conveyance

Another series of long-term indirect effects of the Proposed Action and alternatives – the long-term production and conveyance of water to the Las Vegas Valley and portions of Lincoln County – could function in conjunction with other factors to enable future population growth anticipated by Clark County, Lincoln County, and their municipalities. Indirect effects of groundwater conveyance and of groundwater production would vary across the rural counties and the Las Vegas Valley. Growth associated with groundwater production would not occur in White Pine County and in parts of rural Lincoln County; in fact, groundwater production could result in population loss in these areas if declining groundwater levels resulted in reductions in farm and ranch profitability and adverse effects to vegetation, wildlife and natural features that support tourism and recreation visitation.

Indirect growth-related effects of water conveyance and groundwater production would include the role of additional water resources in enabling growth in the Las Vegas Valley and parts of Lincoln County. The availability of water would not by itself induce growth in those areas, as has been demonstrated by the recent recession related effects in the Las Vegas Valley and by Lincoln County's history of modest population growth and decline over the recent decade, periods when these areas were not constrained by water availability.

<u>The Las Vegas Valley</u>. Growth in the Las Vegas Valley in the decades prior to the current economic recession was driven primarily by domestic and international trends in leisure activities, lifestyle migration, attraction of corporate support operations for major national and international firms, and local commercial, residential, and community infrastructure development strategies and actions to attract and support visitors, migrants, and economic development. Additional water is a necessary resource to support growth and development in the Las Vegas Valley if growth trends associated with those or other economic drivers resume in the future. However, while a lack of water would be a constraint to growth, water availability, in and of itself, would not be the underlying cause of future growth.

SNWA's objectives for the development of groundwater resources in central Nevada are to diversify its available water resources to protect the community from drought and shortage and to help meet projected water demands. In the SNWA's 2009 Water Resource Plan, the forecast demand for its member agencies through 2060 is based on the June 2008 Clark County Population Forecast prepared by the UNLV-CBER. That forecast projects Clark County population to increase from 1,996,542 in 2007 to 3,646,000 in 2035. Those population projections are based on a series of economic, demographic, and migration assumptions. Those projections also are consistent with those underlying the Clark County Comprehensive Plan (Comprehensive Plan) (Clark County 2008b). The Comprehensive Plan contains a previous CBER forecast with similar but slightly lower forecasts, with county population increasing to about 3.5 million by 2035 (Clark County 2007). The CBER population forecasts were endorsed by the Southern Nevada Regional Planning Coalition (SNRPC), which is comprised of elected officials from Las Vegas, North Las Vegas, Henderson, Boulder City, and Clark County (SNRPC 2001).

At present, the amount of groundwater produced from Lincoln and White Pine counties that could be available to support growth is unknown. The number and volume of water rights granted by the Nevada State Engineer (NSE), the

actual productive capacity of those rights, potential effects of climate change, changes in Colorado River system flows, and the extent to which groundwater from Lincoln and White Pine counties would be used to augment Colorado River allocations to Las Vegas Valley water users are complicating factors in the assessment of the role of transbasin diversions from Lincoln and White Pine counties in enabling future growth. Obviously, to the extent that conveyed ground water would be used to replace Colorado River water to meet demands from existing users, it would not be available to support future population growth.

As demonstrated by the above, Clark County and the communities in the Las Vegas Valley anticipate substantial long-term growth and development (current forecasts are for essentially an 83 percent increase in population over 2007 levels by 2035). Given current water demand and supplies, underlying implications as of the growth projections are that Clark County's future water needs are met, that there are no other constraints to growth, and that global, national, and local economic conditions support the fundamental economic growth assumptions underlying the projections. This level of growth would not occur without additional water resources from some source, although again water would enable but not drive growth.

With respect to planning for growth, Nevada statutes charge local governments with managing growth and in the case of the Las Vegas Valley, with maintaining a regional coalition for coordinating efforts to address the effects of growth. Clark and Lincoln counties have and continue to meet this charge by developing long-range comprehensive and master plans, policies, ordinances and other mechanisms to identify and manage potential social and environmental effects of the anticipated growth.

Through legislatively mandated local and regional planning processes, local governments in the Las Vegas Valley have developed plans and policies intended to "identify potential effects of growth, and to accommodate growth while protecting natural resources and preserving and improving the quality of life and character of the Southern Nevada Region" (Clark County 2006, SNRPC 2001). Each of the municipalities within the Las Vegas Valley has planning departments and comprehensive or master plans to guide growth and development within their respective boundaries and the SNRPC is responsible for coordinating the efforts of the individual local governments within the Las Vegas Valley to address the effects of growth on a regional basis. In addition, Clark County, through its comprehensive planning process, addresses potential impacts on a variety of specific environmental resources by virtue of its responsibilities regarding the currently undeveloped land and natural resources within its boundaries.

Southern Nevada Regional Planning Coalition. The SNRPC was created to meet the requirements of Nevada statute (NRS 278.02514). The legislative intent for the Nevada Regional Planning[19] statutes states in part that the Legislature recognized the need to … "Address the anticipated needs and demands of continued urbanization and the corresponding need to protect environmentally sensitive areas…" (NRS 278.02521.1(a)). Nevada statutes also require SNRPC to develop a comprehensive regional policy plan "for the balanced economic, social, physical, environmental, and fiscal development and orderly management of the growth of the region for a period of at least 20 years. The comprehensive regional policy plan must contain recommendations of policy to carry out each part of the plan" (NRS 278.02528.1).

Nevada statutes specify that the comprehensive regional policy plan should include "…goals, policies, maps and other documents relating to:

1. Conservation, including without limitation, policies relating to the use and protection of natural resources.
2. Population, including, without limitation, standardized projections for population growth in the region.
3. Land use and development, including, without limitation, a map of land use plans that have been adopted by local governmental entities within the region.
4. Transportation

[19] For counties whose population is 400,000 or more.

5. The efficient provision of public facilities and services, including, without limitation, roads, water and sewer service, police and fire protection, mass transit, libraries, and parks.
6. Air quality
7. Strategies to promote and encourage:
   a. The interspersion of new housing and businesses in established neighborhoods; and,
   b. Development in areas in which public services are available" (NRS 278.02528.2).

To meet the statutory requirement, the SNRPC developed the Southern Nevada Regional Policy Plan (SNRPP) (SNRPC 2001), which includes regional planning guidelines that will be followed by Las Vegas, North Las Vegas, Henderson, Boulder City, Clark County, the Clark County School District, regional and state agencies, and public utilities. These guidelines address:

- Conservation, Open Space, and Natural Resource Protection;
- Population Forecasts;
- Land Use;
- Transportation;
- Public Facilities;
- Air Quality; and
- Infill Development.

In 2006, the SNRPC completed a study titled "Land Use, Transportation, and Air Quality: Model Description, Findings and Recommendations" (SNRPC 2006). The study describes results of the regional effort to develop a computer model, known as the LUTAQ model, for examining the potential effects of changes in land use characteristics, development density, and transportation planning on air quality, traffic congestion, and other quality of life factors. Once developed, the model was used to analyze a range of development strategies being proposed by or discussed among planners in the region.

Key findings of the LUTAQ modeling include the following:

- Continuing to develop land and the transportation system as they currently are being developed, would result in significant increases in traffic congestion and air pollution in the Las Vegas Valley.
- Increasing the density of development without other changes would make things (air quality conditions) worse.
- Reducing average trip distances and number of trips is required for any significant improvement.
- Increased use of mass transit and alternative modes of transportation is needed to satisfy the policy goals.
- A combination approach of densification, mixed use, and transit changes would:
- Keep time in traffic from increasing beyond present levels.
- Consistently maintain air quality within EPA standards.
- Avoid a slowing in the rate of population growth.
- Reduce overall costs below the status quo scenario by avoiding the loss of federal transportation subsidies.

Based on the findings of the LUTAQ modeling, the LUTAQ working group noted that significant improvements in traffic, air quality, and other factors would require a combination of strategies. Based on model outcomes and best management practices, the working group provided a series of what they considered to be realistic and achievable general LUTAQ policy targets for the SNRPC and its member entities in the Las Vegas Valley. These included

increasing housing density, reducing number of and distances for travel trips, increasing the use of mass transit and alternative modes of traffic, and increasing traffic flow.

Clark County Comprehensive Plan. Clark County has prepared, maintained, and implemented a comprehensive plan to comply with the requirements of Nevada statutes (NRS 278.150). Nevada statutes require that the subject matter of the plan include a plan for the… "conservation, development and utilization of natural resources, including, without limitation, water and its hydraulic force, underground water, water supply, solar or wind energy, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. The plan also must cover reclamation of land and waters, flood control, prevention and control of the pollution of streams and other waters, regulation of land use within stream channels and other areas required for the accomplishment of the conservation plan, prevention, control and correction of the erosion of soils through proper clearing, grading and landscaping, and protection of watersheds. The plan must indicate the maximum tolerable level of air pollution" (NRS 278.160 (1) (b)).

The Comprehensive Plan includes elements for community growth management and design, conservation, economics, historical properties, economics, housing, population and Clark County Public Buildings. The Conservation Element contains information and policies for air quality, flood control, land conservation, species protection, water quality and water resources. The Air Quality section of the Comprehensive Plan Conservation Element contains sections on carbon monoxide, PM_{10}, future air quality issues, and linkages to transportation and land use. The air quality section provides recommendations and includes a Carbon Monoxide State Implementation Plan for Clark County, a Natural Events Action Plan for Clark County, and a PM_{10} State Implementation Plan for Clark County. Comprehensive Plan policies for air quality state that "…development approval should be conditioned on compliance with local, state, and national air quality standards" (CV 1-1.0), and "…to improve air quality to levels necessary to protect public health and improve visual clarity" (CV 1-2.0) (Clark County 2008a, 2007).

Lincoln County. Similar to conditions in the Las Vegas Valley, the availability of additional water could enable growth that is planned for Lincoln County. Through an agreement with SNWA, current and future water resources to be developed by Lincoln County could be conveyed by the Proposed Action water conveyance system. Although current forecasts from the Nevada State Demographer forecast foresee limited population growth in Lincoln County (see **Table 3.18-6**), several major mixed-use developments are planned. If these developments were developed to the maximum approved levels, they could increase Lincoln County population by more than 250,000 (Lincoln County no date). As with the Las Vegas Valley, conveyed groundwater from the northern part of Lincoln County could enable growth, but other factors such as second and retirement home development, lifestyle migration, and relocation of working individuals who would commute to the Las Vegas Valley would be the major factors driving population growth.

Planning and development in Lincoln County is guided by several plans and development codes. These include the following:

- *Lincoln County Master Plan:* Adopted by the Lincoln County Board of Commissioners in 2007, as authorized by state statute (NRS 278.150), the Master Plan addresses conservation and natural resources, environmental constraints, land use and demographics, population, economic base, housing, public lands, future growth areas, land use designations, transportation, public services, facilities and utilities, law enforcement, fire protection, emergency management, schools, community services, recreation, parks, trails, and tourism. The plan also provides a community plan for the Town of Alamo (Lincoln County 2007a). The master plan has a 20-year planning horizon and anticipates potential population growth of over 200,000 people (Lincoln County 2007a).

- *Lincoln County Development Code:* Adopted in 2001 and revised in 2005, this code was adopted "…in accordance with and in order to further the implementation of the county master plan and such other plans, policies, and studies designed to promote the orderly growth of the county and its communities" (Lincoln County 2005.).

- *Coyote Springs Planning Unit Development Code* and *Toquop Township Planned Unit Development Ordinance*: Although some growth would likely occur in the existing communities, the majority of growth is envisioned in two developments: Coyote Springs, which straddles the Lincoln – Clark County border in the south-central part of the

County and the Toquop Township Planned Unit Development located in the southeast corner of the County. This code and ordinance were enacted to address the special circumstances surrounding these projects. Potential socioeconomic and environmental effects of the Coyote Springs development have been assessed by the USFWS in a 2008 EIS (USFWS 2008). The Toquop Township Planned Development is located in the Lincoln County Land Act area and environmental and social effects of development of that specific project have not been addressed although such effects were generally addressed in connection with the sale of that land (Lincoln County 2007b, 2006).

- *The Lincoln County Public Land Management and Use Plan:* Adopted in 1996, this plan establishes policies and provides direction to Lincoln County Government relative to impacts from actions on and near public lands. Over 95 percent of the land area in Lincoln County is administered by federal agencies and the State of Nevada (Lincoln County 1996).

In summary, the Proposed Action and other action alternatives would result in short term-temporary growth during construction and modest long-term growth during project operations and maintenance. Construction, operations, and maintenance of future facilities would have similar indirect growth effects. These effects would vary only slightly between all action alternatives.

The availability of additional groundwater resources in Clark and Lincoln counties, conveyed by the pipeline and facilities associated with the Proposed Action and other action alternatives, could, in combination with other factors, enable a portion of the population growth that is anticipated by those two counties, but only if necessary underlying economic and environmental factors to stimulate growth are in place. Availability of water would not be a driving force for that growth.

Clark and Lincoln counties each have statutory responsibilities for managing growth and have responded by developing long-range comprehensive and master plans, policies, ordinances and other mechanisms to identify and manage potential social and environmental effects of the anticipated growth. Clark County and the municipalities in the Las Vegas Valley have organized the SNRPC, which has also developed a plan, studies, and models to identify and plan for socioeconomic and environmental effects of the anticipated growth.

Conclusion. Construction and operation of the groundwater production and associated future facilities and subsequent pumping and conveyance of groundwater to Clark County and other locations in Lincoln County (the latter occurring under the terms of a contractual agreement between SNWA and the LCWD) would have a combination of short-term and long-term social and economic effects in the region. The short-term effects would include temporary migration, population influx, housing demand, demands on public facilities and services, and social effects similar to, but smaller in scale and shorter in duration than those associated with construction of the pipeline. The social and economic effects associated with such development in Delamar, Dry Lake, Cave and Spring valleys would be concentrated in Pioche, Panaca, and Ely. Businesses in these communities would experience increases in business volume similar to that associated with tourism and hunting, but it would extended over a longer period. The presence of the temporary workers may be a source of social conflict and disruption. The short-term social and economic effects of construction would diminish rapidly then effectively cease following the completion of construction.

For some interests in Lincoln County and the Las Vegas Valley, the onset of groundwater pumping would be welcomed as an indication that water resources to provide buffer against drought and accommodate economic and population growth would be available. Other interests would be distressed at the potential for continued growth and development in the Las Vegas Valley at recent levels.

The initiation of groundwater pumping, transbasin diversions, and long-term drawdown would contribute to political conflict, social dissension, community discord, and personal distress as well as a diminished sense of self-determination and anxiety about the eventual detrimental effects on lifestyle felt by many residents of the rural areas. The long-term effects arising from groundwater pumping and drawdown present risks to social and economic conditions in the rural areas, although uncertainty and the decades and centuries long period over which these effects would arise complicate the description and assessment of such effects. Foreseeable impacts include adverse effects of drawdown on local

agriculture, outdoor recreation and tourism, and future economic growth and development. Economic development effects would likely be related the perception of the risks of drawdown as well as the actual effects. Potential adverse economic effects including reductions in income and employment in the agricultural and outdoor recreation sectors could generate similar effects in secondary sectors such as retail, service, and government, particularly if these effects resulted in out-migration of population. Any curtailment in future economic development opportunities including second and retirement home development and lifestyle migration would have similar secondary effects. Local governments may experience reductions in revenues from affected industries, which could also result in reductions in service levels. Adverse economic, population, and fiscal effects could in turn generate changes in social organization and community cohesion stemming from out-migration and changes in traditional local industries, occupations, and lifestyles.

Applicant Committed Measures:

Applicant committed protection measures include the following that are pertinent to socioeconomics, planning, and permitting.

- (ACM-A.8.1), (ACM-A.8.2), (ACM-A.8.3), (ACM-A.8.4), and (ACM-A12.1, 3, and 4).

Proposed mitigation measures:

Per guidance provided by the BLM NEPA Handbook (H-1790-1), the following additional mitigation measures are recommended to help avoid, minimize, and mitigate for potential short-term and long-term socioeconomic impacts associated with future facilities development and pumping effects under the Proposed Action:

SE-6: To Provide a Source Of Emergency Financial Assistance and Equitable Treatment of Potentially Affected Ranchers and Public Water Systems that Rely on Groundwater. SNWA should create and fund a mitigation/protection program for holders of water rights in Nevada comparable to that for water rights holders in Utah outlined in the draft Nevada/Utah agreement. Effectiveness*:* Implementation of this program would be moderately effective in minimizing long-term social and economic effects.

SE-7: To Provide a Source Of Emergency Financial Assistance to Individual Businesses Adversely Affected By Factors Linked to Groundwater Drawdown. SNWA should expand the impact assistance and compensation program to compensate/provide economic relief to individual businesses for losses due to business interruption or other factors that are reasonably linked to groundwater drawdown. Effectiveness*:* Implementation of this program would be moderately effective in minimizing long-term social and economic effects.

SE-8: To Promote Income Stability and Long-Term Sustainability of Local Agricultural Industry. SNWA should work cooperatively with DRI, University of Nevada - Reno, University of Utah, USDA, and others to assist farmers and ranchers to implement water conservation practices and to transition to higher value, less water consumptive crops. Effectiveness*:* Implementation of this program would be moderately effective in minimizing long-term social and economic effects, helping to sustain regional income, increasing economic linkages and economic development within the region, and promoting sustainability in the farming and ranching community.

SE-9: To Facilitate Local Planning and Ensure Timely Response in the Event of Problems. A cooperative effort should be undertaken by the respective state engineers of Nevada and Utah, SNWA, and White Pine, Lincoln and Millard counties, to develop and implement a comprehensive socioeconomic monitoring program as an adjunct to the stipulated agreements for Spring and Snake valleys. This effort could include creation of an "Ombudsmen" position, perhaps within the NSE, to ensure public access and timely response regarding groundwater issues. Effectiveness*:* Implementation of this measure would be highly effective in disclosing to the public the actual socioeconomic effects of groundwater pumping contrasted with forecast effects, SNWA's performance on the various agreements, and the effectiveness of other mitigation measures.

SE-10: To Help Maintain Local Government Fiscal Strength. If SNWA purchases additional private property or pays another party to establish a permanent conservation easement on productive agricultural or timber lands that

results in a reduction in taxable value, SNWA should provide annual "payments in lieu of taxes" to the affected county to offset any resulting reductions in ad valorem taxes. Effectiveness*:* Implementation of this program would be moderately effective in minimizing long-term adverse effects on local county budgets that arise from efforts to mitigate adverse impacts on other environmental resources. It would not be effective in mitigating social and economic impacts resulting from additional loss of ranching families.

Residual impacts include:

- Few residual social and economic effects would be associated with the future facilities component of the Proposed Action following the completion of construction and reclamation. The residual effects include a small number of jobs and income in the rural areas.
- Residual effects of groundwater pumping and drawdown would include many of the social and economic effects described above. Such effects would arise from the long-term drawdown of groundwater and cannot be reasonably mitigated or avoided because they are inherent with groundwater drawdown. These effects would endure beyond the 200-years of pumping assumed for the assessment.
- Residual social and economic changes in Lincoln County and the Las Vegas Valley could arise in conjunction with growth enabled, but not caused by the water conveyed via the pipeline.
- The ACMs recognize certain protections for holders of existing water rights that would not necessarily inure to the users of those water rights. The protection measures do not directly address adverse economic effects of drawdown on the public. Moreover, some of the environmental protection measures may themselves result in higher or more intense social and economic effects in the rural areas. For example, purchasing private property in Snake Valley to benefit the spring snail habitat (ACM C.2.16) would remove more land from the public tax rolls and further alter the social context of Spring Valley and White Pine counties as a whole.
- The optimization of the points of diversion would have little influence on these residual effects from a social and economics perspective.

3.18.2.10 Alternative A

Groundwater Development Areas

Alternative A would involve development of between 108 and 131 groundwater production wells, compared with up to 174 wells under the Proposed Action. Maximum annual groundwater production of up to 114,755 afy would occur under Alternative A, approximately 35 percent lower than the Proposed Action.

Production wells would be developed in four phases and the same five groundwater production basins as under the Proposed Action; however, fewer wells would be developed in all areas. The short- and long-term social and economic effects of construction of the future facilities under Alternative A would include temporary employment and income, population gains, housing demand, effects on local lodging, retail and service establishments, and the other social and economic effects described above for the Proposed Action. The scale of the impacts would be lower under Alternative A than under the Proposed Action. Average annual employment during the four phases, including the direct and indirect and induced jobs, would be 69 in conjunction with the well field development activity in the Delamar, Dry Lake, and Cave valleys (DDC), 85 jobs during each of the two phases of development in Spring Valley (years 14 thru 16 and years 31 thru 33), and 105 jobs associated with future facilities development in Snake Valley (**Table 3.18-39**).

The Baker/Snake Valley community might experience limited population gains and demands for temporary housing in conjunction with groundwater production development in the Spring Valley. The Baker/Snake Valley community would experience further short term socioeconomic effects in conjunction with the groundwater well field development in the Snake Valley, assumed to occur in 2047 thru 2049. Average direct employment is projected at 67 jobs during that project. In addition, some portion of the 42 indirect and induced jobs supported by the construction would be located in the community. The social and economic impact in Baker/Snake Valley could be significant during the latter period, due to the scale of the temporary demands relative to the size of the community. Ely, Nevada, and Delta, Utah, also might see short-term economic effects from this phase of future facilities development.

In general, the combination of accessibility/proximity to several communities and sizes of these communities provides sufficient capacity to reasonably accommodate the short-term demands associated with the first three phases of future facility development. Condensing the development schedule of any given phase, such as deploying additional drilling rigs to implement the Spring Valley future facilities program in a single 3-year period or concurrent implementation of the Spring and Snake valley programs, would result in higher temporary employment, population and housing demand impacts, which could strain local capabilities to accommodate and cope with the growth.

Table 3.18-39 Short-term Employment and Population Effects, Future Facilities Development for Alternative A

	Delamar, Dry Lake, and Cave Valleys	Spring Valley	Snake Valley
Number of Production Wells	Up to 19 total	Up to 64	Up to 48
Timing of Exploratory Drilling	2014	2020 to 2022 (South) 2038 to 2039 (North)	2043 to 2044
Timing of Production Well and Collector Pipeline Development	2016 to 2019	2025 to 2027 (South) 2042 to 2044 (North)	2047 to 2049
Temporary Employment Effects - Average			
Direct employment	41	51 per phase	67
Indirect/Induced Jobs[1]	28	34 per phase	42
Total Temporary Jobs, Future Facilities	69	85 per phase	109
Incremental Temporary Population			
Weekdays	78	96 per phase	119
Weekends	41	55 per phase	68
Temporary Housing Demand (Units)	46	56 per phase	59

[1] Based on a jobs multiplier of 0.67 indirect and induced jobs per direct job.

Temporary population gains during the work week for the four periods of future facility development are 78, 96 and 119, respectively for the DDC, Spring and Snake valley projects; again, these gains are smaller in scale but affect the same communities in ways similar to those under the Proposed Action.

The effects on population, employment, labor force and economic structure would result in corollary effects on social organization and conditions in the affected communities as described above in conjunction with the Proposed Action. In the rural communities, these would include continuation and potential elevation of existing project-related attitudes, opinions and associated social effects including political conflict, social dissension, community discord and personal distress. For some residents of the rural area, particularly those in Snake and Spring valleys, personal distress would stem from the risk of loss of a valued rural way of life.

Not all residents of the rural areas oppose the project. For example, for some residents, organizations and community leaders in Lincoln County may view favorably the trade-offs between groundwater pumping, future development, and other economic activity and the potential social and economic risks of groundwater drawdown.

Within the Las Vegas Valley, some residents, organizations, community and political leaders, and development interests may view initiation of groundwater pumping as a measure of assurance that water will be available to enable growth and provide a buffer against future water shortages due to episodic drought or climate change. At the same time, residents and other stakeholder groups of the Las Vegas Valley are likely to remain divided on their support for the groundwater development project because of the implications of growth for the areas' environment and quality of life, concern about the project's cost and concern about the equity and environmental consequences of groundwater pumping for the rural areas.

Groundwater Pumping

Under Alternative A, groundwater production by SNWA is assumed to eventually reach 114,755 afy by full build out (in about the year 2049). In addition, the main pipeline may be used to convey additional water on behalf of the LCWD. The groundwater simulations indicate that the areal and vertical extents of groundwater drawdown under Alternative A would be extensive, but less severe than for the Proposed Action. The long-term groundwater drawdown would generally affect the same communities, public water systems, private landowners, public lands and natural resources, although the effect may vary in degree. Consequently, the short- and long-term social and economic effects of project operations under Alternative A would be similar to those under the Proposed Action, although some long-term differences are expected, principally with respect to the potential impacts to the region's agricultural sector from higher production costs and lower overall output.

The groundwater simulations indicate that 59+ percent of the total agricultural lands (14,605 acres) would be affected by vertical drawdown in excess of 10 feet at the end of full build out plus 75 years. Of the affected lands, nearly 13,300 acres overlie areas having projected drawdown of 20 to 99 feet, the latter being sufficient to result in higher irrigation pumping and new well development costs. Some of the affected lands are SNWA-owned. An additional 1,310 acres of land cover areas where drawdown of 10 to 19 feet is projected. Because of differences in existing well depths and productive groundwater zones for an individual well, groundwater drawdown would affect individual property owners differentially. Farmers and ranchers owning these lands could experience diminished land values as a result. The groundwater modeling does not project drawdown in excess of 100 feet under the agricultural lands in Spring and Snake valleys.

The groundwater simulations indicate that pumping for 200 years after full build out of the system would result in projected drawdown of 10 feet or more under 15,021 acres of private agricultural lands. The groundwater modeling does not project drawdown in excess of 100 feet under the agricultural lands in Spring and Snake valleys (**Table 3.18-40**).

Table 3.18-40 Acres of Private Agricultural Lands Affected By Long-Term Drawdown, Alternative A

Private Agriculture Lands	Spring Valley			Snake Valley			Combined Total			
	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out Plus 200 Years
	6,111 acres			18,489 acres			24,600 acres			
Drawdown Interval	Acres Within Interval			Acres Within Interval			Acres Within Interval			% of Total
Unaffected to <10'	5,779	2,476	2,281	18,489	7,519	7,298	24,268	9,995	9,579	38.9
10' - 19'	332	427	413	-	883	326	332	1,310	738	3.0
20' - 49'	-	3,208	501	-	9,946	2,190	-	13,155	2,691	10.9
50' - 99'	-	-	2,916	-	140	8,676	-	140	11,592	47.1
100' - 200'	-	-	-	-	-	-	-	-	-	0.0
200' or more	-	-	-	-	-	-	-	-	-	0.0
Total Affected Acres	332	3,635	3,830	-	10,970	11,191	332	14,605	15,021	61.1
% of Total	5.4	59.5	62.7	0.0	58.2	59.4	1.4	59.4	61.1	-

Notes:

Drawdown is as compared to the existing groundwater elevation, not the surface elevation.

Impacts to agricultural irrigation, individual, and community wells located near private agricultural lands, and stock watering facilities may result from drawdown of less than 10 vertical feet from existing groundwater elevation.

Implementation of Alternative A would result in many other social and economic effects associated with long-term groundwater pumping. These effects under Alternative A would be comparable to those outlined for the Proposed Action in **Table 3.18-38**, allowing for some variations associated with the timing and extent of drawdown.

Future interbasin water transfer fees with Alternative A would reach a maximum of $1.23 million annually, $619,000 less than under the Proposed Action.[20] The actual levels of revenue would reflect the annual volume of production. The distribution of revenues between White Pine and Lincoln counties would depend on future determinations regarding the allocation of the Spring Valley water by the NSE, and both counties would retain the option to negotiate an alternative revenue arrangement with the SNWA.

Projected long-term groundwater drawdown would occur under 4,918 acres of public lands in Lincoln and White Pine counties that were identified for potential disposal in the Ely RMP. There is no specific timetable for such disposals nor is the specific use or user known at this time. However, approval of the GWD Project, with its foreseeable implications on drawdown, could have an adverse effect on the utility of those lands, the likelihood of disposal, and associated effects on the BLM in terms of management.

Due to the lower rates of groundwater production with Alternative A, residents and communities along Utah's Wasatch Front may be less concerned about the indirect effects of the project on dust and air quality than they would be in conjunction with the Proposed Action.

Environmental justice impacts to minority and low-income populations would not be anticipated under Alternative A.

Conclusion. Construction and operation of the groundwater production and associated future facilities and subsequent pumping and conveyance of groundwater to Clark County and other locations in Lincoln County (the latter occurring under the terms of a contractual agreement between the SNWA and the LCWD) would have a combination of short-term and long-term social and economic effects in the region. The short-term effects would include temporary migration, population influx, housing demand, demands on public facilities and services, and social effects similar to, but smaller in scale than those associated with the Proposed Action. The short-term social and economic effects of construction would diminish rapidly then effectively cease following the completion of construction.

For some interests in Lincoln County and the Las Vegas Valley, the onset of groundwater pumping would be welcomed as an indication that water resources to provide buffer against drought and accommodate economic and population growth would be available. Due to the lower volume of additional groundwater to be developed, interests favoring groundwater development would be less satisfied by development under Alternative A than with the Proposed Action. Other interests would be distressed at the potential for continued growth and development in the Las Vegas Valley at recent levels.

The initiation of groundwater pumping, transbasin diversions, and long-term drawdown would contribute to political conflict, social dissension, community discord and personal distress as well as a diminished sense of self-determination and anxiety about the eventual detrimental effects on lifestyle felt by many residents of the rural areas. The long-term effects arising from groundwater pumping and drawdown present risks to social and economic conditions in the rural areas, although uncertainty and the decades and centuries long period over which these effects would arise complicate the description and assessment of such effects. Foreseeable impacts include adverse effects of drawdown on local agriculture, outdoor recreation and tourism, and future economic growth and development. Economic development effects would likely be related the perception of the risks of drawdown as well as the actual effects. Potential adverse economic effects including reductions in income and employment in the agricultural and outdoor recreation sectors could generate similar effects in secondary sectors such as retail, service, and government, particularly if these effects resulted in out-migration of population. Any curtailment in future economic development opportunities including second and retirement home development and lifestyle migration would have similar secondary effects. Local

[20] The maximum annual interbasin transfer fees include $80,000 per year associated with the conveyance of 8,000 afy of groundwater presently produced for agricultural use in White Pine County that would be converted to municipal use and conveyed through the pipeline.

governments may experience reductions in revenues from affected industries, which could also result in reductions in service levels. Adverse economic, population, and fiscal effects could in turn generate changes in social organization and community cohesion stemming from out-migration and changes in traditional local industries, occupations, and lifestyles. The long-term areal extent and magnitude of drawdown effects under Alternative A would be less than those under the Proposed Action.

Applicant Committed Measures and Proposed Mitigation Measures:

Implementation of Alternative A would support the same applicant committed and mitigation measures outlined for the Proposed Action.

Residual impacts include:

- Implementation of Alternative A would have similar but smaller scale residual social and economic effects than the Proposed Action following the completion of construction and reclamation. The residual effects include a small number of jobs and income in the rural areas.

- Residual effects of groundwater pumping and drawdown would include many of the social and economic effects described above. Such effects would arise from the long-term drawdown of groundwater and cannot be reasonably mitigated or avoided because they are inherent with groundwater drawdown. These effects would endure beyond the 200 years of pumping assumed for the assessment.

- Residual social and economic changes in Lincoln County and the Las Vegas Valley could arise in conjunction with growth enabled, but not caused by the water conveyed via the pipeline.

- The ACMs recognize certain protections for holders of existing water rights that would not necessarily insure to the users of those water rights. The protection measures do not directly address adverse economic effects of drawdown on the public. Moreover, some of the environmental protection measures may themselves result in higher or more intense social and economic effects in the rural areas. For example, purchasing private property in Snake Valley to benefit the spring snail habitat (ACM C.2.16) would remove more land from the public tax rolls and further alter the social context of Spring Valley and White Pine counties as a whole.

- The scale of these residual effects would be less from a social and economics perspective due to the lesser extent of drawdown, but they would not be eliminated.

3.18.2.11 Alternative B

Groundwater Development Areas

Alternative B would involve the development of 116 groundwater production wells, yielding up to 176,655 afy. The maximum annual production under Alternative B would be the same as under the Proposed Action. Production wells would be developed in four phases and in the same five groundwater production basins as under the Proposed Action; however, fewer wells would be developed in all areas.

The short- and long-term social and economic effects of construction of the future facilities under Alternative B would include temporary employment and income, population gains, housing demand, effects on local lodging, retail and service establishments, and the other social and economic effects described above for the Proposed Action. The scale of the impacts would be lower. Average annual employment during the four phases, including the direct, indirect, and induced jobs, range from 96 in conjunction with the well field development in the DDC to 75 during each phase of future facilities development in Spring Valley (see **Table 3.18-41**).

Temporary population gains during the workweek for the four periods of future facility development are 109, 84, and 88, respectively for the DDC, each phase of the Spring Valley, and the Snake Valley projects. The temporary population gains, corresponding demand for temporary housing, and indirect effects on local businesses and demands

for services associated with the DDC and Spring Valley projects would primarily affect Pioche, Panaca, and Caliente in Lincoln County and Ely in White Pine County.

Table 3.18-41 Short-term Employment and Population Effects, Future Facilities Development for Alternative B

	Delamar, Dry Lake, and Cave Valleys	Spring Valley	Snake Valley
Number of Production Wells	Up to 24 total	Up to 56	Up to 36
Timing of Exploratory Drilling	2014	2020 to 2023 (South) 2038 to 2040 (North)	2043 to 2045
Timing of Production Well and Collector Pipeline Development	2016 to 2020	2025 to 2028 (South) 2042 to 2044 (North)	2048 to 2050
Total Jobs, Future Facilities – Average	96	74 per phase	78
Incremental Temporary Population			
Weekdays	109	84 per phase	88
Weekends	54	47 per phase	50
Temporary Housing Demand (Units)	63	50 per phase	52

In general, the combination of accessibility/proximity to several communities and sizes of these communities provides sufficient capacity to reasonably accommodate the short-term demands associated with the first three phases of future facility development. Condensing the development schedule of any given phase, such as deploying additional drilling rigs to implement the Spring Valley future facilities program in a single 3-year period, or concurrent implementation of the Spring and Snake valley programs, would result in higher temporary employment, and population and housing demand impacts, which could strain local capabilities to accommodate and cope with the growth.

The Baker/Snake Valley community may experience limited population gains and demands for temporary housing in conjunction with groundwater production in the Spring Valley. The Baker/Snake Valley community would experience further short-term socioeconomic effects in conjunction with the development of groundwater well fields in Snake Valley, assumed to occur in 2048 and 2050. The social and economic impact in Baker/Snake Valley could be significant during the latter period, due to the scale of the temporary demands relative to the size of the community. Ely, Nevada, and Delta, Utah, also might see short-term economic effects from this phase of future facilities development.

The effects on population, employment, labor force, and economic structure would result in many corollary effects on social organization and conditions in the affected communities. In the rural communities, these would include continuation and potential elevation of existing project-related attitudes, opinions and associated social effects including political conflict, social dissension, community discord, and personal distress. For some residents of the rural area, particularly those in Snake and Spring Valleys, personal distress would stem from the risk of loss of a valued rural way of life.

Not all residents of the rural areas oppose the project. For example, some residents and community leaders in Lincoln County may view the trade-offs between the groundwater pumping and future development and the potential social and economic risks from groundwater drawdown in a favorable light.

Within the Las Vegas Valley, some residents, organizations, community and political leaders, and development interests may view initiation of groundwater pumping as a measure of assurance that water will be available to enable growth and provide a buffer against future water shortages due to episodic drought or climate change. At the same time, residents and other stakeholder groups of the Las Vegas Valley are likely to remain divided on their support for the groundwater development project because of the implications of growth for the areas' environment and quality of life, concern about the project's cost and concern about the equity and environmental consequences of groundwater pumping for the rural areas.

Groundwater Pumping

Under Alternative B, groundwater production by the SNWA is assumed to eventually reach 176,655 afy by full build out (in about the year 2050). In addition, the main pipeline may be used to convey additional water on behalf of the LCWD, as well as up to 8,000 afy of water presently produced by the SNWA for agricultural use in White Pine County. The groundwater simulations indicate that the areal and vertical extents of groundwater drawdown under Alternative B would be extensive, affecting the same communities, public water systems, private landowners, public lands and natural resources as the Proposed Action, although the effects may vary in degree. The short- and long-term social and economic effects of project operations under Alternative B would be similar to those under the Proposed Action, although long-term differences are expected, principally with respect to the potential impacts to the region's agricultural sector. Impacts would be associated with higher production costs and the potential reductions in overall output.

The groundwater simulations indicate that 56+ percent of the total agricultural lands (13,865 acres) would be affected by vertical drawdown in excess of 10 feet at the end of the full build out plus 75 years. Of the affected lands, nearly 13,100 acres overlie areas having projected drawdown of 20 to 99 feet, such drawdown being sufficient to result in higher irrigation pumping and new well development costs. Some of the affected properties are SNWA-owned. An additional 539 acres of land cover areas where drawdown of 10 to 19 feet is projected. Agricultural productivity may be adversely affected if higher costs result in reduced water application rates. Farmers and ranchers owning these lands could experience diminished land values as a result. The groundwater modeling projects groundwater drawdown in excess of 100 feet under 231 acres of agricultural lands in Spring and Snake valleys.

Following 200 years of pumping after full build out of the groundwater production facilities, projected drawdown in excess 10 feet would occur under 14,844 acres of private agricultural lands (60.3 percent of the total). The groundwater modeling projects drawdown in excess of 100 feet under more than 3,200 acres of agricultural lands in Spring and Snake valleys. The majority of that total would be in Spring Valley (**Table 3.18-42)**.

Table 3.18-42 Acres of Private Agricultural Lands Affected By Long-Term Drawdown, Alternative B

Private Agriculture Lands	Spring Valley			Snake Valley			Combined Total			
	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out Plus 200 Years
	6,111 acres			18,489 acres			24,600 acres			
Drawdown Interval	Acres Within Interval			Acres Within Interval			Acres Within Interval			% of Total
Unaffected to <10'	4,811	2,597	2,414	18,489	8,138	7,342	23,300	10,735	9,756	39.7
10' - 19'	968	151	183	-	388	796	968	539	979	4.0
20' - 49'	332	1,321	151	-	8,716	490	332	10,037	641	2.6
50' - 99'	-	2,042	575	-	1,016	9,413	-	3,058	9,988	40.6
100' - 200'	-	-	2,788	-	129	182	-	129	2,970	12.1
200' or more	-	-	-	-	102	266	-	102	266	1.1
Total Affected Acres	1,300	3,514	3,697	-	10,351	11,147	1,300	13,865	14,844	60.3
% of Total	21.3	57.5	60.5	0.0	54.9	59.1	5.3	56.4	60.3	-

Notes:

Drawdown is as compared to the existing groundwater elevation, not the surface elevation.

Impacts to agricultural irrigation, individual, and community wells located near private agricultural lands, and stock watering facilities may result from drawdown of less than 10 vertical feet from existing groundwater elevation.

The transfer of groundwater produced from White Pine and Lincoln counties to Clark County under Alternative B would generate up to $1.77 million annually in interbasin transfer fees. Completion and operation of the pipeline under Alternative B would allow the SNWA to convey an additional 8,000 afy of groundwater that is presently produced for agricultural use in White Pine County, yielding up to $80,000 per year in additional interbasin transfer fees.

Projected long-term groundwater drawdown would occur under 7,248 acres of public lands located in Lincoln and White Pine counties identified for potential disposal in the Ely RMP. There is no proposed timetable for such disposals, nor is the specific use or user known at this time. However, approval of the GWD Project, with its foreseeable implications on drawdown could have an adverse effect on the utility of those lands, the likelihood of disposal, and associated effects on the BLM in terms of management.

As with the Proposed Action, Wasatch Front residents would continue to be concerned about the indirect effects of the project on dust and air quality arising in conjunction with long-term drawdown.

Environmental justice affects to minority and low-income populations would not be anticipated under Alternative B. Impacts to Native American traditional values could be greater or lesser depending on the relative importance to affected tribes of the specific springs and streams affected by reductions in flow and the magnitudes of those reductions.

Conclusion. Construction and operation of the groundwater production and associated future facilities and subsequent pumping and conveyance of groundwater under Alternative B would have a combination of short-term and long-term social and economic effects in the region. The short-term effects would include temporary migration, population influx, housing demand, demands on public facilities and services, and social effects similar to those associated construction of groundwater production facilities under the Proposed Action. The short-term social and economic effects of construction would diminish rapidly, then effectively cease following the completion of construction.

For some interests in Lincoln County and the Las Vegas Valley, the onset of groundwater pumping would be welcomed as an indication that water resources to provide buffer against drought and accommodate economic and population growth would be available. Other interests would be distressed at the potential for continued growth and development in the Las Vegas Valley at recent levels.

The initiation of groundwater pumping, transbasin diversions, and long-term drawdown would contribute to political conflict, social dissension, community discord and personal distress as well as a diminished sense of self-determination and anxiety about the eventual detrimental effects on lifestyle felt by many residents of the rural areas. The long-term effects arising from groundwater pumping and drawdown present risks tosocial and economic conditions in the rural areas, although uncertainty and the decades and centuries long period over which these effects would arise complicate the description and assessment of such effects. Foreseeable impacts include adverse effects of drawdown on local agriculture, outdoor recreation and tourism, and future economic growth and development. Economic development effects likely would be related the perception of the risks of drawdown as well as the actual effects. Potential adverse economic effects including reductions in income and employment in the agricultural and outdoor recreation sectors could generate similar effects in secondary sectors such as retail, service, and government, particularly if these effects resulted in out-migration of population. Any curtailment in future economic development opportunities including second and retirement home development and lifestyle migration would have similar secondary effects. Local governments may experience reductions in revenues from affected industries, which could also result in reductions in service levels. Adverse economic, population, and fiscal effects could in turn generate changes in social organization and community cohesion stemming from out-migration and changes in traditional local industries, occupations, and lifestyles. The long-term areal extent and magnitude of drawdown effects under Alternative A would be less than those under the Proposed Action. The long-term areal extent and magnitude of drawdown effects under Alternative B would be similar, although slightly lesser in extent that those under the Proposed Action.

Applicant Committed Measures and Proposed Mitigation Measures:

Implementation of Alternative B would support the same applicant committed mitigation measures outlined for the Proposed Action.

Residual impacts include:

- Implementation of Alternative B would have similar but smaller scale residual social and economic effects than of the Proposed Action following the completion of construction and reclamation. The residual effects include a small number of jobs and income in the rural areas.
- Residual effects of groundwater pumping and drawdown would include many of the social and economic effects described above because those effects would arise from the long-term drawdown of groundwater and cannot be reasonably mitigated, or avoided because they are inherent with groundwater drawdown. These effects likely would endure beyond the 200-year assessment period.
- Residual social and economic effects in Lincoln County and the Las Vegas Valley could arise in conjunction with growth enabled, but not caused by the water conveyed via the pipeline.
- The scale of these residual effects would be less from a social and economics perspective due to the lesser extent of drawdown, but they would not be eliminated.

3.18.2.12 Alternative C

Groundwater Development Areas

Alternative C would involve the development of 108 to 131 groundwater production wells, the same number as under Alternative A. That level of development compares with up to 174 wells under the Proposed Action. Maximum annual groundwater production under Alternative C would be 114,755 afy, although annual production would vary over time in response to drought, availability of water from other sources, and other factors. Production wells would be developed in the same five groundwater production basins as under the Proposed Action; however, fewer wells would be developed in all areas.

The short- and long-term social and economic effects of construction of the future facilities under Alternative C would include temporary employment and income, population gains, housing demand, effects on local lodging, retail and service establishments, and the other social and economic effects described above for the Proposed Action, but be lower-scale/less intense. Average annual employment during the four phases of development, including the direct, indirect and induced jobs, would range from 85 to 105 jobs (**Table 3.18-43**). The peak temporary employment impact under Alternative C would occur in conjunction with future facilities development in the Snake Valley, rather than in conjunction with development in the DDC under the Proposed Action.

Table 3.18-43 Short-term Employment and Population Effects, Future Facilities Development for Alternative C

	Delamar, Dry Lake, and Cave Valleys	Spring Valley	Snake Valley
Number of Production Wells	Up to 19 total	Up to 64	Up to 48
Timing of Exploratory Drilling	2014	2020 to 2022 (South) 2038 to 2039 (North)	2043 to 2044
Timing of Production Well and Collector Pipeline Development	2016 to 2019	2025 to 2027 (South) 2042 to 2044 (North)	2047 to 2049
Total Temporary Jobs, Future Facilities	91	85 per phase	105
Incremental Temporary Population			
Weekdays	103	96 per phase	119
Weekends	55	64 per phase	68
Temporary Housing Demand (Units)	51	56 per phase	59

The temporary economic and social effects associated with future facilities development under Alternative C would be largely equivalent to those described for Alternative A. The temporary population gains, demand for temporary

housing, and indirect effects on local businesses and demands for services associated with the DDC and Spring Valley projects would primarily affect Pioche, Panaca, and Caliente in Lincoln County and Ely in White Pine County. The Baker/Snake Valley community might experience limited population impact and associated demands for temporary housing and service in conjunction with groundwater production development in the Spring Valley and again in conjunction with the development of groundwater well fields in Snake Valley. The social and economic impact in Baker/Snake Valley could be significant during the latter period, due to the scale of the temporary demands relative to the size of the community. Ely, Nevada, and Delta, Utah, also might see short-term economic effects from this phase of future facilities development.

In general, the combination of accessibility/proximity to several communities and sizes of these communities provides sufficient capacity to reasonably accommodate the short-term demands associated with the first two phases of future facility development. Condensing the development schedule of any given phase, such as deploying additional drilling rigs to implement the Spring Valley future facilities program in a two-year period, or implementing the Spring and Snake valley programs concurrently, would result in higher temporary employment, population and housing demand impacts, which could strain local capabilities to accommodate and cope with the growth.

The effects on population, employment, labor force, and economic structure associated with construction would be comparable to those described for Alternative A above.

Groundwater Pumping

Under Alternative C, groundwater production by SNWA is assumed to eventually reach 114,755 afy by full build-out (in about the year 2050). In addition, the main pipeline may be used to convey additional water on behalf of the LCWD. For the purposes of the groundwater modeling, future project-related production alternates between 12,000 and 114,755 afy, on 5-year intervals. The 5-year cycle is an assumption defined to simulate the effects of drought or other conditions necessitating groundwater pumping. The low end of the range reflects the minimum volume required to maintain the engineering integrity and functioning of the mainline system.

Based on the assumed 5-year on/5-year off pumping regime, future groundwater production would result in less rapid expansion of areas affected by substantial drawdown and less rapid and a smaller magnitude of vertical drawdown in the affected hydrologic basins. The groundwater simulations indicate that the areal and vertical extents of groundwater drawdown under Alternative C would be extensive, but less severe than those arising in conjunction with the Proposed Action. The long-term groundwater drawdown would affect the same communities, public water systems, private landowners, public lands and natural resources, although the effect may vary in degree. Consequently, the short- and long-term social and economic effects of project operations under Alternative C would be similar to those under the Proposed Action, although some long-term differences are expected, principally with respect to potential impacts to the region's agricultural sector associated with higher production costs and the potential reduction in overall output.

The groundwater simulations indicate that 50+ percent of the total agricultural lands (12,359 acres) would be affected by vertical drawdown in excess of 10 feet at the end of the full build out plus 75 years. Of the affected lands, more than 9,200 acres overlie areas having projected drawdown of 10 to 19 feet, which is sufficient to result in higher irrigation costs, but less likely to require more expensive well development and less likely to affect productivity substantially. Some of the affected properties are SNWA-owned. Nonetheless, farmers and ranchers owning these lands could experience diminished land values as a result. The groundwater modeling does not project drawdown in excess of 100 feet under the agricultural lands in Spring and Snake valleys.

Following 200 years of operation of the complete system, projected drawdown in excess 10 feet would occur under nearly 56 percent of the total private agricultural lands. The lesser areal extent and degree of drawdown would likely result in less adverse financial impacts on future irrigation costs, crop yields, and land values. The groundwater modeling does not project drawdown in excess of 50 feet under the agricultural lands in Spring and Snake valleys (**Table 3.18-44**).

The reduced level and areal extent of drawdown would, in turn, reduce the rate of water level declines in other wells, the necessity to deepen wells or locate alternative sources, and, the associated adverse effects on irrigation costs.

Indirect effects on range and wildlife conditions that may affect allowable levels of grazing, hunting and other outdoor recreation would likely be delayed or of lesser magnitude than under the Proposed Action.

Projected long-term groundwater drawdown would occur under 4,918 acres of public lands identified for potential disposal in the Ely RMP. There is no specific timetable for such disposals, nor is the specific use or user known at this time. However, approval of the GWD Project, with its foreseeable implications on drawdown, could have an adverse effect on the utility of those lands, the likelihood of disposal, and associated effects on the BLM in terms of management.

Future interbasin water transfer fees would be lower due to the intermittent pumping assumed under Alternative C. The actual levels of revenue would reflect the annual volume of production. Under the 5-year on/5-year off production assumptions, and including allowances for the conveyance of up to 8,000 afy of present production, such revenues would average approximately $714,000, 61 percent lower than under the Proposed Action. The distribution of revenues between White Pine and Lincoln counties would depend on future determinations regarding the allocation of the Spring Valley water by the NSE, and both counties would retain the option to negotiate an alternative revenue arrangement with SNWA.

Table 3.18-44 Acres of Private Agricultural Lands Affected By Long-Term Drawdown, Alternative C

Private Agriculture Lands	Spring Valley			Snake Valley			Combined Total			
	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out Plus 200 Years
	6,111 acres			18,489 acres			24,600 acres			
Drawdown Interval	**Acres Within Interval**			**Acres Within Interval**			**Acres Within Interval**			**% of Total**
Unaffected to <10'	5,779	3,162	2,903	18,489	9,079	7,948	24,268	12,241	10,851	44.1
10' - 19'	332	2,302	2,288	-	6,934	4,525	332	9,236	6,813	27.7
20' - 49'	-	647	921	-	2,475	6,016	-	3,123	6,937	28.2
50' or more	-	-	-	-	-	-	-	-	-	0.0
Total Affected Acres	332	2,949	3,208	-	9,410	10,541	332	12,359	13,749	55.9
% of Total	5.4	48.3	52.5	0.0	49.9	55.9	1.4	50.2	55.9	-

Notes:
Drawdown is as compared to the existing groundwater elevation, not the surface elevation.
Affects to agricultural irrigation, individual and community wells located near private agricultural lands, and stock watering facilities may result from drawdown of less than 10 vertical feet from existing groundwater elevation.

Alternative C likely would result in lesser adverse social effects for the rural part of the study area as a result of the smaller area affected by drawdown and the anticipated lower levels of drawdown. Although some anticipated social effects could still occur, the resultant change to the social context in the rural areas stemming from drawdown would be diminished as compared to the Proposed Action.

Due to the lower long-term average volume of groundwater production, Wasatch Front residents may be somewhat less concerned about the indirect effects of the project on dust and air quality, assuming implementation of Alternative C, than they would be in conjunction with the Proposed Action.

Conclusion. Construction and operation of the groundwater production and associated future facilities and subsequent pumping and conveyance of groundwater under Alternative C would have a combination of short-term and long-term social and economic effects in the region. The short-term effects would include temporary migration, population influx, housing demand, demands on public facilities and services, and social effects similar to those associated construction of

groundwater production facilities under the Proposed Action. The short-term social and economic effects of construction would diminish rapidly, then effectively cease following the completion of construction.

For some interests in Lincoln County and the Las Vegas Valley, the onset of groundwater pumping would be welcomed as an indication that water resources to provide buffer against drought and accommodate economic and population growth would be available. Due to the lower volume of additional groundwater to be developed, interests favoring groundwater development would be less satisfied by development under Alternative C than with the Proposed Action. Other interests would be distressed at the potential for continued growth and development in the LVV at recent levels.

The initiation of groundwater pumping, transbasin diversions, and long-term drawdown would contribute to political conflict, social dissension, community discord and personal distress as well as a diminished sense of self-determination and anxiety about the eventual detrimental effects on lifestyle felt by many residents of the rural areas. The long-term effects arising from groundwater pumping and drawdown present risks of significant adverse effects on social and economic conditions in the rural areas, although uncertainty and the decades and centuries long period over which these effects would arise complicate the description and assessment of such effects. Foreseeable impacts include adverse effects of drawdown on local agriculture, outdoor recreation and tourism, and future economic growth and development. Economic development effects would likely be related the perception of the risks of drawdown as well as the actual effects. Potential adverse economic effects including reductions in income and employment in the agricultural and outdoor recreation sectors could generate similar effects in secondary sectors such as retail, service, and government, particularly if these effects resulted in out-migration of population. Any curtailment in future economic development opportunities including second and retirement home development and lifestyle migration would have similar secondary effects. Local governments may experience reductions in revenues from affected industries, which could also result in reductions in service levels. Adverse economic, population, and fiscal effects could in turn generate changes in social organization and community cohesion stemming from out-migration and changes in traditional local industries, occupations and lifestyles. The long-term areal extent and magnitude of drawdown effects under Alternative C would be comparable to those under the Proposed Action.

Applicant Committed Measures and Proposed Mitigation Measures:

Applicant committed and proposed mitigation measures under Alternative C would be the same as for the Proposed Action.

Residual impacts include:

- Implementation of Alternative C would have similar but smaller scale residual social and economic effects than the Proposed Action following the completion of construction and reclamation. The residual effects include a small number of jobs and income in the rural areas.
- Residual effects of groundwater pumping and drawdown would include many of the social and economic effects described above because those effects would arise from the long-term drawdown of groundwater and cannot be reasonably mitigated or avoided because they are inherent with groundwater drawdown. These effects would likely endure beyond the 200-year assessment period.
- Residual social and economic effects in Lincoln County and the Las Vegas Valley could arise in conjunction with growth enabled, but not caused by the water conveyed via the pipeline.
- The scale of these residual effects would be less from a social and economics perspective due to the lesser extent of drawdown associated with intermittent pumping, but they would not be eliminated.

3.18.2.13 Alternative D

Groundwater Development Areas

Alternative D would involve the development of up to 83 groundwater production wells, compared with up to 174 wells under the Proposed Action. Production wells would be developed in two phases in the Delamar, Dry Lake,

Cave, and Spring valleys, with the latter confined to areas within Lincoln County. No project-related groundwater production facilities would be developed in White Pine County.

The short- and long-term social and economic effects of construction of the future facilities under Alternative D would be somewhat similar, but smaller in scale and less geographically dispersed than those for the Proposed Action. Specifically, the short-term effects associated with construction and long-term effects associated with production from northern Spring Valley and the Snake Valley would not occur under Alternative D. Eliminating these effects would result in less employment, a shorter development schedule and lower levels of indirect support from vendors or suppliers, induced employment, and effects on local retail sales, housing demand, or other social and economic effects when compared to the Proposed Action.

Average annual employment during the two construction phases for Alternative D, including the direct, indirect and induced effects, would be 69 jobs in conjunction with the future facilities development activity in the Delamar, Dry Lake and Cave Valleys and 85 jobs during the development in Spring Valley (**Table 3.18-45**).

Table 3.18-45 Short-term Employment and Population Effects, Future Facilities Development, Alternative D

	Delamar, Dry Lake, and Cave Valleys	**Spring Valley**	**Snake Valley**
Number of Production Wells	Up to 19 total	Up to 64 (in 2 phases)	0
Timing of Exploratory Drilling	2014	2020 to 2023 2038 to 2040	NA
Timing of Production Well and Collector Pipeline Development	2016 to 2020	2025 to 2028 2041 to 2043	NA
Total Temporary Jobs, Future Facilities	69	85 per phase	NA
Incremental Temporary Population			
Weekdays	78	96 per phase	NA
Weekends	41	64 per phase	NA
Temporary Housing Demand (Units)	46	56 per phase	NA

Temporary population gains during the workweek for the two periods of future facility development are 78 and 96, respectively, for the DDC and Spring valleys projects. The temporary population gains, corresponding demand for housing, and indirect effects on local businesses and demands for services associated with the DDC and Spring valleys projects would primarily affect Pioche, Panaca and Caliente in Lincoln County and Ely in White Pine County. The Baker/Snake Valley community might experience limited population gains and demands for temporary housing in conjunction with development in Spring Valley. The future short-term socioeconomic effects on the Baker/Snake Valley community associated with the Proposed Action or Alternatives A through C would not occur under Alternative D as no future facilities would be developed in the Snake Valley.

In general, the combination of accessibility/proximity to several communities and sizes of these communities provides sufficient capacity to reasonably accommodate the short-term demands associated with future facility development.

The effects on population, employment, labor force and economic structure would result in many corollary effects on social organization and conditions in the affected communities. In the rural communities, these effects would include continuation and potential elevation of existing project-related attitudes, opinions and associated social effects including political conflict, social dissension, community discord and personal distress. Implementation of Alternative D would avoid some of the distress regarding perceptions of the risks of damage to the physical and biological environments, and concern for detrimental long-term effects on health, quality of life and livelihoods held by residents of Snake Valley. Similar concerns held by some residents in other parts of White Pine and Lincoln County would continue.

Not all residents of the rural areas oppose the project. For these stakeholders, implementation of Alternative D may generate mixed reactions. On the one hand, it could be seen in an unfavorable light in that it provides for substantially less conveyance capacity, which potentially could limit intracounty water transfers. At the same time, the fact that implementation of Alternative D provides some conveyance capacity for any future intracounty water transfers could be viewed favorably.[21]

Within the Las Vegas Valley, some residents, organizations, community, and political leaders, and development interests, initiation of groundwater pumping may provide a measure of assurance that water will be available to enable some future growth and provide a buffer against future water shortages that would occur due to episodic drought or climate change. However, many of those same stakeholders would be less satisfied with Alternative D, when compared to the Proposed Action and Alternatives A through C, because the volume of water to be conveyed would be less. At the same time, residents and other stakeholder groups of the Las Vegas Valley are likely to remain divided on their support for the groundwater development project because of the implications of growth for the areas' environment and quality of life, concern about the project's cost and concern about the equity and environmental consequences of groundwater pumping for the rural areas.

Groundwater Pumping

Under Alternative D, groundwater production by the SNWA is assumed to eventually reach 78,755 afy by full build out (in about the year 2043). In addition, the main pipeline may be used to convey additional water on behalf of the LCWD. The groundwater simulations indicate that the areal and vertical extents of groundwater drawdown under Alternative D would be primarily affecting the Las Vegas Valley and communities, public water systems, private landowners, public lands and natural resources in Lincoln County, although the effect may vary in degree.

The short- and long-term social and economic effects of project operations under Alternative D would be similar to those under the Proposed Action, although long-term differences are expected due to differences in the areal and vertical extent of drawdown. The principal differences would be with respect to the potential impacts to the region's agricultural sector. The groundwater simulations indicate that about 1+ percent of the total agricultural lands in Spring and Snake valleys (299 acres) would be affected by vertical drawdown in excess of 10 feet at the end of full build out plus 75 years. The groundwater modeling does project drawdown in excess of 50 feet under agricultural lands in Spring and Snake valleys during this period. Such drawdowns would leave the local agricultural sector largely unaffected.

Following 200 years of full pumping volumes, projected drawdown in excess 10 feet would occur under 4,612 acres of private agricultural lands, approximately 19 percent of the total. The lesser areal extent and degree of drawdown would likely result in lesser adverse financial impacts on future irrigation costs, crop yields, and land values as a result. The groundwater modeling projects no drawdown in excess of 100 feet under the agricultural lands in Spring and Snake valleys at full build out plus 200 years (**Table 3.18-46**). Although no SNWA groundwater production would occur in Snake Valley, portions of the valley eventually would experience drawdown as the pumping effects propagate outwards from the points of pumping and affect seeps and springs that may contribute to groundwater recharge in Snake Valley.

Elimination of pipeline and groundwater development facilities in Snake Valley would dramatically reduce the number of people who would be directly affected by development because Snake Valley is the most highly populated of the two inhabited groundwater production areas.

At full build out plus 200 years, projected long-term groundwater drawdown would occur under 915 acres of public lands identified for potential disposal in the Ely RMP. There is no specific timetable for such disposals, nor is the specific use or user known at this time. However, approval of the GWD Project, with its foreseeable implications on drawdown, could have an adverse effect on the utility of those lands, the likelihood of disposal, and associated effects on the BLM in terms of management.

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[21] This statement is made without consideration of any potential financial implications of the reduced conveyance capacity of the overall cost of the project, or changes in costs that might accrue to Lincoln County users as a result of the smaller project. The implications of Alternative D on the overall costs of the project, the financial details of the contract between the SNWA and the Lincoln County Water District, and the subsequent impact of Alternative D on conveyance costs charged to the LWCD are outside the scope of this assessment.

Table 3.18-46 Acres of Private Agricultural Lands Affected By Long-Term Drawdown, Alternative D

Private Agriculture Lands	Spring Valley			Snake Valley			Combined Total			
	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out Plus 200 Years
	6,111 acres			18,489 acres			24,600 acres			
Drawdown Interval	Acres Within Interval			Acres Within Interval			Acres Within Interval			% of Total
Unaffected to <10'	6,111	5,913	4,000	18,489	18,388	15,988	24,600	24,301	19,988	81.3
10' - 19'	-	145	937	-	101	1,358	-	246	2,295	9.3
20' - 49'	-	53	975	-	-	1,143	-	53	2,118	8.6
50' - 99'	-	-	198	-	-	-	-	-	198	0.8
100' or more	-	-	-	-	-	-	-	-	-	0.0
Total Affected Acres	-	198	2,111	-	101	2,501	-	299	4,612	18.7
% of Total	0.0	3.2	34.5	0.0	0.5	13.3	0.0	1.2	18.7	-

Notes:
Drawdown is as compared to the existing groundwater elevation, not the surface elevation.
Affects to agricultural irrigation, individual, and community wells located near private agricultural lands, and stock watering facilities may result from drawdown of less than 10 vertical feet from existing groundwater elevation.

At full groundwater production levels, implementation of Alternative D would result in 57 percent lower annual interbasin water transfer fees, $0.79 million compared to $1.85 million under the Proposed Action. The difference reflects the foregone groundwater production and conveyance from northern Spring Valley and the Snake Valley. Lincoln County would likely realize a larger share of these revenues than under the Proposed Action, although White Pine County could still realize some revenues based on rulings by the NSE regarding the share of water recharge in Spring Valley that occurs in White Pine County.

Social effects of Alternative D for the rural areas would be somewhat reduced in the Snake Valley as compared to the Proposed Action, because no facilities would be developed in Snake Valley and a smaller area of Snake Valley would be affected by drawdown. Some level of anticipatory social effects would still be likely. Social effects of Alternative D would continue in Spring Valley, as the residents in that valley face the prospect of drawdowns, albethey of lesser magnitude and extent than those under the Proposed Action.

Las Vegas Valley business, economic development and real estate development interests and residents concerned about water availability likely would be less satisfied with implementation of Alternative D as compared to the Proposed Action, because of the prospect of less water to serve future development and provide a buffer against drought.

The reduced risk of groundwater effects on Baker/Snake Valley reduces risks of indirect effects on tourism and the local community's ability to support tourism and visitors and staff associated with GBNP.

Due to the lower overall volume of groundwater production and the lack of water production from the Snake Valley, Residents of downwind communities are likely to be somewhat less concerned about dust and air quality effects assuming implementation of Alternative D than they would be in conjunction with the Proposed Action.

Conclusion. Construction and operation of the groundwater production and associated future facilities and subsequent pumping and conveyance of groundwater under Alternative D would have a combination of short-term and long-term social and economic effects in the region. The short-term effects would include temporary migration, population influx, housing demand, demands on public facilities and services, and social effects similar to those associated with construction of groundwater production facilities under the Proposed Action. The short-term social and economic

effects of construction would diminish rapidly, then effectively cease following the completion of construction. Alternative D would avoid most temporary social and economic effects in the Baker/Snake Valley community.

For some interests in Lincoln County and the Las Vegas Valley, the onset of groundwater pumping would be welcomed, marking the availability of additional water resources to provide buffer against drought and accommodate economic and population growth. Due to the lower volume of additional groundwater to be developed, interests favoring groundwater development would be less satisfied by development under Alternative D than with the Proposed Action. Other interests would be distressed at the potential for continued growth and development in the Las Vegas Valley at recent levels.

The initiation of groundwater pumping, transbasin diversions, and long-term drawdown would contribute to political conflict, social dissension, community discord and personal distress as well as a diminished sense of self-determination and anxiety about the eventual detrimental effects on lifestyle felt by many residents of the rural areas. The long-term effects arising from groundwater pumping and drawdown present risks to social and economic conditions in the rural areas, although uncertainty and the decades and centuries long period over which these effects would arise complicate the description and assessment of such effects. Foreseeable impacts include adverse effects of drawdown on local agriculture, outdoor recreation and tourism, and future economic growth and development. Economic development effects would likely be related the perception of the risks of drawdown as well as the actual effects. Potential adverse economic effects including reductions in income and employment in the agricultural and outdoor recreation sectors could generate similar effects in secondary sectors such as retail, service, and government, particularly if these effects resulted in out-migration of population. Any curtailment in future economic development opportunities including second and retirement home development and lifestyle migration would have similar secondary effects. Local governments may experience reductions in revenues from affected industries, which could potentially lead to reductions in service levels. Adverse economic, population, and fiscal effects could in turn generate changes in social organization and community cohesion stemming from out-migration and changes in traditional local industries, occupations, and lifestyles. The long-term areal extent and magnitude of drawdown effects under Alternative D would be substantially less than those under the Proposed Action. Alternative D would avoid virtually all long-term project-related social and economic effects in White Pine County, and particularly in the Baker/Snake Valley community including western Juab and Millard counties in Utah.

Applicant Committed Measures and Proposed Mitigation Measures:

Applicant committed and proposed mitigation measures under Alternative D would be the same as for the Proposed Action.

Residual impacts include:

- Implementation of Alternative D would have similar but smaller scale residual social and economic effects than the Proposed Action following the completion of construction and reclamation. The residual effects include a small number of jobs and income in the rural areas.
- Residual effects of groundwater pumping and drawdown would include many of the social and economic effects described above because those effects would arise from the long-term drawdown of groundwater and cannot be reasonably mitigated, or avoided because they are inherent with groundwater drawdown. These effects would likely endure beyond the 200-year assessment period.
- Residual social and economic effects in Lincoln County and the Las Vegas Valley could arise in conjunction with growth enabled, but not caused by the water conveyed via the pipeline.
- Residual impacts under Alternative D would be similar to those for the Proposed Action, but affecting a smaller geographical area in the portion of Spring Valley in White Pine County and with little or no residual effects in Snake Valley.

3.18.2.14 Alternative E

Groundwater Development Areas

Alternative E would involve the development of up to 83 groundwater production wells, compared with up to 174 wells under the Proposed Action. Production wells would be developed in two phases in the Delamar, Dry Lake, Cave, and Spring valleys. Unlike Alternative D, the development of production wells in Spring Valley would not be confined to areas within Lincoln County. However, like Alternative D, no groundwater production facilities would be developed in Snake Valley.

The short- and long-term social and economic effects of construction of the future facilities under Alternative E would be similar to those for Alternative E. Potential short-term effects associated with construction and long-term effects associated with production from Snake Valley under the Proposed Action would not occur under Alternative E. Eliminating these effects would result in less employment, a shorter development schedule and lower levels of indirect support from vendors or suppliers, induced employment, and effects on local retail sales, housing demand, or other social and economic effects when compared to the Proposed Action. The development of some additional wells in the portion of Spring Valley in White Pine County would result in minor shifts in temporary impacts from the communities in central Lincoln County to Ely in White Pine County.

Average annual employment during the two construction phases for Alternative E, including the direct, indirect and induced effects, would be 69 jobs in conjunction with the future facilities development activity in the Delamar, Dry Lake and Cave Valleys and 85 jobs during the development in Spring Valley (**Table 3.18-47**).

Table 3.18-47 Short-term Employment and Population Effects, Future Facilities Development, Alternative E

	Delamar, Dry Lake, and Cave Valleys	Spring Valley	Snake Valley
Number of Production Wells	Up to 19 total	Up to 64 (in 2 phases)	0
Timing of Exploratory Drilling	2014	2020 to 2023 2038 to 2040	NA
Timing of Production Well and Collector Pipeline Development	2016 to 2020	2025 to 2028 2041 to 2043	NA
Total Temporary Jobs, Future Facilities	69	85 per phase	NA
Incremental Temporary Population			
Weekdays	78	96 per phase	NA
Weekends	41	64 per phase	NA
Temporary Housing Demand (Units)	46	56 per phase	NA

Other temporary social and economic effects on population, housing, and indirect effects on local businesses and demands for services associated with the DDC and Spring Valley projects under Alternative E would be comparable to those under Alternative D, affecting primarily Pioche, Panaca, and Caliente in Lincoln County and Ely in White Pine County. The Baker/Snake Valley community might experience limited population gains and demands for temporary housing in conjunction with development in Spring Valley. In general, the combination of accessibility/proximity to several communities and sizes of these communities provides sufficient capacity to reasonably accommodate the short-term demands associated with the first two phases of future facility development.

The future short-term socioeconomic effects on the Baker/Snake Valley community associated with the Proposed Action and Alternatives A through C would not occur under Alternative E as no future facilities would be developed in Snake Valley.

Implementation of Alternative E would largely avoid some of the distress regarding perceptions of the risks of damage to the physical and biological environments, concern for detrimental long-term effects on health, quality of life and

livelihoods held by residents of Snake Valley. Similar concerns held by some residents in other parts of White Pine and Lincoln counties would continue.

Not all residents of the rural areas oppose the project. For these stakeholders, implementation of Alternative E would likely be seen favorably, as it would still provide conveyance capacity for future intracounty water transfers.[22]

Within the Las Vegas Valley, for some residents, organizations, community and political leaders, and development interests, initiation of groundwater pumping may provide a measure of assurance that water will be available to enable growth and provide a buffer against future water shortages due to episodic drought or climate change. However, many of those same stakeholders would be less satisfied with Alternative E, when compared to the Proposed Action and Alternatives A through C, because the amount of water to be conveyed would be less. At the same time, residents and other stakeholder groups of the Las Vegas Valley are likely to remain divided on their support for the groundwater development project because of the implications of growth for the areas' environment and quality of life, concern about the project's cost and concern about the equity and environmental consequences of groundwater pumping for the rural areas.

Groundwater Pumping

Under Alternative E, project-related groundwater production by the SNWA is assumed to eventually reach 78,755 afy by full build out (in about the year 2049). In addition, the main pipeline may be used to convey up to 8,000 afy of water presently produced by the SNWA for agricultural use in White Pine County and water on behalf of the LCWD. The groundwater simulations indicate that the areal and vertical extents of groundwater drawdown under Alternative E would primarily affect the Las Vegas Valley and communities, public water systems, private landowners, public lands and natural resources in Lincoln County, although the effect may vary in degree. The short- and long-term social and economic effects of project operations under Alternative E would be similar to those under the Proposed Action. Some long-term differences are expected, due to difference in the areal and vertical extent of drawdown and subsequent implications for impacts to the region's agricultural sector.

The groundwater simulations indicate that nearly 60 percent of the total agricultural lands in Spring Valley (3,635 acres) would be affected by vertical drawdown in excess of 10 feet at the end of the full build out plus 75 years. The majority of the affected acreage would be on top of areas projected to see 20 to 49 feet of drawdown. By full build out plus 200 years, the total affected private agricultural acreage climbs to 3,791 acres, but the extent of drawdown would be more severe, with more than 2,900 acres overlaying areas projected to see 50 to 99 feet of drawdown (**Table 3.18-48**). Some of the affected lands are owned by the SNWA.

The groundwater simulations do not project drawdown in excess of 100 feet under the agricultural lands in Spring Valley.

At full groundwater production levels, implementation of Alternative E would result in 53 percent lower annual interbasin water transfer fees than under the Proposed Action, $0.87 million compared to $1.85 million under the Proposed Action. Lincoln County would likely realize a larger share of these revenues than under the Proposed Action, although White Pine County could still realize revenues based on rulings by the NSE regarding the share of water recharge in Spring Valley occurring in White Pine County.

At full build out plus 200 years, projected long-term groundwater drawdown would occur under 107 acres of public lands identified for potential disposal in the Ely RMP. There is no specific timetable for such disposals, nor is the specific use or user known at this time. However, approval of the GWD Project, with its foreseeable implications on drawdown, could have an adverse effect on the utility of those lands, the likelihood of disposal, and associated effects on the BLM in terms of management.

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[22] This statement is made without consideration of any potential financial implications of the reduced conveyance capacity of the overall cost of the project, or changes in costs that might accrue to Lincoln County users as a result of the smaller project. The implications of Alternative E on the overall costs of the project, the financial details of the contract between the SNWA and the Lincoln County Water District, and the subsequent impact of Alternative E on conveyance costs charged to the LWCD are outside the scope of this assessment.

Table 3.18-48 Acres of Private Agricultural Lands Affected By Long-Term Drawdown, Alternative E

Private Agriculture Lands	Spring Valley			Snake Valley			Combined Total			
	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out Plus 200 Years
	6,111 acres			18,489 acres			24,600 acres			
Drawdown Interval	Acres Within Interval			Acres Within Interval			Acres Within Interval			% of Total
Unaffected to <10'	5,779	2,476	2,320	18,489	18,489	18,489	24,268	20,965	20,809	84.6
10' - 19'	332	427	374	-	-	-	332	427	374	1.5
20' - 49'	-	3,208	501	-	-	-	-	3,208	501	2.0
50' - 99'	-	-	2,916	-	-	-	-	-	2,916	11.9
100' more	-	-	-	-	-	-	-	-	-	0.0
Total Affected Acres	332	3,635	3,791	-	-	-	332	3,635	3,791	15.4
% of Total	5.4	59.5	62.0	0.0	0.0	0.0	1.4	14.8	15.4	-

Notes:

Drawdown is as compared to the existing groundwater elevation, not the surface elevation.

Impacts to agricultural irrigation, individual, and community wells located near private agricultural lands, and stock watering facilities may result from drawdown of less than 10 vertical feet from existing groundwater elevation.

Social effects of Alternative E for the rural areas would be substantially reduced in Snake Valley as compared to the Proposed Action, because no facilities would be developed in Snake Valley and a smaller area of Snake Valley would be affected by drawdown. Social effects of Alternative E would occur in Spring Valley, as the remaining residents in that valley face the prospect of long-term drawdown and the associated effects on the agricultural sector.

Las Vegas Valley business, economic development and real estate development interests and residents concerned about water availability would likely be less satisfied with implementation of Alternative E as compared to the Proposed Action, because of the prospect of less water to serve future development and provide a buffer against drought.

Due to the lower overall volume of groundwater production and the lack of water production from the Snake Valley, Residents of downwind communities are likely to be somewhat less concerned about dust and air quality effects assuming implementation of Alternative E than they would be in conjunction with the Proposed Action.

Conclusion. Construction and operation of the groundwater production and associated future facilities and subsequent pumping and conveyance of groundwater under Alternative E would have a combination of short-term and long-term social and economic effects in the region. The short-term effects would include temporary migration, population influx, housing demand, demands on public facilities and services, and social effects similar to those associated construction of groundwater production facilities under the Proposed Action. The short-term social and economic effects of construction would diminish rapidly, then effectively cease following the completion of construction. Alternative E would avoid most temporary social and economic effects in the Baker/Snake Valley community.

For some interests in Lincoln County and the Las Vegas Valley, the onset of groundwater pumping would be welcomed as an indication that water resources to provide buffer against drought and accommodate economic and population growth would be available. Due to the substantially lower volume of additional groundwater to be developed, interests favoring groundwater development would be less satisfied by development under Alternative E than with the Proposed Action. Other interests would be distressed at the potential for continued growth and development in the Las Vegas Valley at recent levels.

The initiation of groundwater pumping, transbasin diversions, and long-term drawdown would contribute to political conflict, social dissension, community discord and personal distress as well as a diminished sense of self-determination and anxiety about the eventual detrimental effects on lifestyle felt by many residents of the rural areas. The long-term effects arising from groundwater pumping and drawdown present risks of significant adverse effects on social and economic conditions in the rural areas, although uncertainty and the decades and centuries long period over which these effects would arise complicate the description and assessment of such effects. Foreseeable impacts include adverse effects of drawdown on local agriculture, outdoor recreation and tourism, and future economic growth and development. Economic development effects would likely be related the perception of the risks of drawdown as well as the actual effects. Potential adverse economic effects including reductions in income and employment in the agricultural and outdoor recreation sectors could generate similar effects in secondary sectors such as retail, service, and government, particularly if these effects resulted in out-migration of population. Any curtailment in future economic development opportunities including second and retirement home development and lifestyle migration would have similar secondary effects. Local governments may experience reductions in revenues from affected industries, which could also result in reductions in service levels. Adverse economic, population, and fiscal effects could in turn generate changes in social organization and community cohesion stemming from out-migration and changes in traditional local industries, occupations and lifestyles. The long-term areal extent and magnitude of drawdown effects under Alternative E would be substantially less than those under the Proposed Action. Alternative E would avoid many of the long-term project-related social and economic effects in White Pine County, particularly those in the Baker/Snake Valley community including western Juab and Millard counties in Utah, at least for the foreseeable future. However, long-term social and economic effects would arise in conjunction with groundwater development in Spring Valley.

Applicant Committed Measures and Proposed Mitigation Measures:

Applicant committed and proposed mitigation measures under Alternative E would be the same as for the Proposed Action.

Residual impacts include:

Implementation of Alternative E would have similar but smaller scale residual social and economic effects than the Proposed Action following the completion of construction and reclamation. The residual effects include a small number of jobs and income in the rural areas.

- Residual effects of groundwater pumping and drawdown would include many of the social and economic effects described above because those effects would arise from the long-term drawdown of groundwater and cannot be reasonably mitigated or avoided because they are inherent with groundwater drawdown. These effects would likely endure beyond the 200-year assessment period.
- Residual social and economic effects in Lincoln County and the Las Vegas Valley could arise in conjunction with growth enabled, but not caused by the water conveyed via the pipeline.
- Residual impacts under Alternative E would be similar to those for the Proposed Action, but affecting a smaller geographical area in the portion of Spring Valley in White Pine County and with little or no residual effects in Snake Valley.

3.18.2.15 Alignment Options 1 through 4

Future facilities development and pumping profiles would be unaffected by the Alignment Options. Therefore, the Alignment Options are not addressed in this section.

3.18.2.16 Alternatives Comparison

Construction, operation, maintenance, and pumping effects associated with the action alternatives would result in relatively minor, but substantial long-term social and economic effects across the socioeconomic study area. Differences between the alternatives would primarily reflect differences in the volume of water pumped and basins in which such pumping would occur. The short-term effects would consist primarily of impacts related to temporary employment and population gains across the region occurring in conjunction with groundwater production well field

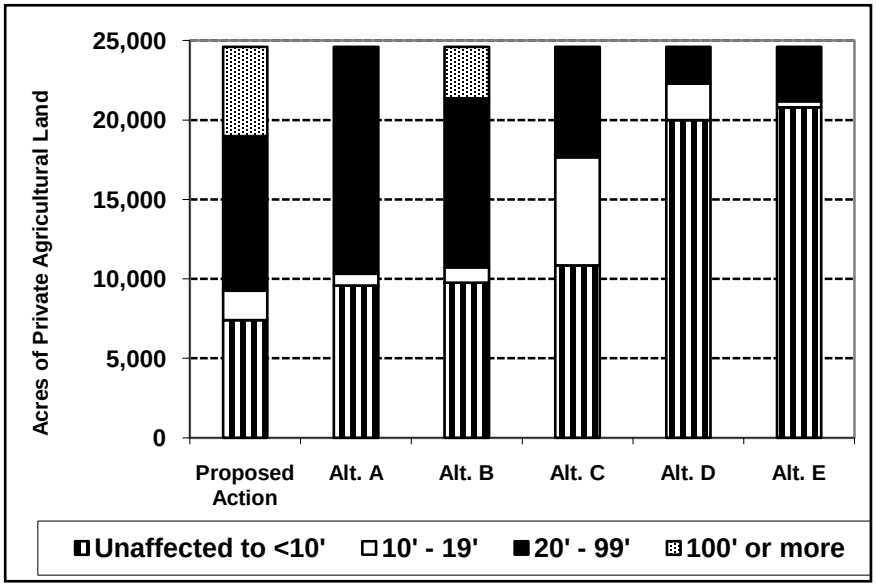
development. Long-term impacts would result from the indirect effects of groundwater drawdown. **Table 3.18-49** provides comparative indicators of effects associated with social and economic change in the region for the groundwater development alternatives.

Table 3.18-49 Alternatives Comparison, Groundwater Development Areas and Pumping

	Proposed Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Total number of production wells	144 to 176	108 to 131	116	108 to 131	69 to 83	69 to 83
Temporary employment supported (total job-years)	1,613	1,101	1,044	1,101	874	994
Peak temporary population impact in the rural area during the work week	155	96	119	96	96	96
Acres of private agricultural lands in Spring and Snake valleys with limited impacts on irrigation costs and production to less than 10 feet of projected drawdown at full build out plus 75 years	8,,808	9,994	10,735	12,241	24,301	20,965
Acres of private agricultural lands in Spring and Snake valleys at risk for impacts on irrigation pumping and new well development costs and production due to projected drawdown of between 10 and 100 feet at full build out plus 75 years	15,792	14,605	13,364	12,359	299	3,635
Acres of private agricultural lands in Spring and Snake valleys at risk for major increases in irrigation costs and reductions in output due to projected drawdown of 100 feet or more at full build out plus 75 years	0	0	231	0	0	0
Annual interbasin water transfer fees, assuming pumping of full volumes (millions)	$1.85[1]	$1.23[1]	$1.85[1]	$0.71 (average)[1]	$0.79	$0.87[1]
Acres of public lands identified for potential disposal in Lincoln and White Pine counties overlying area of projected groundwater drawdown of 10 inches or greater at full build out plus 75 years	4,918	4,918	4,918	4,918	107	107
Long-term adverse economic and social effects in the rural area	Yes, Potentially Substantial	Yes, Potentially Substantial	Yes, Potentially Substantial	Yes, Potentially Substantial	Less severe than Proposed Action	Less severe than Proposed Action

[1] Includes fees on 8,000 afy of groundwater presently produced by the SNWA for agriculture use that could be conveyed by the project.

The potential level of drawdown underlying agricultural lands is an important concern in the rural portion of the study area. **Figure 3.18-12** summarizes the potentially affected area based on the hydrology modeling done for this assessment.



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Notes:

Drawdown is as compared to the existing groundwater elevation, not the surface elevation.

Affects to agricultural irrigation, individual and community wells located near private agricultural lands, and stock watering facilities may result from drawdown of less than 10 vertical feet from existing groundwater elevation.

Figure 3.18-12 Long-Term Groundwater Drawdown underlying Private Agricultural Lands in Spring and Snake Valleys, Full Build Out Plus 200 Years

3.18.2.17 No Action

The No Action Alternative describes future conditions in the study area assuming denial of SNWA's requested ROWs. Although Congress mandated that the BLM approve the ROWs, with appropriate mitigation, Congress also mandated the assessment of impacts under the NEPA. The NEPA requires effects under the No Action Alternative be assessed. From a NEPA perspective, denial of the ROW applications would effectively preclude or delay SNWA's plans to develop and convey groundwater associated with its existing and any future rights appropriated to it by the NSE in the five groundwater development basins (Spring, Snake, Cave, Dry Lake, and Delamar valleys) to the Las Vegas Valley. Assuming denial of these applications, the SNWA has an option to submit applications to the BLM for a different ROW to access these same or other groundwater resources. Denial would also preclude or delay the SNWA from providing conveyance capacity to the LCWD, which could hinder that District's ability to develop groundwater to meet its future needs.

From a social and economic perspective, the No Action Alternative portrays a scenario under which the future would unfold absent the discrete direct and indirect actions and effects associated with the SNWA's GWD Project. Such a future would itself be contingent upon numerous assumptions, including efforts by the SNWA to identify and develop additional water supplies to support future growth. As with any forecast, such a scenario would reflect considerable uncertainty regarding the timing, likelihood, and scale of future influences affecting social and economic conditions in the area. As discussed in Section 3.18.3 above, the availability of water may enable growth in the Las Vegas Valley, but is not in itself the cause of growth. Consequently, forecasts of population through 2030 prepared by the Nevada State Demographer, Utah Governor's Office and Planning and Budget (UHOPB), augmented by forecasts prepared by UNLV CBER in the case of Clark County, provide a general view of anticipated growth and development in the assessment area for the No Action Alternative.

The discussion of the No Action Alternative addresses other factors that may influence growth and uncertainties associated with those factors while acknowledging that many currently unknown factors and events would likely exert even greater influences on long-term growth and development in the assessment area beyond 2030. Perspectives regarding those influences may vary widely among individuals, groups and organizations. There are no guarantees that

other options could be developed. Some individuals, public entities and advocacy groups, including the Sonoran Institute, have advocated for the adoption of more stringent conservation and efficiency measures, in combination with actions to limit growth, rather than the development of future water sources. The EIS does not attempt to quantify potential impacts of the No Action Alternative to the economy or population of southern Nevada, assuming no development of additional water supply by the SNWA.

Population and Demographics

State agencies in Nevada and Utah prepare long-term population projections for their respective states. The current forecasts for Nevada, released in 2010 and summarized in **Table 3.18-50**, reflect historical growth trends with consideration of the uncertainty introduced by the recent economic recession, particularly in Clark County. The available projections for the Utah counties date to 2008, before the severity and pervasiveness of effects of the recession and home mortgage crisis were apparent.

Projections prepared by the Nevada State Demographer in 2010 reflect uncertainties regarding the timing and strength of future economic recovery, portraying a range of net population growth between 76,543 and 1.16 million residents in Clark County by 2030. The upper end of the range is nearly 500,000 below the Nevada State Demographer's projections from 2 years earlier.[23] Projections by the UNLV-CBER from 2009 portray a conservative outlook through 2020, but anticipate economic recovery and a resumption of pre-recessionary growth levels thereafter, yielding net population growth of 47 percent through 2030. The UNLV-CBER's projected population of 3,126,000 in 2030 is 328,000 residents lower, or nearly 10 percent, than those it prepared four years earlier.

Table 3.18-50 Population Projections to 2030 for the GWD Project Study Area Counties

County (Source)	2010	2030	Net Change, 2010 to 2030
Clark, Nevada			
Low Job Growth (Nevada State Demographer 2010)	1,902,502	1,979,045	76,543
High Job Growth (Nevada State Demographer 2010)	1,902,502	3,066,872	1,164,370
UNLV-CBER 2009	2,122,000	3,126,000	1,004,000
Lincoln, Nevada			
Nevada State Demographer 2008	4,499	5,500 (e)	1,001
Nevada State Demographer 2010	4,238	4,384	146
White Pine, Nevada			
Nevada State Demographer 2008	10,453	11,440 (e)	987
Nevada State Demographer 2010	9,495	8,259	-1,236
Juab, Utah (UGOPB 2008)	10,519	18,004	7,485
Millard, Utah (UGOPB 2008)	13,863	19,682	5,819

Notes:

These projections were prepared by the Nevada State Demographer, UNLV-CBER, and UGOPB. The Nevada State Demographer projections do not include explicit assumptions regarding future development and population growth associated with the Coyote Spring or Toquop/Lincoln County Land Act projects.

(e) = estimated by the BLM contractor in order to extend the base projections from 2028 to 2030 to provide forecasts for a consistent period.

Sources: Nevada State Demographer 2010, UNLV-CBER 2009, UGOPB 2008.

[23] Note that the 2010 population reported for Clark County in the 2010 Census is higher than the estimate used by the Nevada State Demographer in preparing the projections. However, it is the net change, rather than the specific value, that is important for the purposes of this assessment.

The pre-recessionary outlook anticipated population growth in the four rural counties to climb by 39 percent, by nearly 15,300 residents, from 39,334 to 54,626 between 2010 and 2030. The vast share of the net growth is projected to occur in Juab and Millard counties and is likely tied to the continued growth along the Wasatch Front. Due to the limited amount of private land and lack of identified economic development opportunities, population growth in Snake Valley would likely be limited, although it is likely that a modest amount of growth would continue to occur around GBNP associated with retirees and others attracted by social, scenic and environmental amenities and related economic opportunities. Some potentially developable mineral deposits have been identified in western Millard County, which if pursued and proven feasible, could promote growth in the area.

Lincoln and White Pine counties were each projected to gain approximately 1,000 residents in the Nevada State Demographer's 2008 projections. The more recent projections call for lower growth in Lincoln County and population declines in White Pine County. Projected long-term growth in Lincoln County reflects continuation of growth in the southern and central portions of the county linked to Clark County and some retirement/second-home development. Although the projected growth may reflect indirect/spin-off growth related to the Coyote Springs and Toquop/Lincoln County Land Act planned unit development projects in the southeastern portion of the county, the Nevada State Demographer's projections do not explicitly reflect growth associated with these developments. Lincoln County estimates that these developments could ultimately increase local population by 250,000 (Lincoln County no date). The current economic recession has negatively affected the near-term development and marketing prospects for these developments, with the prospects for future progress dependent on improved economic conditions and the success of developers in attracting businesses and residents. While it is uncertain whether the recession will have long-term residual effects on the development of these projects, they do represent long-term opportunities for growth that are considerably higher than past growth.

No Action as defined for this assessment includes continuation of existing and approved groundwater development and conveyance within Lincoln County, in part to serve Coyote Springs, as well as meet agricultural and municipal needs in the Pioche/Panaca/Caliente area. Groundwater drawdown in excess of 10 feet is projected in and around those three communities by 2125. Much of that area would see drawdown in excess of 20 feet by 2250 (see Section 3.3.2, Water Resousrces, for additional information regarding the No Action drawdown). The effect on long-term growth in Lincoln County of the DOE's decision to withdraw the license application for the Yucca Mountain Nuclear Waste Repository and associated transportation actions is unclear.

The economic outlook for White Pine County reflects the continuation of mining, construction, and operation of multiple wind energy farms. However, several proposed coal-fired generating plants have been delayed or cancelled due to air quality concerns and weak long-term demand for coal-fired generating capacity in light of the economic recession, climate change, and other factors (Rajala 2009).

Beyond 2030, the economic outlook for White Pine County includes the prospect of an eventual shutdown of the Robinson Mine. The loss of jobs following such a shutdown would result in substantial exodus of population from White Pine County. White Pine County is desirous of, and is actively engaged in, pursuing appropriate economic development and diversification. The NSE's earlier ruling in Spring Valley explicitly reserved groundwater to meet future community economic development needs. Although consideration of such needs was stipulated in the state's water rights regulations, the SNWA's filings were widely viewed locally as constraining new groundwater applications and development by any other parties. The lack of a ruling had left that issue unresolved. Although the NSE's original decision has been vacated for procedural reasons, with a new hearing pending, the decision might be viewed as establishing precedent in opening the Spring Valley to other applications for within basin use. No such applications have been filed to date. Nonetheless, the water thereby reserved augments existing water rights held by White Pine County that could promote long-term economic development and population growth beyond that underlying the Nevada State Demographer's current projections.

From a No Action perspective, the long-term outlook over the extended period encompassed by the pumping scenarios under the Proposed Action is uncertain. On the one hand, it might be deemed unreasonable to expect that long-term growth would suddenly cease; it could be deemed equally unreasonable to expect growth to continue indefinitely at or near the same rate in the face of water availability issues, climate change, and other potential constraints to growth. Section 3.18.3.1 (Relationship to Induced Growth) provides a discussion of the role of imported groundwater in enabling growth in the Las Vegas Valley.

Given the magnitude of projected population growth in Clark County, it is reasonable to conclude that those projections also assume corresponding economic growth and a lack of constraints to growth, including adequate water supplies to serve future demand, at least implicitly. However, because the No Action scenario assumes denial of the right-of-way grants, realization of the projected growth would be contingent on the identification and development of non-GWD Project source(s) of water. Absent a supplemental water source, the timing and level of future population growth in Clark County would be uncertain. In fact, it would be reasonable to expect the Nevada State Demographer and the UNLV-CBER to prepare new long-term forecasts if the No Action alternative were implemented and no other viable sources of water for the Las Vegas Valley were identified. This would be particularly true if the recent drought in the Colorado River system were to continue.

Employment, Labor Force, and Economic Structure

Long-term employment and labor market trends under the No Action Alternative would generally mirror the population trends described above. In other words, the number of jobs and size of the local labor force would be expected to increase over time, although such growth would be limited under one scenario put forth by the Nevada State Demographer. However, short-term fluctuations, including declines, would occur in response to local, industrial, national, and even global events and influences. Those short-term fluctuations could manifest themselves as changes in local unemployment rates, labor force migration, and labor force participation.

Under the No Action Alternative, no major long-term changes in economic structure, diversification, or economic dependencies would be foreseen in Clark County. Gaming and entertainment would continue to be the area's economic mainstay, augmented by some specialty manufacturing and financial, engineering, and other types of service firms which take advantage of communications and technology and are not dependent upon access to bulk commodities and natural resources. The residential and commercial construction industries would be important economic cogs in Las Vegas, although the level of activity and employment would likely exhibit cyclic expansion and contraction.

Absent future mineral development, agriculture, tourism, and outdoor recreation would remain the mainstays of the rural economies in western Utah. Tourism and outdoor recreation would also play important roles in the White Pine and Lincoln county economies. Foreseeable changes in economic structure in the rural Nevada counties include renewable energy development, trade and service employment associated with construction and consumer demands linked to the Coyote Springs development, potential specialized produce grown for the Las Vegas market, and residential development tied to a "bedroom" work force for Las Vegas and second-home development. Over the long term, the shutdown of the Robinson Mine, were it to occur, would portend a significant restructuring of the White Pine economy.

Foreseeable long-term groundwater drawdown in Lincoln County potentially would increase agricultural production costs, diminish future levels of grazing (see Section 3.12, Rangelands and Grazing), profitability, and property values, and increase the cost of operations for public water systems in central Lincoln County.

Local, state, and federal government employment would remain an important source of employment across the entire study area.

Personal Income and Poverty

Future economics and population growth under the No Action Alternative would be expected to result in rising aggregate personal income across the study area. Continuation of historical economic trends and absence of major changes in the structure of the local economies, save that associated with a shutdown of the Robinson Mine near Ely or extended absence of new construction in Clark County, would likely limit any dramatic changes in personal income on a per capita or per household basis. Therefore, current disparities in per capita incomes between Clark County and the rural areas would likely continue and poverty rates would remain below national norms, although per capita income and poverty rates would both be subject to short-term fluctuations in response to local economic events. Lower total and per capita personal incomes among White Pine County residents may result following the shutdown of the Robinson Mine. However, local incomes could benefit from short-term and long-term stimulus associated with future development projects. Temporary incomes supported by construction activities would generally be higher than the average prevailing wages and salaries in the community. The number of long-term jobs, particularly many of those in the trade and services industries, would be lower.

Housing

Future population growth under the No Action Alternative would first absorb the current surplus of housing in the Las Vegas market and then result in corresponding long-term demand for additional rental and owner-occupied housing across the study area. Projected levels of growth in the rural portions of the area would likely also support some modest levels of new residential development. Housing availability and prices would be subject to short-term variability in response to local, regional and national economic conditions.

Public Facilities and Services and Local Government

Clark County and municipal governments, school districts and many other public service providers in the Las Vegas Valley would face increased demand for services requiring major expansions in terms of infrastructure, equipment inventories, and the number of staff. The timing of changes in demand and requirements for additional facilities and services would be a function of the level, timing and geographic location of future residential, commercial, industrial and public sector development. Aggregate capital outlays and operating costs would climb over time, although outlays on a per capita basis could remain stable, increase or even decline.

In the event that the projected growth and development in Clark County does not materialize, development related revenues that support many intergovernmental transfers statewide, also would not materialize.

County and municipal governments, school districts and many other public service providers in the rural portions of the study area could also face increased demand for services in response to future growth. While the scale of the service needs may be lower than those in the Las Vegas Valley, governmental agencies and service providers in the rural areas could face their own challenges in meeting needs due to the more constrained financial resources available to them and the lower density of population and demand dispersed over wide geographic areas. In terms of the relative increase in demand for public facilities and services, Lincoln County would face the greatest challenges given the scale of anticipated growth in southern Lincoln County.

Social Organization and Conditions

Under the No Action Alternative, the potential social effects of construction and operations of the pipeline and ancillary facilities described for the Proposed Action and other action alternatives would not occur. Moreover, the ongoing adverse social effects of anticipated groundwater pumping in the rural parts of the assessment area – political conflict, social dissension, community discord and personal distress – would likely cease, although a residual level of anxiety about future groundwater exportation initiatives would likely continue. Future project-related changes in the social context associated with relocating residents and businesses in the rural areas would not occur. Residents of the rural areas who view the proposed project as providing economic development benefits for Lincoln County would likely be disappointed.

Businesses and economic development interests in the Las Vegas Valley who view the Proposed Action as necessary for continued growth and development would be dissatisfied with implementation of the No Action Alternative, as would residents of the Las Vegas Valley who view the Proposed Action as providing a buffer against future water shortages arising from climate change or long-term drought. It is likely that implementation of the No Action Alternative would result in considerable distress for both of these groups. This distress would be heightened if subsequent drought years on the Colorado River system were to occur. It is likely that SNWA efforts to develop other sources of water would take on higher urgency, as would interest among some residents in examining the implications of water supply on the sustainable levels of growth and development in the Las Vegas Valley.

Environmental Justice

Given that the No Action Alternative represents a continuation of current conditions in the rural portions of the socioeconomic and environmental justice study area, no disproportionate adverse effects of construction and operation of facilities or groundwater pumping affecting low income or minority populations or Indian Tribes would occur. In the Las Vegas Valley, the lack of supplemental water supplies could affect economic conditions particularly in the construction and development sectors, but these effects would be distributed throughout the population and would be unlikely to affect minority and low income populations and Indian Tribes disproportionately.

3.18.3 Cumulative Impacts

This section addresses the potential socioeconomic impact of the SNWA project alternatives when added to the past and present actions and RFFAs in the study area that could interact with project alternatives in a manner that would result in cumulative impacts. These past and present actions and RFFAs are associated primarily with agricultural, municipal, and public recreational uses, mining, and federal civilian and military activity on federal land holdings in the region.

Cumulative effects of the Proposed Action and alternatives and past and present actions and RFFAs on socioeconomic conditions in the study area would potentially arise if the employment, economic activity, population, housing, public service demand and fiscal aspects of RFFA projects occurred concurrently with those of the Proposed Action and alternatives. Cumulative socioeconomic activities could also occur if activities or land use associated with RFFAs occupied or proposed to use the same surface or subsurface areas as the Proposed Action and alternatives. Cumulative socioeconomic impacts have the potential to be both beneficial and adverse.

3.18.3.1 Issues

Rights-of-way and Groundwater Development Area Construction and Maintenance

- Potential cumulative short-term indirect socioeconomic effects on local communities arising from concurrent temporary employment, population and traffic increases and the associated demands on temporary housing, public facilities and services, and emergency services during construction.
- Potential cumulative long-term indirect socioeconomic effects on local communities arising from job and population growth associated with operations of cumulative projects, demand on housing, public facilities and services, and emergency services during operations.
- Potential cumulative short- and long-term indirect effects on grazing, outdoor recreation, tourism, and other elements of the economy due to short and long term disturbance, changes in access, and visual effects.

Groundwater Pumping

- Potential cumulative short-term indirect socioeconomic effects on local communities arising from concurrent temporary employment, population and traffic increases and their associated demands on temporary housing, public facilities and services, and emergency services during construction.
- Potential cumulative short and long-term indirect effects on grazing, outdoor recreation, tourism, and other elements of the economy due to short and long term disturbance, changes in access, and changes in the landscape and visual resources arising from the effects of groundwater pumping .
- Potential cumulative effects from pumping on economic and social conditions in the rural areas.

3.18.3.2 Assumptions

- The schedule and progression of development and direct employment associated with the construction and operations of the GWD Project would be as described in Chapter 2.

Approach: The assessment of potential cumulative socioeconomic effects is of necessity qualitative and descriptive due to the limited information available for the RFFA in terms of timing, location, project design/capacity, and anticipated construction and operations employment levels.

3.18.3.3 Methodology of Analysis

Influence Area: The influence area for cumulative socioeconomic effects includes the southern portion of White Pine County, Lincoln County, the western portion of Millard County, Utah, and the northern portion of Clark County, including the Las Vegas Valley.

Time frame: **Short-term** -- 5 years or less, and is generally applicable to the construction of the main pipeline and, ancillary facilities, and the development of the groundwater production well fields and future facilities. **Long-term** -- is longer than 5 years, and is applicable to the operations and maintenance of the physical systems (tier 1) and to the pumping effects (subsequent tiers). Long-term time frames arise primarily in conjunction with the latter and would extend more than 200 years into the future.

3.18.3.4 Cumulative Effects – Past and Present Actions for All Alternatives

The SNWA's project would be located almost entirely on federal lands administered by the BLM, and more than 90 percent of the land surface in White Pine and Lincoln counties is under federal management. Historically and economically important segments of the region's economic base include agriculture, travel and tourism, outdoor recreation, mining, and federal civilian and military activity on the Nevada Test Site, at the GBNP, and other federal land holdings in the region. The GWD Project area is sparsely populated. A substantial portion of Clark County is also rural and undeveloped. Clark County's character however, is defined largely by the urbanized Las Vegas metropolitan area.

Two major U.S. highways, Highway 93 running north and south through the Nevada portion of the influence area, and Highway 6/50 running east and west across White Pine County, serve the GWD Project area. Interstate I-15 runs diagonally through Clark County just south of the study area, connecting Las Vegas and Salt Lake City. A segment of the Union Pacific Railroad mainline network extends diagonally through southern Lincoln County and central Clark County, passing through Caliente.

Past actions include public land disposal actions by the BLM, several of which have accommodated substantial levels of new development in Clark County since 2000. Other land disposal actions have been completed, but not yet fully developed such that the future development remains a RFFA. The effects of past and current development in the region are evident in the existing settlement patterns, physical development and infrastructure, fiscal structures, and social settings. Such development and the related activities, events, and people associated with it imbue the area with a rich heritage and cultural history.

The collective past development activity contributed to growth and development that underlies important economic and social conditions and trends in the area. These trends are differentiated between the rural and urban areas; the rural areas had been marked by limited long-term population growth and economic expansion, punctuated by periods of cyclical expansion and decline, while the Las Vegas metropolitan area was characterized, until just recently by rapid growth and development. The differences in these development trends were often manifest by unemployment rates in the rural areas that were higher than those in the Las Vegas area, while incomes were lower. The rapid population and job growth in Clark County provided the impetus for new residential and commercial development and expansion of local government infrastructure and services.

The proposed action and alternatives would occur in the socioeconomic context and setting described above. The past and present actions helped create a setting based largely on natural resources in the rural areas, and gaming, entertainment and business and government services in Las Vegas. That difference underlies another important dimension related to cumulative effects, which is the comparative capacity of the communities to accommodate growth. The availability of labor, housing resources, community infrastructure and local government capacity in Las Vegas can more readily accommodate temporary demands associated with construction projects. Labor, housing, and service capacity is more limited in the rural areas. Consequently, cumulative effects of past and present socioeconomic conditions, when combined with the Proposed Auction and alternatives, are likely to be mainly beneficial in the metropolitan area, whereas the potential for both adverse and beneficial effects is more prevalent in the rural areas.

Social effects of development also have occurred and natural resource development has resulted in some conflict between the extractive (mineral and energy resource) industries and recreation, tourism, and grazing on public lands.

3.18.3.5 Cumulative Analysis – Pipeline and Ancillary Facility Construction and Operation

Multiple linear ROWs, pipelines and transmission lines, conventional and renewable energy and water development projects, land disposal and land development, and other activities are reasonably foreseeable in the area. The construction of one or more reasonably foreseeable renewable energy, transmission line, or land development projects

would be accompanied by an increase in temporary employment, along with demands on housing, community services, and social conditions in nearby communities that could interact with similar effects related to the Proposed Action or alternatives. The timing of RFFA development is an important factor in assessing the potential for cumulative socioeconomic effects. Consequently, the following assessment of cumulative effects uses the project's development schedule as the primary organizing element. This cumulative analysis includes a broader range of foreseeable projects than those listed in Section 2.9 to provide a larger range view of future development.

3.18.3.6 Proposed Action, Alternatives A through C

The potential for short-term cumulative effects arises when one or more of these projects is to be located in or near the pipeline or power line corridors or groundwater exploratory areas and the construction or operating schedules overlap with the construction schedule for the SNWA's project. Potential short-term cumulative effects include the influx of temporary construction workers, demands for temporary housing, and short-term demands on law enforcement, emergency medical services and other public facilities and services. The extent of the effects would depend on the scale of the workforces of the respective projects, the locations of active worksites relative to one another and to nearby communities, and the timing and duration of concurrent development. Concurrent development of multiple projects, each located in the more rural settings near the project, could increase the potential for beneficial economic and fiscal effects but could also increase the potential for adverse cumulative effects.

Lincoln and White Pine county governments may experience increased short-term pressures on fiscal resources to meet demands. Revenues generated by the projects, including temporary increases in sales and use taxes, that flow through to local governments would help offset some or all of the added expenditures, although jurisdictional and timing mismatches in terms of revenue generation and the costs incurred, could also occur.

Short-term social effects could include community disruption were large numbers of construction workers to reside in the same communities concurrently. Additional short and long-term dissatisfaction may occur for residents and visitors who value undeveloped open space and natural environments, and thus would view the cumulative development as detrimental to wildlife habitat, undeveloped landscapes and scenic resources. Individuals who view these other projects as harbingers of economic development and sources of energy to meet rising demand would generally see concurrent development in a more favorable light.

Construction of the proposed project is anticipated to begin in 2012, with completion scheduled in 2023. Over time, construction would proceed from south to north, with substantial construction occurring in Clark County and southern Lincoln County during the first five years. Thereafter, project-related construction would be concentrated in central and northern Lincoln County for 3 years, before shifting into White Pine County.

Based on the schedule outlined above, potential temporary effects could occur in Clark County in conjunction with the following:

- Construction of the ON Line transmission line in the southern LCCRDA corridor, and the Eastern Nevada Transmission Line in the Apex area;
- Industrial development, including any conventional or renewable energy generating project built in Coyote Springs and elsewhere in northeastern Clark County; and
- A resurgence of general residential, commercial and public sector development in the Las Vegas Valley in the next 4 to 5 years.

The construction of such projects would typically involve temporary and short-term demands on labor, housing and public facilities and services, drawing on resources in the Las Vegas Valley, and potentially in Moapa, Logandale and Mesquite. These effects would likely be perceived as beneficial. Land use in the area around the southern terminus of the SNWA's project is industrialized, including existing transmission lines, substations and interconnections, a power generating station, rail line and I-15. The project's contribution to these effects would be minor given the size of the metropolitan economy.

Opportunities for cumulative effects to arise in conjunction with other linear systems would continue as project construction moves northward into northern Clark County and southern Lincoln County. Potential cumulative effects would be similar to those described above and would depend on the relative scale of the cumulative projects and the location and duration of concurrent development. The Las Vegas Valley would continue to serve that support role for a time, but eventually the demand would shift northward to Alamo and potentially to the Moapa area. Alamo offers limited support capacity, giving rise to a relatively high potential for adverse cumulative socioeconomic effects, especially for housing, law enforcement, and emergency medical services.

A resumption of residential and commercial development activity at the Coyote Springs Development during the time when the GWD Project proceeds through the area could contribute to temporary cumulative socioeconomic impacts in Alamo, Moapa, and the Las Vegas Valley. Short-term, potentially significant cumulative socioeconomic effects could arise in Alamo, Moapa and other communities if construction of a major renewable energy facility at Coyote Springs were to occur concurrently with construction of the SNWA's main pipeline and transmission line. Cumulative effects could also arise in conjunction with future groundwater development, but the duration and scale of potential project-related effects limits their contribution to the overall effects. Past and future development of the Coyote Springs project is altering the character of the Coyote Springs Valley, creating a large-scale suburban community in what has historically been a rural, relatively undeveloped area. Existing land use in the area includes a sand and gravel mine and several utility corridors. Potential cumulative social effects associated with this segment of the ROW could include increased dissatisfaction among some residents and repeat travelers/visitors to the area due to the increased presence of development in and through the valleys.

As construction of the SNWA's project moves northward into central Lincoln County, opportunities for cumulative effects would arise primarily in conjunction with temporary construction activity associated with other linear facilities, renewable energy projects, BLM resource management, and land disposal actions. Based on location, highway accessibility, and availability of temporary lodging and retail and dining/recreation establishments, the largest share of any effects would likely occur in Caliente, although Alamo, Pioche and Panaca could also be affected. If construction schedules of the projects happened to occur a year or two in advance of, or following the project, the actions and responses by private or public entities related to impacts from one project may temper potential adverse or enhance beneficial effects of the other project. Potential cumulative long--term social effects associated with this segment of the ROW include increased dissatisfaction among some residents and repeat travelers/visitors to the area due to the increased presence of industrial-type development in the valleys.

The GWD Project construction would next move into Spring Valley in southern White Pine County. Potential for cumulative effects would arise primarily in conjunction with renewable energy projects (mostly wind energy) and the associated linear transmission systems. Cumulative long-term social effects associated with this segment of the ROW include increased dissatisfaction among some residents and repeat travelers/visitors to the area due to the increased presence of development in and through the valleys. Cumulative development activities in Spring Valley also would result in an increased sense of dissatisfaction for some residents/property-owners in the valley, who value the current combination of open space and agricultural settings.

The final phase of the GWD Project construction would occur in Snake Valley in southeastern White Pine County. Although direct construction would not occur in Millard County, Utah, the community of Garrison and nearby unincorporated areas in Snake Valley would experience indirect effects, e.g., increased vehicular traffic on local roads. Identified potentials for cumulative socioeconomic effects are fewer in this area than elsewhere, but could include future management actions by the BLM, USFS and NPS, and development activities in western Millard County. Were concurrent activities to occur, the associated social and economic effects would most likely affect the Baker/Snake Valley community. Depending on the scale and duration of the activity, the short-term economic and social effects may be viewed as beneficial, although social disruption associated with the presence of temporary workers in the community and potential indirect effects on tourism also could occur.

Potential cumulative effects on grazing and outdoor recreation may occur across the entire ROW. Short-term effects due to temporary loss of or degradation of forage, disruption of access, and disruption of livestock access to water could occur from concurrent construction activity on two or more projects in the same area. Following construction, the potential for such effects would diminish, although some effects may persist for the long-term pending completion of

reclamation and as a result of the additional physical presence of facilities in areas that are presently largely undeveloped.

Most cumulative effects related to construction typically disappear within a short time following the completion of construction. Potential residual effects include any new private or public infrastructure, including housing put in place to respond to demands associated with the temporary growth.

Potential long-term cumulative effects on economic and population growth and indirect effects on housing, public facilities and services and social conditions involving operations and maintenance of the SNWA groundwater facilities would be limited due to the small size of the SNWA's operating staff; perhaps as many as 20 individuals. Each of the RFFAs would likely have a number of permanent jobs associated with them, contributing to overall job and population growth over time. The jobs and resident population associated with the Proposed Action and Alternatives A through C could interact with such growth; however, the project's contribution to the overall long-term growth would be limited.

3.18.3.7 Alternative D

The potential for short-term cumulative socioeconomic effects associated with the pipeline and ancillary facility development and maintenance under Alternative D would be the same as under the Proposed Action and Alternatives A through C for the first 7 years of project development. Potential cumulative social and economic effects associated with construction activities in the Spring Valley portion of White Pine County and in Snake Valley would not occur under Alternative D, with the differences in potential adverse and beneficial effects accruing primarily to Ely and Baker/Snake Valley.

The long-term operations and maintenance requirements associated with the pipeline and ancillary facilities under Alternative D would be virtually the same as those with the Proposed Action. Consequently, potential long-term cumulative effects under Alternative D would be comparable to those from with the Proposed Auction, and could interact with growth from other projects. However, the project's contribution to the overall long-term growth would be limited.

3.18.3.8 Alternative E

The potential cumulative effects associated with the pipeline and ancillary facility development and maintenance under Alternative E would be the same as under the Proposed Action and Alternatives A through C for the first 8 years of project development. Potential cumulative effects associated with construction activities in the Snake Valley would not occur under Alternative E, with the differences in potential adverse and beneficial effects accruing primarily in Baker/Snake Valley.

The long-term operations and maintenance requirements associated with the pipeline and ancillary facilities under Alternative E would be virtually the same as those with the Proposed Action. Consequently, potential long-term cumulative under effects under Alternative E would be comparable to those from with the Proposed Auction, and could interact with growth from other projects. However, the project's contribution to the overall long-term growth would be limited.

3.18.3.9 Conclusion

The highest potential for adverse short-term cumulative social and economic effects arising in conjunction with development of the groundwater production activities would occur in southern and central Lincoln County and the Moapa area in years 4 and 5 of the SNWA's GWD Project development schedule, when the project's construction work force would be at its peak. The potential long-term cumulative effects involving the SNWA groundwater facilities would be limited, as would the project's contribution to those impacts.

3.18.3.10 Cumulative Effects – Groundwater Development and Pumping (subsequent tiers)

Groundwater Production Facilities – All Alternatives

Groundwater production wells proposed in 5 hydrographic basins would collectively supply the water to be conveyed by the main pipeline. The groundwater pumping scenarios defined for the hydrology analysis assume these wells would

be developed in three or four distinct periods; 2016/2019 in the DDC valleys, 2025/2027 and 2042/2044 in Spring Valley, and 2047/2050 in Snake Valley.

Development of the production wells, power lines, water collection lines and roads involves a series of short-term, temporary construction-type activities that create opportunities for cumulative socioeconomic effects in nearby communities. Based on proximity to the targeted hydrographic basins, the communities potentially affected by short-term cumulative socioeconomic effects include Alamo, Caliente, Panaca and Pioche in conjunction with the DDC, Panaca, Pioche, Caliente, Ely and Baker/Garrison in conjunction with the Spring Valley development, and Ely and Baker/Garrison in conjunction with the Snake Valley developments.

Temporary direct and indirect employment and population effects associated with wellfield development are described in Section 3.18.3 above and would be lower in magnitude than those associated with pipeline development. Unlike construction of the main pipeline, which continually advances along the ROW route, development of the groundwater production wellfields would occur within a specific basin, and may be more spatially dispersed within the basin. As a result, the potential for concurrent development and cumulative effects would arise as the construction of other linear-type facilities moves through an area, or in conjunction with the construction and operation of a more land intensive, fixed location facility, e.g., a mine or solar powered generating facility. The maximum duration of cumulative effects would be defined by the duration of groundwater wellfield development activity, although it could be much shorter.

No specific instances of concurrent development have been identified given the currently available information regarding the RFFAs. Consequently, the potential for cumulative effects related to the groundwater production wellfields is limited. Given the scale of effects associated with such development, the potential for substantial cumulative effects to arise in which the contribution of the proposed development would be a major contributor is low. Using the number of wells to be completed as an indicator of development intensity, the relative potentials for cumulative effects would be highest with the Proposed Action, followed by Alternative B, Alternatives C and A, then Alternative E, and finally Alternative D.

3.18.3.11 Pumping Effects – All Alternatives

Completion of the main pipeline, ancillary facilities, the groundwater production wellfields and other future facilities would facilitate the long-term pumping and conveyance of water from Lincoln County and in some cases, from White Pine County. The assumed volume of groundwater to be pumped would increase over time as additional wells are completed, until the maximum quantity for each alternative is reached – see Chapter 2. The pumping would result in long-term groundwater drawdown, affecting vegetation, seeps and springs, and surface users who pump water. Some of those effects have potential long-term social and economic implications. Pumping associated with the proposed project and alternatives would interact with groundwater pumping for other existing and future use in these same basins (see Section 2.12), creating cumulative effects. Pumping as part of the Proposed Auction would also contribute to potential cumulative effects at the regional level because of subsurface hydrologic connections between basins.

The hydrology modeling done for this assessment assumed certain levels of continuing and cumulative groundwater development. Results of that analysis show both long-term expansion of the geographic area affected by drawdown and an increase in vertical drawdown over time. The results show contributions to the cumulative effects ranging from negligible to moderate in basins other than the production basins. In the Spring and Snake valleys, pumping associated with current agricultural uses in the area is a contributing factor to the drawdown.

From a socioeconomic perspective, it is important to recognize that the groundwater, surface water and environmental changes that may drive cumulative socioeconomic effects would develop over a very long period, with pumping by the SNWA not beginning for decades in some areas. The extended periods (50+ years) over which drawdown effects propagate before reaching significant levels proximate to communities or the agricultural areas in Spring and Snake valleys, limit meaningful analysis of cumulative social and economic effects from drawdown. Given the limitations, two sets of results from the hydrology analysis are used as indicators of the potential cumulative effects: 1) the area and extent of long-term drawdown underlying agricultural lands in Spring and Snake valleys, and 2) the area of drawdown relative to public lands identified for potential disposal in White Pine and Lincoln counties.

Foremost among such effects, from a social and economic perspective, would be potential adverse impacts on agricultural users in Spring and Snake Valleys who rely on groundwater for irrigation, livestock watering, and domestic potable water needs. These and other ranchers also rely on grazing on public lands in other hydrographic basins that could be adversely affected by changes related to pumping. Cumulative drawdown effects could result in reduced agricultural production and higher farm operating costs. Other potential long-term effects include impacts to public water systems, and long-term indirect effects on outdoor recreation, including OHV use and hunting, and on tourism due to changes in recreational setting or viewsheds.

Potential cumulative indirect effects associated with drawdown, such as changes in vegetation, would also occur over extended periods. The hydrology analysis estimated that approximately 1,654 acres of private agricultural lands in Spring and Snake valleys would be affected by 10 feet or more of drawdown by full build out plus 75 years (about the year 2125) under the No Action Cumulative scenario. Under the Proposed Action cumulative scenario, the total area of affected private lands would increase by 14,252 acres, with drawdown of 50 to 99 feet projected under nearly 9,900 acres (see **Table 3.18-51**). The contribution of the project to the cumulative drawdown would be substantial. The extent of the drawdown would be greater under the Proposed Action and Alternative B than under the other alternatives. Such drawdown would encompass more than half of the privately owned agricultural lands in central and northern Lincoln County and southeastern White Pine County, and include agricultural lands and the community of Garrison in the southwestern portion of Millard County. The hydrology results suggest that the community of EskDale and nearby agricultural lands would not be impacted by severe drawdown. Under Alternative D, the total affected area would increase to 3,024 acres during the same time period; nearly double that under the No Action Alternative, but substantially less than under the Proposed Action.

Table 3.18-51 Private Agricultural Lands in Spring and Snake Valleys Affected By Long-Term Drawdown, Full Build Out Plus 75 Years, Cumulative Scenarios (Acres)

Projected Drawdown	No Action	Alternative					
		Proposed Action	A	B	C	D	E
Unaffected to <10'	22,946	8,694	9,657	10,428	10,987	21,576	20,699
10' - 49'	1,654	6,091	14,003	10,222	13,613	3,024	3,253
50' or more'	0	9,887	940	3,950	0	0	647
Total Affected Acres	1,654	15,978	14,943	14,172	13,613	3,024	3,901
Change in Affected Acres Over No Action	NA	14,252	13,289	12,518	11,959	1,370	2,247
Percent% of Total	7	65	61	58	55	12	16

Notes: Drawdown is relative to the current groundwater elevation, not surface elevation.

In some instances, impacts to agricultural irrigation, individual and community wells located near private agricultural lands, and stock watering facilities may result from drawdown of less than 10 vertical feet.

Under the cumulative development scenarios, the Proposed Action and Alternatives A and B would be major contributors to cumulative drawdown that would be substantially more severe than the direct effects.

Another indicator of potential cumulative effects would be the level of projected drawdown underlying public lands identified for potential disposal in the study area. One objective for such disposals is to support community and economic development in the region. Drawdown of groundwater underlying these lands could undermine the utility and value of such lands to meet that objective, due to long-term uncertainties regarding water availability.[24]

Approximately 51,600 acres of public lands have been identified for potential disposal within the project area. Most of these lands are not located in the same areas as the agricultural lands, i.e., not in Spring and Snake Valleys. Nearly

[24] The Nevada State Engineer considers future economic and community development needs during hearings to grant applications for water rights. However, the extent to which that consideration accounts for future needs associated with potential future lands disposals is unclear.

22,000 acres, 43 percent of these lands, are located such that they would be unaffected by drawdown of greater than 10 feet by groundwater development associated with actions under the actions included in the No Action Cumulative scenario (see **Table 3.18-52**).

Table 3.18-52 Public Lands Identified for Potential Disposal Overlying Projected Groundwater Drawdown of 10 Feet or Greater at Full Build Out Plus 75 Years Cumulative Scenarios

Drawdown Interval	No Action	Alternative					
		Proposed Action	A	B	C	D	E
Unaffected to <10'	21,989	3,935	3,935	3,935	3,935	9,404	8,754
Total Affected Acres	29,612	47,666	47,666	47,666	47,666	42,197	42,847
Change in Affected Acres Over No Action Acres	NA	18,054	18,054	18,054	18,054	12,585	13,235
Percent% of Total	**57**	**92**	**92**	**92**	**92**	**82**	**83**

Note: Drawdown is as compared to the existing groundwater elevation, not the surface elevation.

Adding in the effects of pumping associated with the Proposed Action substantially increases the extent of affected lands over time. At full build out plus 75 years, the acres of potential disposal lands overlaying areas unaffected by drawdown of 10 feet or more falls to less than 4,000 acres, while the affected areas increase to nearly 47,700 acres or; 92 percent of all such lands in the study area. Alternatives D and E also would contribute to long-term increases in total affected lands, but would affect approximately 5,000 fewer acres.

Although the social and economic implications of the drawdown underlying public disposal lands are unclear, the drawdowns represent potential cumulative adverse effects of pumping, localized within the rural areas. There may be some offsetting effects if water conveyed under the cumulative scenarios enable growth and development on some of the public lands, but an analysis of such trade-offs is beyond the scope of this analysis.

3.18.3.12 Conclusion

Cumulative groundwater drawdown effects would intensify the effects on social organization and conditions that would occur in the rural portion of the assessment area and in communities along the Wasatch Front under the Proposed Action and other alternatives. These impacts would materialize over time and likely would be irreversible within any reasonable period of time as viewed from the perspective of an individual or family.

The effects of groundwater production facilities and pumping associated with the Proposed Action and alternatives would contribute to long-term cumulative changes in social and economic conditions in the study area. The potential for cumulative effects and the groundwater pumping projects' contributions to such effects are both largely a function of the annual volume of water to be pumped for the Proposed Action and Alternatives A through C. Volume is an important factor in Alternatives D and E, as is the geographic location of pumping within Spring Valley.