

## 4.0 ENVIRONMENTAL CONSEQUENCES

This chapter evaluates the environmental consequences that would result from implementation of the Proposed Action or Alternatives. The Proposed Action and Alternative 1 differ in the location of the 138 kV transmission line and fiber optic line between Highway 93 and the Emrys Jones Substation. The groundwater and electric utility facilities east of Emrys Jones Substation would be the same under both the Proposed Action and Alternative 1. Under the Proposed Action, the 138 kV transmission line and fiber optic line would be located on private or leased lands along the Kane Springs Road ROW. Under Alternative 1, all electric utility facilities would be located within the 2,640-foot wide LCCRDA utility corridor on BLM-managed lands (see **Map 2-1**).

The impact analysis for environmental consequences focuses on potential direct, indirect and cumulative effects on resources described in Chapter 3.0 - Affected Environment. Direct effects are impacts that are “caused by the Proposed Action and occur at the same time and place” (40 CFR 1508.8). For the Proposed Action, direct effects are those impacts resulting from the granting of the ROW by the BLM and subsequent construction and operation of the proposed facilities that would function to withdraw groundwater. The actual withdrawal of the groundwater is considered an indirect effect as explained below and in detail in Section 4.3.

Indirect effects are those impacts that are “caused by the Proposed Action and are later in time or farther removed in distance, but are still reasonably foreseeable” (40 CFR 1508.8). Indirect effects may include the effects of the withdrawal of groundwater, growth-inducing effects and other effects related to induced changes in the pattern of land use, changes to the population density or growth rate, and related effects on the physical attributes of associated ecosystems.

The cumulative effects analysis is focused on the potential effects (direct and indirect) of construction, operation and maintenance of the Proposed Action combined with other past, present and reasonably foreseeable future actions that could have effects in the ROI. As described in Chapter 3.0, the ROI varies depending on the resource being analyzed and the predicted locations of direct and indirect impacts from the Proposed Action.

### 4.1 GEOLOGIC RESOURCES

#### 4.1.1 Proposed Action

##### 4.1.1.1 Geology

Construction activities would be limited to shallow-depth trenching (up to 6 feet) within the granted ROW. Project construction would occur in three phases and would include drilling, testing and completion of up to six additional wells and appurtenant facilities. Exact locations for each well have not been determined; however, current project design indicates that each well would be spaced approximately 1.3 to 1.8 miles apart beginning at KPW-1. Final well locations would be based on additional geologic and hydrogeologic investigations. The Applicant would adhere to Nevada rules and regulations such as those listed in NRS Chapter 534 and applicable industry standards regarding drilling, testing and completion procedures during well construction. No direct or indirect impacts to geologic resources from construction activities would occur under the Proposed Action.

Groundwater withdrawal from the proposed wells and use of water for development would not affect geologic resources in the project area. No direct or indirect impacts to geologic resources from project operation and maintenance would occur under the Proposed Action.

#### **4.1.1.2 Seismicity**

Seismic activity occurs in the project area and would be expected to occur in the future in response to natural processes. Construction, operation and maintenance of the Proposed Action would have no direct or indirect impacts on seismic activity in the area. However, seismic activity may potentially impact project components.

All project components would be constructed and operated in accordance with applicable regulations and engineering protocols and safety standards to minimize potential impacts to structures (including pipeline) from seismic activity (**Table 1-2**). Environmental consequences related to pipeline breaks or leaks (such as those resulting from seismic activities) are addressed in Section 2.1.3.3.

#### **4.1.2 Alternative 1**

Impacts to geologic resources under Alternative 1 would be the same as those described under the Proposed Action.

#### **4.1.3 No Action Alternative**

Under the No Action Alternative, the ROW on federal lands would not be granted. No ground disturbance associated with either the Proposed Action or Alternative 1 would occur, and no facilities would be constructed on BLM-managed lands. No project-related impacts to geologic resources would occur under this alternative.

#### **4.1.4 Mitigation**

No mitigation is required.

### **4.2 SOIL RESOURCES**

#### **4.2.1 Proposed Action**

Approximately 191 acres would be temporarily disturbed during construction of the Proposed Action, of which approximately 167 acres are managed by the BLM. Approximately 23 acres would be permanently impacted by project components (well yards, access roads and overhead poles). All disturbances would be located within the permitted 100- to 150-foot wide ROW.

Short-term direct impacts that would result from construction activities include increased soil compaction and erosion from wind and water, and chemical changes resulting from mixing surface soils with subsoil during salvage activities. These effects would be influenced by the extent of disturbance, surface soil texture, soil cover, slope steepness and intensity of storm events.

Soils would have an increased susceptibility to erosion after construction until vegetation can reestablish. This increased susceptibility to erosion would be compounded in areas within the area that was burned in 2005. Higher erosion rates after fires can result from 1) the decrease in litter and vegetative cover, 2) changes in soil properties including the loss of organic matter and formation of a water-repellent layer, and 3) increased rill erosion due to the increase in overland flow.

Shallow depth excavations may pose certain construction challenges depending on the depth to bedrock, slope and presence of cemented pans in a particular area. In these areas, special construction procedures may be required.

As described in Chapter 2.0 - Proposed Action and Alternatives, construction and operation of Phase 1 of the Proposed Action would provide up to 1,000 AFY of groundwater to the LCWD service territory. Procedures described in Section 2.1.3.3 - Operations and Maintenance would minimize impacts to soils during operation and maintenance of the Proposed Action. Full build out of the Proposed Action, under Phases 2 and 3, would maximize delivery up to 5,000 AFY to the LCWD service territory. Full build out would not generate additional impacts on soil resources. The environmental protection measures to minimize or avoid impacts to soil resources during construction are referenced in Section 2.1.4 - Applicant Proposed Environmental Protection Measures. These measures would be applied under Phase 1 of the Proposed Action and would be sufficient to minimize impacts of the build out condition.

The selected erosion and sediment control BMPs and environmental protection measures would be based on the type of disturbance expected, soil type and the location of the site relative to sensitive resources. Detailed environmental protection measures specific to soil resources can be found in **Appendix C** - Standard Construction and Operation Procedures (Reference Numbers ESC-1, ESC-2, ESC-3, ESC-4, ESC-5, ESC-6, ESC-7, PUCC-1, PUCC-2, PUCC-3 and V-3).

#### **4.2.1.1 Landslides and Subsidence**

Within the ROI, slopes are primarily level to gently sloping. The risk of landslides should not be significantly increased by the construction of the Proposed Action.

No caves or sinkholes have been identified in the ROI; however, the regional carbonate aquifer also can be highly fractured in some areas and might contribute to the formation of future cave features. Land subsidence can occur from compaction of the aquifer system, dissolution and collapse of rocks that are relatively soluble in water and dewatering of organic soils. Subsidence primarily occurs where groundwater drawdown occurs in unconsolidated sediments, namely valley fill deposits. Groundwater pumping associated with the Proposed Action would occur in the deep carbonate-rock aquifer at depths greater than 900 feet bgs. The Proposed Action would have no affect on valley fill deposits or contribute to land subsidence in the ROI.

#### **4.2.2 Alternative 1**

Under Alternative 1, the 138 kV transmission line and buried fiber optic line would be located within the designated LCCRDA utility corridor between Highway 93 and the Emrys Jones Substation. Map units along this alternative include Weiser-Tencee and Kurstan-Tencee soils in the upland areas and Arizo-Bluepoint soil within the drainages of the Kane Springs Wash.

Installation of the overhead power lines and buried communication line would require clearing and grading of the alignment. All construction would occur within a 100-foot wide construction easement, which would result in disturbing up to 36 acres of undisturbed desert lands. After construction, disturbed areas adjacent to the permanent access dirt road would be reclaimed to pre-construction conditions.

Routine maintenance activities may require cross-country travel along the reclaimed area. Motorized travel would be limited to the permanent ROW.

#### **4.2.3 No Action Alternative**

Soil resources on federal lands would not be disturbed under the No Action Alternative.

#### **4.2.4 Mitigation**

To ensure adequacy of the selected sediment and erosion control measures, including dust control measures, the BLM would monitor the effectiveness of the Environmental Protection Measures described in **Appendix C** and would recommend additional protection measures if deemed necessary.

### **4.3 WATER RESOURCES**

#### **4.3.1 Proposed Action**

Potential impacts to water resources resulting from Proposed Action can be divided into two general categories:

- Direct and indirect impacts resulting from project construction, and
- Direct and indirect impacts resulting from project operation and maintenance.

##### **4.3.1.1 Impacts to Surface Water**

Use of heavy construction equipment would cause compaction of near surface soils that could result in increased runoff and sedimentation from disturbed areas during heavy rain events. As outlined in Chapter 2.0, LCWD and its contractors would implement engineering controls and site-specific BMPs (presented in **Appendix C**) to minimize erosion and sedimentation during construction. In addition, LCWD has developed a SWPPP that describes appropriate measures to minimize environmental impacts from sedimentation. Measures in **Appendix C** that would avoid adverse impacts on surface water quality from sedimentation and erosion include ESC 1-7, LP 1-7, R 13-15 and WP 3-5.

The proposed ROW would cross 11 ephemeral drainages including four crossings of Kane Springs Wash. One crossing of Kane Springs Wash would be located in the far upstream portion of the project area, and three would be halfway between the northern and southern extents of the project area. All ephemeral drainages within the project area are tributaries to Kane Springs Wash. These drainages are normally dry and only flow during periods of heavy rainfall, which are most often associated with summer thunderstorms. Potential impacts may result from

suspension of sediment caused by in-stream construction and erosion of cleared stream banks and ROWs. Construction activities within these drainages would be localized and short-term. All drainage crossings would be restored at the completion of pipeline construction, and no changes in drainage patterns would be anticipated. Restoration and reclamation measures are presented in **Appendix C**.

Water discharges from hydrostatic testing would be localized, and the rate would be controlled to minimize impacts. Excess water would be discharged into natural drainage areas around each site. A diffuser, rock rip-rap or other erosion control measure would be used to reduce discharge rates to prevent scouring. The discharged water is not anticipated to extend more than 500 feet from the discharge site because it would rapidly evaporate or percolate into the alluvial sediment in the area. No long-term ponding of water would occur. The LCWD would obtain a temporary NPDES permit prior to construction. In addition, LCWD has developed a Hydrostatic Discharge Plan that describes appropriate measures to minimize environmental impacts.

Spills resulting from storage, handling and disposal of fluids from drilling boreholes present potential for surface contamination. These fluids would primarily be composed of water with additives or organic polymers. The drilling fluids would be disposed of through evaporation of the water and drying of the additives in shallow depressions. All drilling fluids would be stored and handled according to environmental protection measures outlined in the Spill Prevention, Containment, Countermeasure and Cleanup (SPCCC) Plan developed for the Proposed Action.

The potential for accidental spills and leaks of equipment fluids, such as gasoline and oil, increases during construction activities. Potential spills from vehicle refueling, equipment failure and storage of hazardous substances could cause surface contamination. The LCWD has developed an SPCCC for the Proposed Action which outlines spill prevention practices, emergency response and cleanup procedures, and storage protocols. All contractors involved with the construction of the Proposed Action would be required to adhere to the protocols outlined in the SPCCC. Impacts from accidental spills and leaks would be avoided by application of measures LP-5, WP-7 and HM 1-12 in **Appendix C**.

No direct or indirect impacts to surface water resources related to groundwater pumping are anticipated under the Proposed Action. In situations where pumped groundwater is connected to surface water, surface water quantity or quality from groundwater pumping could be affected. However, no such connection occurs in the Kane Springs Valley Hydrographic Area, as the water to be withdrawn is located from the deep carbonate aquifer and is not hydraulically connected to surface water in the Kane Springs Valley.

#### **4.3.1.2 Impacts to Groundwater**

The depth to groundwater in the project area is 900 feet or greater bgs (URS 2006a). Surface disturbance associated with construction is not expected to impact groundwater.

According to the CH2MHILL (2006) study, the average annual recharge to groundwater in the Kane Springs Valley Hydrographic Area is estimated to be on the order of 5,000 AFY. The study concluded that at least 15,000 AFY of groundwater flows through the carbonate aquifer system within the Kane Springs Valley Hydrographic Area, and the perennial yield was

estimated to be on the order of 5,000 AFY based on the recharge analysis developed by Walker. An older study by Harrill et al. (1988) reported an estimated perennial yield of 500 AFY. The perennial yield is defined by the Nevada Division of Natural Resources as the amount of usable water from a groundwater aquifer that can be economically withdrawn and consumed each year for an indefinite period of time. It cannot exceed the natural recharge to that aquifer and ultimately is limited to the maximum amount of discharge that can be utilized for beneficial use.

In February 2007, the Nevada State Engineer permitted LCWD to pump up to 1,000 AFY of groundwater from the Kane Springs Valley Hydrographic Area (Office of the Nevada State Engineer, Ruling 5712). Up to 500 AFY would be pumped from the existing KPW-1 well, and a combined duty of up to 500 AFY would be pumped from the three other permitted points of diversion.

The Nevada State Engineer has sole authority for establishing perennial yields within each basin. The case for increasing the perennial yield from 500 to 5,000 AFY was presented by LCWD (based on CH2MHILL studies summarized in CH2MHILL 2006a and 2006b) to the Nevada State Engineer in April 2006. The Nevada State Engineer originally recognized the perennial yield of the Kane Springs Valley Hydrographic Area to be less than 500 AFY based on an older Eakin (1964) analysis. However, based on new information provided during the hearings, and the uncertainty in perennial yield calculations, the Nevada State Engineer limited groundwater extraction under the previously filed applications to 1,000 AFY (Ruling 5712).

In April 2006, LCWD submitted additional groundwater appropriation applications to the Nevada State Engineer for pumping up to 17,000 AFY in the Kane Springs Valley Hydrographic Area. The hearings for these applications have not occurred. As described in Chapter 2.0 - Proposed Action and Alternatives, construction and operation of Phase 1 of the Proposed Action would provide up to 1,000 AFY of groundwater to the LCWD service territory. Full build out of the Proposed Action, under Phases 2 and 3, could maximize delivery up to 5,000 AFY to the LCWD service territory and would depend on the allocation of additional water by the State Engineer.

Depending on the accuracy of the perennial yield analysis, direct and indirect impacts could occur from groundwater withdrawals. Both the Applicant and various federal and state agencies are currently conducting additional studies to refine the accuracy of previous estimates of perennial yield. Potential indirect impacts would be related to lowered yields at local and regional springs and impacts to local water users. Potential direct and indirect impacts from groundwater withdrawals are described in the following sections.

#### **4.3.1.3 Impacts to Groundwater Quantity**

Impacts to groundwater quantity would consist of removing groundwater at the proposed volumes from the regional carbonate aquifer and transferring this water to the Coyote Spring Valley area. As described in Chapter 2.0 - Proposed Action and Alternatives, construction and operation of Phase 1 of the Proposed Action would provide up to 1,000 AFY of groundwater from four wells. Full build out of the Proposed Action, under Phases 2 and 3, would maximize delivery up to 5,000 AFY to the LCWD service territory.

Groundwater removal from soil results in a cone of depression (zone of influence) around the pumping wells. Extraction of groundwater from an aquifer can be described mathematically using equations, the purpose of which is to help predict the change in the groundwater elevation as a function of the extraction rate. For the purpose of analyzing systems where only preliminary aquifer data are available, it is common practice to use an equation derived by Theis (1935). This equation requires only two parameters (transmissivity and storativity) to permit calculation of the change in the groundwater elevation (also called drawdown) at some distance from an extraction well depending on the pumping rate and elapsed time.

To enable the calculation to be performed with only two parameters, certain assumptions concerning the geometry of the aquifer are required. These assumptions and their applicability to Kane Springs Valley include:

- The aquifer should be confined; in practice, this means that the sedimentary layer defined as the aquifer have other overlying sediments that restrict the inflow of water from a surficial aquifer. This assumption is clearly met in the current case of extraction from the deep carbonate aquifer, which is overlain by a surficial aquifer that is approximately 200 feet thick.
- The aquifer is isotropic and homogeneous with respect to transmissivity and storativity, and the water flows toward the well in a circular, radially symmetric manner from an infinite distance. In the current situation, flow toward the well may not be radial due to the wells' locations within the Kane Springs Wash Fault Zone. In this case, the theoretical cone of depression (area subject to drawdown of the groundwater surface) may be oval rather than circular with less drawdown within the more permeable fault gauge and greater drawdown toward the center of the basin. However, due to the unknown geometry of the Kane Springs Wash Fault system and the potential for further focusing by the Willow Spring Fault, it is believed that the Theis approach provides a reasonable method for estimating the maximum impacts (drawdown) prior to project development.
- A single well is used as a proxy for extraction from multiple wells. In order to achieve the desired extraction of 5,000 AFY, more than one well would be needed (four are proposed). For an infinite isotropic aquifer, the drawdown does not depend on the spacing of the pumping wells. It may result in less drawdown at each individual pumping well because of the lower rate at each, but the total effect is additive, and a monitor well at some distance will experience about the same drawdown as if the pumping were from a single well.
- The effect of the storage coefficient on the drawdown is greatest near a well or immediately after the start of pumping. At longer times or greater distances, an order of magnitude change in storage coefficient will result in a relatively small change in the drawdown. A storage value of  $10^{-4}$  was calculated from the CH2MHILL (2006) study. Storage terms likely vary within the carbonate aquifer on the scales we are assessing and an average value can only be obtained by observing water level response to long-term pumping stress. Although this storage value was from a 7-day test, it is reasonable based on the geologic conditions and is the only estimate derived from site-specific data.

The 100-year drawdown was predicted by CH2MHILL (2006) for two transmissivity values, one representative of local aquifer conditions affected by the Willow Springs Fault (300,000 gpd/ft) and another representative of a lower value, which would be more applicable for a long-term pumping estimate (150,000 gpd/ft). Prudic et al (1995) estimated the regional transmissivity in the Coyote Spring area at 200,000 gpd/ft, indicating that the CH2MHILL transmissivity values are reasonable estimates. These two estimated values of transmissivity are used below to calculate a range of expected results from the proposed groundwater pumping.

As seen in **Table 4-1**, after 100 years (yrs), the expected drawdown 1 mile from the extraction point would vary between 2 and 30 feet depending on the extraction rate and the values of transmissivity selected. For an extraction rate of 1,000 AFY, the drawdown at 1 mile would be between 4 and 6 feet, while at an extraction rate of 5,000 AFY, the drawdown would increase to between 16 and 30 feet. Similar calculations were performed to calculate the effect at 10 miles from the pumping area. These are also shown in **Table 4-1**.

| <b>Transmissivity<br/>(gpd/ft)</b>  | <b>Predicted maximum<br/>drawdown while pumping<br/>1,000 AFY at distance</b> |          | <b>Predicted maximum<br/>drawdown while pumping<br/>5,000 AFY at distance</b> |          |
|---|---|----------|---|----------|
|   | 1 mile  | 10 miles | 1 mile  | 10 miles |
| 150,000   | 6 feet  | 3 feet   | 30 feet   | 20 feet  |
| 300,000   | 4 feet  | 2 feet   | 16 feet   | 11 feet  |
| Source: CH2M HILL 2006<br>AFY – acre-feet per year <span style="float: right;">gpd/ft – gallons per day per foot</span> |   |          |   |          |

These calculations suggest that, at 10 miles from the extraction area (approximate distance to the Coyote Spring Hydrographic Area), the drawdown could be between 2 and 20 feet depending on the extraction rate. However, this calculation likely overestimates the extent of the drawdown outside of the Kane Springs Valley because it is expected that the Kane Springs Wash Fault would act as a barrier to flow out of Kane Springs Valley, causing the effect to be less than calculated here (CH2MHILL 2006).

#### **4.3.1.4 Impacts to Groundwater Quality**

Based on available groundwater data, groundwater quality from all three aquifers (alluvial, volcanic and carbonate) in the Kane Springs Valley is relatively good. The additional pumping under the Proposed Action would occur from the carbonate aquifer that is located at great depths with respect to the overlying volcanic and alluvial aquifers. Proposed groundwater pumping is not expected to deteriorate water quality from the mixing of waters from the various aquifers under the Proposed Action.

#### **4.3.1.5 Impacts to Springs**

Based on previous isotope studies conducted in the region, local springs in the Kane Springs Valley Hydrographic Area are recharged by local precipitation and derive their water from localized groundwater flowing through the surrounding upland areas such as the Delamar

Mountains and Meadow Valley Mountains (CH2MHILL 2006). Because these springs are not connected to the regional carbonate aquifer where the proposed pumping would occur, no impacts to local springs from groundwater withdrawals are anticipated under the Proposed Action.

Potential impacts to regionally significant springs were evaluated by reviewing the hydraulic data, water chemistry and published geologic interpretations of the hydrologic conditions in the lower portion of the White River Flow System. The potential effects of pumping on discharges from Muddy Springs were included in this evaluation primarily due to the high permeability and transmissivity of the carbonate aquifer underlying Kane Springs Valley and downgradient Coyote Spring Valley, which could connect the Proposed Action and the springs. Areas of high transmissivity, such as observed in Kane Springs Valley, generally develop a smaller drawdown cone. Long-term effects from groundwater extraction could, however, be propagated over great distances. Barriers to flow, such as faults or rock units with low permeability, also affect the extent of the drawdown.

Based on available water level data, a break in the regional hydraulic gradient has been observed at the location of the Kane Springs Wash fault zone with a steeper gradient north and a flatter gradient south of the fault zone. South of the fault zone, in Coyote Spring Valley, the Kane Springs Wash fault zone would likely impede the propagation of the cone of depression migrating south towards the Muddy Springs area. Until additional long-term pumping data are obtained in the area, the true range of influence can not be fully evaluated.

As described in Section 3.3 - Groundwater Resources, based on recent isotope data, regional springs appear to contain varying proportions of regional carbonate groundwater and a younger, non-carbonate water. Estimated percentages of regional carbonate groundwater indicate that the percentage of recharge water increases with distance downgradient from Pahranaagat Valley. Muddy Springs are estimated to be composed of 60 percent regional carbonate groundwater and 40 percent water of non-carbonate origin, while Rogers Spring and Blue Point Spring, located further downgradient near Lake Mead, are estimated to contain 60 percent recharge and only about 40 percent regional carbonate groundwater (see **Table 3-4**). This implies that groundwater in the regional aquifer is being continuously recharged by local sources along its flow path. The Office of the Nevada State Engineer (Ruling 5712) concurred that, while pumping at 1,000 AFY, “there is not substantial evidence that the appropriation of the limited quantity being granted under this ruling would likely impair the flow at Muddy River Springs, Rogers Springs or Blue Point Springs. As for the effect of pumping at the higher proposed rate of 5,000 AFY from Kane Springs Valley there is insignificant evidence to judge the effects at this time.” The regional flow systems and effectiveness of faults as barriers to groundwater flow in Kane Springs Valley are currently being further evaluated by various state and federal agencies.

Based on the above discussion, no impacts to discharges at Muddy Springs are anticipated from the Proposed Action. The Stipulation Agreement between LCWD and the USFWS, described in Section 1.4.2 and provided in **Appendix A**, outlines protection measures designed to protect aquatic resources within the Muddy River area. Any water impacts within this system would be controlled and mitigated by ceasing all pumping activities if the water discharges in the Warm Springs area drops below 3.0 cfs.

No impacts to water levels within the upgradient Pahrnagat and Delamar Valleys or within the Meadow Valley Wash Hydrographic area located to the east are anticipated. Water levels in Pahrnagat and Delamar Valleys are controlled by the partial barrier created by the Pahrnagat Shear Zone, and groundwater in the Meadow Valley Wash Hydrographic Area is a part of a separate regional flow system.

#### **4.3.1.6 Impacts to Local Water Users**

Based on the Nevada State Engineer water rights database, there are no groundwater right applications within the Kane Springs Valley Hydrographic Area other than those filed by LCWD. Low-yield domestic wells are exempt from state water right permitting requirements; however, they do require a drilling permit. The search of the Nevada State Engineer well log database returned records for only three wells – the LCWD KMW-1/KPW-1 wells and a stock water well installed by Geysers Ranch in 1968.

Geologic observations during the installation of KPW-1 do not show a completely impermeable confining layer within the geologic column. However, the data indicate that most of the flow may occur within a narrow band of fractured material at a depth of approximately 1,350 feet below the surface. Thus, the amount of connection between the deep carbonate aquifer and any surficial aquifer is unknown at this time. Based on data evaluated to date, no effect from pumping on shallow water wells is anticipated under the Proposed Action.

In the Coyote Spring Valley hydrographic area, no groundwater rights have been identified within 1 mile of the Proposed Action. Therefore, no wells would experience lowered water levels of 4 to 30 feet (**Table 4-1**) as predicted by the drawdown analysis provided in Section 4.3.1.3. Groundwater wells located within 10 miles of the Proposed Action include SNWA industrial wells, CSI municipal wells and Bedrock Limited, LLC wells associated with mining operations. Based on the drawdown analysis provided in Section 4.3.1.3., these wells could experience lowered groundwater levels by 2 to 3 feet for an extraction rate of 1,000 AFY, while at an extraction rate of 5,000 AFY, the drawdown may increase to between 11 and 20 feet (**Table 4-1**).

#### **4.3.2 Alternative 1**

Impacts to surface water and groundwater resources under this alternative would be the same as those anticipated under the Proposed Action.

#### **4.3.3 No Action Alternative**

Under the No Action Alternative, the ROW on federal lands would not be granted. No ground disturbance associated with the Proposed Action or Alternative 1 would occur, and no associated facilities would be constructed on BLM-managed lands. No project-related impacts to water resources would occur under this alternative.

#### **4.3.4 Mitigation**

Even though the studies suggest that the local springs in the Kane Springs Valley are not connected to the regional carbonate aquifer but rather recharged by local precipitation, BLM

proposes to monitor these springs to confirm that no impacts to local springs would result from the Proposed Action.

It is not anticipated that the Proposed Action would result in adverse impacts to discharges at Muddy Springs; nevertheless, several rulings by the Nevada State Engineer and agreements were drafted to protect the flows at Muddy River Springs. These rulings are presented in **Appendix A** and include:

- Nevada State Engineer Order 1169 (described in Section 4.20.3.3.5) which relates to groundwater applications in several adjacent groundwater basins, including Coyote Spring Valley, and holds various permits in abeyance pending the completion of a study of the regional carbonate aquifer system. Order 1169 requires major groundwater rights holders in the Coyote Spring Valley Hydrographic Area to participate in a 5-year study to provide information on the effects of pumping existing permitted water rights in Coyote Spring Valley. These right holders include the Las Vegas Valley Water District, SNWA, CSI, Nevada Power Company, and the Moapa Valley Water District. Signatory agencies for Order 1169 include BLM, Bureau of Indian Affairs, USFWS and the National Park Service.
- Stipulation Agreement between the LCWD and USFWS (described in Section 1.4.2) agrees to cooperatively manage the development of LCWD water rights in the Kane Springs Valley Hydrographic Area including reduction or cessation of pumping if specified spring flow trigger levels at Muddy River Springs are reached.
- Memorandum of Understanding (as described in Section 4.20.4.2) agreement between SNWA, CSI, Moapa Valley Water District, and USFWS requires the reduction or cessation of pumping if specified spring flow trigger levels are reached.

BLM will continue to coordinate with LCWD, major groundwater rights holders and other agencies in the region to ensure that groundwater development would not adversely impact the flows at Muddy River.

A series of monitoring wells would be utilized to monitor potential impacts to local water users related to increased depth to groundwater from proposed pumping. Even though no impacts on shallow water users are anticipated, water levels in the shallow aquifers would also be monitored to better document the degree of hydraulic connection or isolation from the deep carbonate aquifer. BLM would work collaboratively with other state and federal agencies to ensure that all potential impacts associated with the Proposed Action would be appropriately mitigated.

No additional mitigation is required.

## **4.4 VEGETATION RESOURCES**

### **4.4.1 Proposed Action**

Construction of project facilities would result in impacts to Mojave Creosote Bush Scrub and Mojave Desert Wash Scrub vegetation communities within the granted ROW. These impacts would include removal of vegetation resulting from grading and compaction of soils. All construction would occur within a 100- to 150-foot wide construction easement, which would

result in approximately 23 acres of permanent disturbance and approximately 191 acres of temporary disturbance.

Any disturbance of existing vegetation would increase potential for invasive plant species and noxious weeds to become established within the project area, which would facilitate their spread into adjacent undisturbed areas. In addition, dust generated during construction activities in areas adjacent to or downwind from dust sources may temporarily reduce plant photosynthesis and water use efficiency for the affected plants (Sharifi et al. 1997). The construction phase of this project would last 3 to 6 months, so these habitats would not experience any long-term declines in productivity. Phases 2 and 3 would last 1 to 2 months each.

Vegetation in the project area is shrub-dominated, and these communities can take up to several decades to fully redevelop following disturbance. Consequently, the composition and diversity of vegetation that becomes established following completion of the project would differ from the existing vegetation for up to several decades. Grasses and forbs would likely dominate the vegetation community on reclaimed and disturbed areas for at least several years. The increase of invasive species, particularly of non-native grasses, would increase the susceptibility of these areas to wildland fires.

Reclamation of disturbed areas would begin immediately following construction. Reclamation would consist of reestablishing existing contours, planting approved desert scrub species, and monitoring the success of revegetation. Success criteria, rehabilitation standards and monitoring timeframes would also be developed by BLM. These protocols are outlined in the Revegetation Plan prepared by the LCWD. Specific Applicant-Proposed Environmental Protection Measures are outlined in **Appendix C** - Standard Construction and Operation Procedures (Reference Numbers LP-1, ESC-1, PUCC-2, BR-5, BR-7, BR-9, BR-10, BR-14, BR-17, BR-19, BR-21, BR-22, R-1, R-2, R-3, R-4, R-5, R-6, R-7, R-8, R-9, R-10, R-13 and R-15).

The objectives of the Revegetation Plan include:

- Control erosion and sedimentation.
- Provide a self-perpetuating, drought-tolerant vegetative cover that is compatible with post-construction land use.
- Use adapted native species for revegetation that are beneficial to wildlife and that would reduce the visual effect of the ROW and other project components.
- Encourage native plant reinvasion by avoiding the use of highly competitive introduced species.
- Limit the introduction and spread of noxious and other annual weeds through prompt revegetation.
- Return disturbed land to a level of productivity comparable to pre-construction levels.
- Reestablish desert tortoise critical habitat.

Operation and maintenance of the Proposed Action would not result in impacts to vegetation resources. Operation of the project involves phased withdrawals of groundwater from the

carbonate aquifer. However, as described in Section 4.3.1.1 - Impacts to Surface Water and Section 4.3.1.5 - Impacts to Springs, no impacts to surface water or springs related to groundwater pumping would result; therefore, no impacts to vegetation resources are anticipated.

The Proposed Action may have long-term beneficial effects on vegetation communities in the project area with the development of a reliable water supply and access point. The proposed fire hydrant to be installed adjacent to the 50,000-gallon forebay tank would improve the ability of firefighters to respond to wildland fires, thus potentially resulting in fewer acres of native vegetation burning in the event of a fire. However, it is also possible that the frequency of human-caused ignitions and wildland fires in this area will increase due to increased human presence on the landscape.

Impacts to vegetation resources from implementation of the Proposed Action would be avoided or minimized by implementing the Standard Construction and Operation Procedures set out in **Appendix C** - Standard Construction and Operation Procedures and specifically identified in Section 4.4.1. These Applicant Proposed Environmental Protection Measures, and those referenced in Section 2.1.4, would be applied under all three phases of the Proposed Action and Alternative 1 and would be sufficient to avoid or minimize impacts of the build out condition upon vegetation.

#### **4.4.1.1 Non-native Invasive Species and Noxious Weeds**

Disturbed areas created by implementation of the Proposed Action would be more susceptible to infestation by invasive and noxious weed species, such as red brome, cheatgrass, Sahara mustard and others, that are present in surrounding shrubland communities. Invasive and noxious weed invasion would hinder establishment of desirable vegetation. Additionally, any new areas of invasive or noxious weed occurrence within the granted ROW may act as a source for invasion of adjacent areas. Non-native annual grass species respond poorly to treatment programs, so proper management of disturbed soil is the best method of control. Invasive and noxious weed species are most likely to establish and spread along roadways and other disturbed areas that act as corridors for the transport of weed seeds. Invasive and noxious weeds also decrease habitat suitability for wildlife species because they provide little forage value for native wildlife. Additionally, invasive and noxious weeds species often out-compete native species and decrease habitat suitability for federally listed and sensitive plant and animal species (Whitson 2000). An increase in the fine, flashy fuels associated with several of the non-native invasive weed species found in the project area (red brome, cheatgrass, Mediterranean grass) could also alter the fire regime in the area.

A weed inventory and a Weed Risk Assessment would be completed prior to construction of this project to identify noxious weed and invasive species infestations to enable avoidance during construction or pre-treatment of these areas during construction and to reduce or eliminate the spread of these species. Specific environmental protection measures included as part of the Proposed Action are outlined in **Appendix C** - Standard Construction and Operation Procedures (Reference Number BR-22).

#### 4.4.1.2 Federally Threatened, Endangered and Candidate Plant Species

There are no potential habitats for federally listed plant species within the Proposed Action ROW or the ROI. Therefore, construction, operation and maintenance of the Proposed Action would have no effect on any federally listed plant species.

#### 4.4.1.3 Special Status Plant Species

The BLM identified 21 sensitive plants as potentially occurring within the project area (**Table 3-9**). The project area contains suitable habitat for three species - white bearpoppy, Meadow Valley sandwort and Las Vegas buckwheat. No individuals of these three species or of any other special status plant species were located during complete surveys within and immediately adjacent to the project area (ARCADIS 2006a). Consequently, there would be no impacts to special status plant species during construction, operation and maintenance of the Proposed Action.

All species of cactus and yucca that are native to the State of Nevada are protected and regulated (NRS 527.060-120). Surveys conducted during spring and fall of 2006 identified nine protected species of cactus and yucca in and adjacent to the Proposed Action ROW (ARCADIS 2006a). Construction activities would result in the removal of cactus within the permitted ROW. Salvage and restoration of cactus and yucca would be implemented as part of the Proposed Action and are described in the Applicant's Reclamation Plan.

As described in Chapter 2.0 - Proposed Action and Alternatives, construction and operation of Phase 1 of the Proposed Action would provide up to 1,000 AFY of groundwater to the LCWD service territory in Coyote Spring Valley. Full build out of the Proposed Action, under Phases 2 and 3, would maximize delivery of up to 5,000 AFY to the LWCD service territory. Phasing of the project would not generate additional impacts on vegetation resources; water resource impacts to Phases 1, 2 and 3 are analyzed in this DEIS.

#### 4.4.2 Alternative 1

Under Alternative 1, the 138 kV transmission line and buried fiber optic line would be located within the designated LCCRDA utility corridor between Highway 93 and the Emrys Jones Substation. Installation of the overhead power lines and buried communication line would require clearing and grading of the alignment through undisturbed desert land. All construction would occur within a 100-foot wide construction easement, which would result in the temporary disturbance of up to an additional 32 acres of undisturbed desert lands. Disturbed areas would be reclaimed to pre-construction conditions following the end of construction activities except for the access road and pole footprints. However, the disturbance area would be more susceptible to the introduction and spread of invasive species and noxious weeds. Additionally, the creation of a new access road may increase the likelihood of OHV traffic, which could lead to the spread of invasive species and noxious weeds.

Routine maintenance activities may require cross-country travel along the reclaimed area. Motorized travel would be limited to the permanent access road (approximately 5 acres). These activities would increase the potential spread of invasive species and noxious weeds.

### 4.4.3 No Action Alternative

Under the No Action Alternative, the ROW would not be granted. No disturbance of federally managed lands associated with the Proposed Project or Alternative 1 would occur as a result of this project.

### 4.4.4 Mitigation

No additional mitigation is required.

## 4.5 WILDLIFE RESOURCES

### 4.5.1 Proposed Action

Impacts to wildlife resources, including Threatened, Endangered and Candidate species, result from ground disturbance caused by construction-related activities. Ground disturbance can impact wildlife habitat by removing vegetation, altering plant composition or structure, or altering soil characteristics. Loss of vegetative cover would adversely affect wildlife species that depend on that vegetation for food or shelter.

Activities that could result in additional effects on wildlife during construction include degradation of soil due to fuel contamination, harassment from human presence, and increased levels of noise and vibration due to construction, equipment movement or blasting. An additional impact could result from the increased perching opportunities for raptors and ravens, which would lead to increased predation within the project area. Long-term impacts can occur in the forms of loss of vegetation and wildlife habitat resulting from continued disturbance due to operation and maintenance activities. Approximately 191 acres of habitat would be temporarily disturbed, and 23 acres of habitat would be permanently removed in order to construct access roads and other facilities. Wildlife species could also be temporarily displaced from areas of human activity during operation and maintenance activities. Environmental protection measures proposed by LCWD, LCPD and LCT as part of the Proposed Action to reduce these impacts are listed in **Appendix C** (Reference Numbers LP-1, LP-2, LP-3, PUCC-1, BR-5, BR-9, BR-11, BR-12, BR-13, BR-14, BR-15, BR-16, BR-17, BR-18, BR-19, BR-20, BR-21 and BR-23).

Potential for wildland fire ignition will increase as a result of the increased presence of humans and vehicles in the project area. However, the proposed fire hydrant to be installed adjacent to the 50,000-gallon forebay tank would improve the capabilities of emergency responders in wildland fire situations, potentially resulting in fewer acres of wildlife habitat being burned in the event of a fire.

The Proposed Action ROW parallels an existing disturbance corridor (Kane Springs Road), thereby reducing the amount of existing wildlife habitat that would be affected. The large expanses of undisturbed habitat surrounding the ROW provide adequate refuge for large mammal species in the area. Additionally, all construction within the permitted ROW would occur in phases, allowing adequate time and space for large mammals to move freely throughout the area.

Minimal impacts may occur to small mammals as a result of the Proposed Action. These impacts include direct mortality or injury from crushing by construction equipment and from being trapped in burrows during project construction. Impacts to reptile species in the project area would be similar to those described for small mammals. Overall, the impacts to small mammals and reptiles would be limited to permanent removal of habitats that would result from project construction.

Operation and maintenance of the Proposed Action involves phased withdrawals of groundwater from the carbonate aquifer. However, as described in Section 4.3.1.1 - Impacts to Surface Water and Section 4.3.1.5 - Impacts to Springs, no impacts to surface water or spring discharges related to groundwater pumping would result; therefore, no water-related impacts to wildlife resources are anticipated.

#### **4.5.1.1 Federally Threatened, Endangered and Candidate Wildlife Species**

##### *4.5.1.1.1 Desert Tortoise*

The desert tortoise is the only federally listed species that may occur within the Proposed Action ROW. Construction and operation of the Proposed Action have the potential to impact desert tortoise and its habitat. Using data from desert tortoise strip-transect surveys conducted during the fall of 2006, biologists estimated a density of 0 to 26 desert tortoises per square mile in the project area. Based on the acreage of temporary disturbance to desert tortoise habitat, construction of the Proposed Action may result in the take of between 0 and 8 tortoises.

Desert tortoises may be subject to direct mortality or injury from crushing by construction equipment, being trapped in burrows during initial site grading, vehicle strikes, or falling into open trenches during construction. The magnitude of impacts would depend on conditions such as the type and duration of the disturbance, time of year and density of tortoises within and adjacent to the affected area. Environmental protection measures designed to reduce impacts to desert tortoises include imposing a project personnel speed limit, designing trenches and open pits with sloped sides for escape, and conducting a desert tortoise clearance survey prior to construction activities to remove tortoises from the ROW.

As shown in **Table 4-2**, approximately 23 acres of desert tortoise habitat would be permanently disturbed by construction of the Proposed Action. Approximately 191 acres of desert tortoise habitat would be temporarily disturbed. Of these totals, 19.6 acres (federal and private lands) of permanent disturbance would occur in the Mormon Mesa Critical Habitat Unit. Approximately 157.6 acres of temporary disturbance of desert tortoise habitat would occur in the Mormon Mesa Critical Habitat Unit. Permanent and temporary disturbance make up 0.005 and 0.04 percent of the Mormon Mesa Critical Habitat Unit, respectively. Most of the critical habitat disturbance would be on land that is within the Kane Springs Road ROW. Approximately 147.2 acres of desert tortoise critical habitat on federal land would be disturbed.

Other potential effects to desert tortoise from construction activities include degradation of soil due to fuel contamination, harassment from human presence, increased levels of noise and vibration due to construction equipment movement or blasting, loss of cover due to crushing or removal of vegetation, and loss of forage due to changed vegetation composition. Increased predation of desert tortoise from ravens and other species could potentially occur as a result of predators being attracted to the area by the garbage accumulation associated with human

presence; however, construction crews would be required to remove refuse daily. The overhead transmission lines may also provide new perching opportunities for predators, which could lead to increased predation; however, anti-perching devices installed as part of the Proposed Action would help to minimize these impacts.

| <b>Land Category</b>                               | <b>Permanent Impacts (acres)</b> | <b>Temporary Impacts (acres)</b> |
|--|----------------------------------|----------------------------------|
| Public Land  |                                  |                                  |
| Desert Tortoise Critical Habitat/Kane Springs ACEC | 13.6                             | 133.6                            |
| Desert Tortoise Habitat (non-critical)             | 3.4                              | 33.4                             |
| Private Land                                       |                                  |                                  |
| Desert Tortoise Critical Habitat                   | 6                                | 24                               |
| <b>Project Total Disturbance</b>                   | <b>23</b>                        | <b>191</b>                       |
| ACEC – Area of Critical Environmental Concern      |                                  |                                  |

Potential for wildland fire ignition would increase as a result of the increased presence of humans and vehicles in the project area. However, the proposed fire hydrant to be constructed adjacent to the 50,000-gallon forebay tank would improve the firefighting capabilities of emergency responders in wildland fire situations, potentially resulting in fewer acres of desert tortoise habitat being burned in the event of a fire.

In consultation with the USFWS and BLM biologists, the LCWD, LCPD and LCT and their contractors would incorporate desert tortoise protection measures to reduce the potential for effects associated with the Proposed Action. These Applicant Proposed Environmental Protection Measures are listed in **Appendix C** (Reference Numbers LP-1, LP-2, LP-3, PUCC-1, BR-5, BR-9, BR-11, BR-12, BR-14, BR-16, BR-18, BR-19, BR-20, BR-21 and BR-23). Additional mitigation measures may be required by the USFWS through Section 7 or Section 10 consultation.

Habitat restoration would be conducted for all federal lands disturbed by construction of the Proposed Action with the exception of about 23 acres (public and private) that would be permanently impacted by the project footprint. Additional measures to minimize or mitigate incidental take of desert tortoise will be determined through consultation with the U.S. Fish and Wildlife Service through Section 7 or Section 10, as appropriate. Restoration on private or leased lands held by CSI would be consistent with the standards that would be implemented upon approval of the CSI MSHCP. The Coyote Spring - Lincoln County General Improvement District Service Plan describes potential impacts to Endangered and Threatened species within the GID service territory. The GID would require mitigation for any adverse impacts to habitat as a result of the Proposed Action, and initial funds for mitigation would come from a land disturbance fee assessed at the time of construction permitting.

Prior to issuance of any federal permit, lease or authorization for any surface-disturbing activity on public lands, the LCWD and the other utility agencies would be required to pay a remuneration fee for each acre of disturbed desert tortoise habitat. The amount of the fee would

be calculated by the USFWS and would be used to fund conservation measures benefiting the desert tortoise.

#### 4.5.1.1.2 *Moapa Dace*

There is no habitat for Moapa dace within the project area. Within the ROI, there is habitat for this species in the Muddy River system, and impacts could occur to suitable habitat for the Moapa dace. This species has been documented in the Muddy Springs area, approximately 28 miles south of the project area.

Groundwater pumping associated with the Proposed Action would have the potential to impact flow rates in the Muddy River system. However, as described in Section 1.4.2, the LCWD and USFWS have agreed to cooperatively monitor pumping of LCWD water rights in the Kane Springs Valley Hydrographic Area to avoid impairment of senior federal water rights or unreasonable adverse impacts to federal water resources. The Monitoring, Management and Mitigation Plan included in the Stipulation Agreement outlines “trigger points” that serve to minimize adverse impacts to the Moapa dace (and consequently, other riparian habitat) (**Appendix A**) including reduction or cessation of pumping if specified spring flow trigger levels at Muddy River Springs are reached. BLM will continue to coordinate with LCWD and USFWS to ensure that the Proposed Action would not adversely impact the Muddy River system. Therefore, the Proposed Action would not result in direct impacts to the Moapa dace, and indirect impacts associated with decreased flow levels resulting from groundwater pumping would be mitigated using measures from the Monitoring, Management and Mitigation Plan.

#### 4.5.1.1.3 *Southwestern Willow Flycatcher*

There is no habitat for the southwestern willow flycatcher within the project area. Within the ROI, this species has been documented in riparian habitat in the Muddy Springs area, approximately 28 miles south of the project area. This riparian habitat is supported by surface water flow from springs, along stream reaches and in the shallow alluvial aquifer.

As described above, the Monitoring, Management and Mitigation Plan outlines “trigger points” that serve to minimize adverse impacts to riparian habitat in the Muddy Springs area (**Appendix A**). BLM will continue to coordinate with LCWD and USFWS to ensure that the Proposed Action would not adversely impact the Muddy River system and to mitigate potential indirect effects to the Muddy River system, including impacts to riparian flycatcher habitat. Therefore, the Proposed Action would not result in direct or indirect impacts to the southwestern willow flycatcher or its habitat within the Muddy River system.

#### 4.5.1.1.4 *Yellow-billed Cuckoo*

There is no habitat for the western yellow-billed cuckoo within the project area. Within the ROI, this species has been documented in riparian habitat in the Muddy Springs area, approximately 28 miles south of the project area. This riparian habitat is supported by surface water flow from springs, along stream reaches and in the shallow alluvial aquifer. As described above, the Monitoring, Management and Mitigation Plan outlines “trigger points” that serve to minimize adverse impacts to riparian habitat in the Muddy Springs area (**Appendix A**). These Monitoring, Management and Mitigation measures would be adopted within the scope of the Proposed Action. BLM will continue to coordinate with LCWD and USFWS to ensure that the Proposed Action would not adversely impact the Muddy River system and to mitigate potential indirect

effects to the Muddy River system including riparian yellow-billed cuckoo habitat. Therefore, the Proposed Action would not result in direct or indirect impacts to the western yellow-billed cuckoo or its habitat within the Muddy River system.

#### 4.5.1.2 Special Status Wildlife Species

##### 4.5.1.2.1 Mammals

Construction activities along Kane Springs Road may temporarily disrupt movement of large mammals between the Meadow Valley and Delamar Mountain Ranges. Construction activities are anticipated to be short-term. The ROW would be restored at the completion of construction, and there would be no long-term impacts (e.g., fencing of the pipeline corridor) that would restrict historic movement of wildlife among the mountain ranges. No measurable direct or indirect impacts to wildlife would occur from construction, operation and maintenance of the Proposed Action.

No maternal roost, colonial roosting habitats or winter roosts for bats are known to occur within the Proposed Action ROW. There is a potential for impacts to bats and other small mammals that could be harmed by entering substations and coming in contact with electrical systems.

##### 4.5.1.2.2 Reptiles and Amphibians

During field surveys for desert tortoise and rare plants conducted in the spring and fall of 2006, no populations of Gila monsters or chuckwallas were found within the proposed ROW (ARCADIS 2006a and 2006b); however, Gila monsters have historically been observed within the ROI. The project area contains suitable reptile habitat, which include deep, dissected washes along with natural cavities that may provide shelter for Gila monsters as well as boulders that may provide habitat for chuckwallas.

Potential effects to banded Gila monsters, chuckwallas and other reptiles include direct mortality or injury from vehicle strikes, crushing by construction equipment and being trapped in burrows during project construction. The magnitude of impacts would depend on conditions such as the frequency of the maintenance, time of year and density of reptiles within and adjacent to the operations. Specific measures to reduce impacts are discussed in Section 4.5.4 - Mitigation. Implementation of these measures would help to reduce direct impacts to reptile species within the project area. Adherence to these environmental protection measures would limit the extent of direct impacts to reptile species. Environmental protection measures outlined in **Appendix C** (Reference numbers BR-3, BR-4, BR-9, BR-10, BR-12, BR-14, BR-15 and BR-21) would help to reduce direct impacts to reptile species within the project area. Adherence to these measures would limit the extent of direct impacts to reptile species and reduce any potential direct impacts.

Additional impacts which may affect banded Gila monsters, chuckwallas and other reptiles during construction activity include degradation of soil due to fuel contamination, harassment from human presence, increased levels of noise and vibration due to construction equipment movement or blasting, increased predation from ravens, and the potential to fall into open trenches and pits. Specific environmental protection measures for these species are included in **Appendix C** (Reference numbers BR-11, BR-16, BR-18, BR-20 and BR-23). These measures would reduce the potential for indirect impacts from raptor predation, fall and entrapment hazards, and soil contamination.

#### 4.5.1.2.3 Migratory Birds

Most of the bird species that occur within the project area are protected by the MBTA. Impacts to birds in the vicinity of the project area include direct mortality from increased human traffic in the area; direct disturbance of nests as a result of construction, operation and maintenance activities destroying a nest; and nest abandonment as a result of construction, operation and maintenance noise. If construction of the project occurs during the breeding season, a migratory bird nesting survey would be conducted prior to construction in order to identify any active migratory bird nests. Any occupied nests would be monitored and avoided until the fledglings have left the nest. Undertaking environmental protection measures outlined in **Appendix C**, including BR-1, would limit the potential for impacts to migratory bird species by identifying, monitoring and avoiding known nests if construction occurs within the breeding season. Therefore, the MBTA would not be violated as a result of construction of the Proposed Action, and impacts to migratory birds and their nests would be avoided/minimized.

Suitable habitat for the western burrowing owl occurs throughout the project area. During field surveys conducted in the spring and fall of 2006, one burrowing owl was found in the project area (ARCADIS 2006b). The project area would be surveyed for burrowing owl nesting cavities prior to the nesting season and during construction if ground-disturbing activities are scheduled between mid-March and August. Empty nest site burrows would be collapsed within the construction zone so that owls would not enter the ROW during construction and set up a nest. Before collapsing the burrows, they would be inspected to prevent the trapping of desert tortoises, Gila monsters and other wildlife species. Any occupied burrows would be surrounded by a 250-foot buffer zone, within which no construction activities would occur, to prevent nest abandonment. The nesting cycle for burrowing owls takes 74 days, so construction activities would cease in the area until after this allotted time has passed or until a qualified biologist confirmed that nesting was completed. This would mitigate direct impacts that may otherwise occur to burrowing owls. This would be accomplished, where appropriate, as part of the surveys for the desert tortoise. If owl-occupied burrows are located during their nesting or brooding season, they would be avoided until the young owls leave the nest or it is determined that the nesting attempt failed.

Direct effects to the burrowing owl may include the destruction of nest burrows or other occupied satellite burrows, direct mortality or injury from crushing by construction equipment, and from being trapped in burrows during project construction. Undertaking environmental protection measures outlined in **Appendix C** (Reference number BR-1) would limit the potential for impacts to migratory bird species by identifying, monitoring and avoiding known nests if construction occurs within the breeding season. Therefore, the MBTA would not be violated as a result of constructing the Proposed Action, and impacts to migratory birds and their nests would be reduced to less than significant levels.

Additional impacts to the western burrowing owl may occur as a result of degradation to soil due to fuel contamination, harassment and potential nest abandonment from human presence; increased levels of noise and vibration due to construction equipment movement or blasting; and loss of prey base as a result of direct mortality of small mammals and reptiles.

It is not anticipated that operation and maintenance activities associated with the Proposed Action would have any impacts on western burrowing owls because measures described above and listed in **Appendix C** would be implemented.

There is no riparian habitat within the project area. Riparian bird species, including blue grosbeak (*Guiraca caerulea*), summer tanager (*Piranga rubra*), vermilion flycatcher (*Pyrocephalus rubinus*), and others, are known to occur in the Muddy Springs area, approximately 28 miles south of the project area. As described previously, any potential impacts to surface water flows in the Muddy River system would be minimized through the Stipulation Agreement between the LCWD and USFWS.

Raptors and other large aerial perching birds are most susceptible to electrocution when coming in contact with power line structures because of their size, distribution and behavior (Olendorff et al. 1981; APLIC 1996). Because raptors and other large aerial perching birds often perch on tall structures that offer optimal views of potential prey, the design characteristics of transmission poles appear to be a major factor in raptor electrocutions (APLIC 1996). Electrocution occurs only when a bird simultaneously contacts two energized phase conductors or an energized conductor and grounded hardware. This happens most frequently when a bird attempts to perch on a transmission pole with insufficient clearance between these elements. Any transmission structures constructed for the Proposed Action would have clearances between phase conductors or between phase conductors and grounded hardware (as recommended by APLIC [1996]) that are sufficient to protect even the largest birds, and therefore would present little to no risk of bird electrocution. With the application of appropriate construction designs for all transmission lines and their towers, impacts associated with bird electrocution should be minimized.

There would also be an increased potential for collisions with transmission lines and poles. If bird collisions become an issue with the new transmission line, strike indicators (visual markers for birds) could be installed to help reduce impacts.

#### 4.5.1.2.4 Fisheries

There is no fish habitat within the project area. Within the ROI, suitable habitat for sensitive fish species occurs within the Muddy River system. The Virgin River chub and Moapa speckled dace are known to occur in the Muddy Springs or Muddy River areas, approximately 28 miles south of the project area. As described in Section 4.3.1.5 - Impacts to Springs, no impacts to discharges at Muddy Springs are anticipated. Construction of the Proposed Action would have no direct impacts on fish species in the Muddy Springs area. Indirect impacts to sensitive fish species in the Muddy River system could occur as a result of surface water drawdown resulting from groundwater pumping; however, the Monitoring, Management and Mitigation measures in the Stipulation Agreement (**Appendix A**) would mitigate potential indirect effects to the Muddy River system and would be adopted within the scope of the Proposed Action. BLM will continue to coordinate with LCWD and USFWS to ensure that the Proposed Action would not adversely impact the Muddy River system. This would most likely eliminate any potential impacts to sensitive fish species and their habitat in the Muddy River system. There would be no direct or indirect impacts to BLM sensitive or state protected fish species related to construction, operation and maintenance activities within the immediate project area.

#### 4.5.1.2.5 Invertebrates

The grated tryonia and Moapa Warm Spring riffle beetle are known to occur in the Warm Springs area near the Muddy River. Impacts to sensitive invertebrate species in the Muddy River system could occur as a result of surface water drawdown resulting from groundwater pumping; however, the Monitoring, Management, and Mitigation Plan in the Stipulation Agreement (**Appendix A**) would mitigate potential effects to the Muddy River system. This would most likely eliminate any potential impacts to sensitive invertebrate species and their habitat in the Muddy River system. There would be no direct or indirect impacts to BLM sensitive or state categorized invertebrate species related to construction, operation and maintenance activities within the immediate project area.

### 4.5.2 Alternative 1

Under Alternative 1, the 138 kV transmission line and buried fiber optic line would be located within the designated LCCRDA utility corridor between Highway 93 and the Emrys Jones Substation. Installation of the overhead power lines and buried communication line would require clearing and grading of the alignment through undisturbed desert land. All construction would occur within a 100-foot wide construction easement, which would result in the temporary disturbance of up to 32 acres of undisturbed desert lands. Disturbed areas would be reclaimed to pre-construction conditions following the end of construction activities except for the access road and pole footprints.

Disturbance to desert tortoise habitat under Alternative 1 would be slightly greater than that under the Proposed Action. Approximately 28.2 acres (5.2 acres more than the Proposed Action) of desert tortoise habitat would be permanently disturbed by construction of Alternative 1. Approximately 191 acres would be temporarily disturbed. Of these totals, 19.6 acres (federal and private lands) of permanent disturbance would occur in the Mormon Mesa Critical Habitat Unit. Approximately 157.6 acres of temporary disturbance would occur in the Mormon Mesa Critical Habitat Unit. Permanent and temporary disturbance would make up 0.005 and 0.04 percent of the Mormon Mesa Critical Habitat Unit, respectively. Most of the critical habitat disturbance would be on land that is within the Kane Springs Road ROW. Approximately 147.2 acres of critical habitat on federal land would be disturbed. As described for the Proposed Action, the environmental protection measures that would be implemented as part of this Alternative would reduce potential direct impacts to fish and wildlife species.

Increased predation from raptors as a result of increased perching opportunities created by development of a transmission line away from the road would constitute an indirect impact associated with Alternative 1. This indirect impact would be minimized with the adoption and implementation of Reference Measure BR-18 (Appendix C). Additionally, the creation of a new access road may increase the likelihood of OHV traffic, which could facilitate the spread of invasive species of plants, noxious weeds and the chances of collisions with wildlife.

Because the location and volume of groundwater pumping under the Alternative 1 would be the same as that for the Proposed Action, potential indirect effects to federally listed and other species of concern in the Muddy Springs area would be the same as those described for the Proposed Action. As described for the Proposed Action, conservation measures developed for

the Moapa dace would reduce potential indirect impacts from groundwater pumping to federally listed and other special status species.

### **4.5.3 No Action Alternative**

Under the No Action Alternative, the BLM would not grant ROWs allowing construction and operation of the Proposed Action or Alternative 1, and the impacts described above would not occur as a result of this project. The No Action Alternative would not affect the biological viability of local, regional or national populations of wildlife species of concern/interest. The No Action Alternative would have no impact on Endangered, Threatened, Candidate and other sensitive species.

### **4.5.4 Mitigation**

No additional mitigation is required; however, additional mitigation measures may be required by the USFWS through Section 7 or Section 10 consultation.

## **4.6 LAND USE**

### **4.6.1 Proposed Action**

Construction of the Proposed Action would require approximately 191 acres (167 acres public; 24 acres private). Following construction, approximately 23 acres (17 acres public; 6 acres private) would be maintained as permanent ROW and aboveground facilities. The remaining 168 acres would be restored and allowed to revert to former use. Most of the ROW would parallel Kane Springs Road within the designated LCCRDA utility corridor. While land ownership would remain unchanged, grazing and public use (including access to the surrounding Wildernesses) and use of Kane Springs Road, may be disrupted for short durations during construction.

The 138 kV transmission line, Emrys Jones Substation, terminal storage tank and portions of the fiber optic lines would be located on private or leased lands in northern Coyote Spring Valley. Land use plans have been adopted, ordinances enacted and agreements have been signed between Lincoln County and CSI for development of these lands. These documents include:

- Coyote Spring Development Agreement (June 9, 2005)
- Coyote Spring Planned Unit Development (Lincoln County Ordinance 2004-04) (July 1, 2005)
- Lincoln County–Coyote Spring GID Service Plan (May 4, 2005)
- Coyote Spring Fire Protection and Emergency Medical Service GID Service Plan for Lands Located within Lincoln County (May 3, 2005).

Indirect impacts of the Proposed Action would include conversion of undeveloped desert land to utility-related uses. Title III of LCCRDA designated utility corridors on BLM lands to encourage consolidation of utilities within a common corridor. The LCWD intends to use the LCCRDA corridor as a means to convey groundwater to the Coyote Spring Valley within the

LCWD service territory. During Phase 1, up to 1,000 AFY would be conveyed to the LCWD service territory. During Phases 2 and 3, and depending on additional water demands and acquisition of additional water rights, up to 5,000 AFY may be conveyed to the LCWD service territory. The affects of conveyance of 1,000 AFY of groundwater on land use would be the same as those for conveyance of 5,000 AFY of groundwater.

Operation and maintenance of the Proposed Action would not conflict with existing federal, state or county land use plans, policies or regulations applicable to the project area. All future land use changes associated with urban growth in the Coyote Spring Valley area would be required to comply with Clark County, Lincoln County and Coyote Spring GID land use plans and development requirements. Land use on federal lands would continue to be managed under the Caliente MFP (as amended) until the RMP/EIS for the Ely District is approved. The USFWS would continue to coordinate with the BLM, Lincoln County and CSI to protect wildlife and their habitats in the area.

#### **4.6.1.1 Mineral Resources**

There are no active mining claims or oil and gas leases within the project area. The Proposed Action would not affect access to, or availability or development of, oil and gas or any locatable/saleable mineral resources in the project area. Western Elite, Inc. operates a sand and gravel operation on private lands west of the intersection of Kane Springs Road and Highway 93. If sand and gravel are needed during the construction and operation of the Proposed Action, Western Elite would most likely provide those materials.

#### **4.6.1.2 Range Resources**

The project area includes portions of the Grapevine and Delamar grazing allotments. Both allotments were affected by wildland fires in 2005. Currently, 45 percent of the burn area in the Delamar Allotment is temporarily closed to livestock grazing (Johnson 2006). A portion of the Grapevine Allotment is also under review for temporary closures due to the 2005 fires (Johnson 2006). The proposed pipelines would be buried and would not permanently restrict movement of cattle among grazing areas.

Implementation of the Proposed Action, and the resultant groundwater pumping activities, would not cause a reduction in forage levels in the project area that would lead to a decrease in permitted AUMs in either the Delamar or Grapevine allotments.

#### **4.6.1.3 Transportation**

Highway 93 and Kane Springs Road would provide the primary access into the project area. Traffic flow in the project area could be intermittently slowed by vehicles turning from Highway 93 onto Kane Springs Road. Traffic volumes would vary as construction progresses from one area to another. These impacts would be short-term (3 to 4 months during construction activities) and would not change the service level of Kane Springs Road. LCWD has prepared an Access Road Plan, which describes measures to be taken by the LCWD or its contractors to access project facilities and the ROW, reclaim temporary access roads, and prevent unauthorized vehicle use of the project ROW. It includes descriptions of access routes and standard operational procedures for transportation-related activities.

Construction activity could contribute to increased levels of dust, which is generated from travel on gravel and dirt roads. LCWD has prepared a Dust Control Plan, which outlines dust control measures the LCWD and which its construction and reclamation contractors would implement during project construction in accordance with local regulations. The Dust Control Plan is designed to comply with the NDEP – Bureau of Air Pollution Control SAD Permit requirements.

Use of Kane Springs Road during construction would contribute to roadway deterioration in the short term and would increase maintenance costs to Lincoln County. The county would continue to maintain the roadway during and after construction of the Proposed Action.

The Proposed Action would cause no impacts to the UP Railroad, located east of the project area, or any local or municipal airports in the region.

#### **4.6.2 Alternative 1**

Under Alternative 1, the 138 kV transmission line and buried fiber optic line would be located within the designated LCCRDA utility corridor between Highway 93 and the Emrys Jones Substation. Installation of the overhead power lines and buried communication line would require clearing and grading of the alignment through undisturbed desert land. All construction would occur within a 100-foot wide construction easement, which would result in the temporary disturbance of up to 32 acres of undisturbed desert lands. With the exception of the permanent access road and electric pole footprints, all disturbed areas would be reclaimed to pre-construction conditions. Land use in this area would change from undeveloped desert to utility-related uses.

#### **4.6.3 No Action Alternative**

Under the No Action Alternative, there would be no impacts to land use on federal lands within the project area associated with the Proposed Action or Alternative 1. However, land use would continue to change on private or leased lands resulting from construction of the Emrys Jones Substation and associated transmission lines. Land use planning on these lands would be subject to Lincoln County or local GID regulations.

#### **4.6.4 Mitigation**

To restrict OHV use in unauthorized areas, restrictive barriers would be used to limit public access of new maintenance roads adjacent to the Wilderness. Barrier control methods would be coordinated with the landowner/manager and may include locked gates and fencing.

### **4.7 AREAS OF CRITICAL ENVIRONMENTAL CONCERN, WILDERNESS AND OTHER SPECIAL USE AREAS**

The Proposed Action would be located in the Kane Springs ACEC; however, all components on federal lands would be constructed within the 2,640-foot wide LCCRDA corridor. Per BLM Manual 8560 – Section 19, “No buffer zones are created around Wilderness areas to protect them from the influence of activities on adjacent land.” As such, no project component would be located closer than 100 feet from a Wilderness boundary. Project facilities located on private

lands in the Coyote Spring Valley area would be subject to the applicable land use plan (e.g., CSI MSHCP, Lincoln County Master Plan, Lincoln County – Coyote Spring General Improvement Service Area Plan).

Construction activities may temporarily restrict access roads into the surrounding Wildernesses. However, these impacts would be localized and short-term. Operation of the Proposed Action would not, in and of itself, increase recreation use in the area. Permanent project facilities would not restrict access to the surrounding Wildernesses.

#### **4.7.1 Alternative 1**

Construction activities associated with Alternative 1 would result in the disturbance of approximately 32 acres of land within the Kane Springs ACEC (assuming a 100-foot wide construction and permanent ROW). After construction, the permanent access road between Highway 93 and the Emrys Jones Substation would be maintained by the LCPD for routine maintenance activities. The permanent ROW would convert previously undisturbed desert within the Kane Springs ACEC to utility-related uses. All disturbed lands would be located within the designated LCCRDA utility corridor.

#### **4.7.2 No Action Alternative**

Under the No Action Alternative, there would be no impacts to ACECs, Wildernesses or other special use areas on federal lands within the project area associated with the Proposed Action or Alternative 1.

#### **4.7.3 Mitigation**

No mitigation is recommended.

### **4.8 RECREATION**

#### **4.8.1 Proposed Action**

Due to its remoteness, the project area currently does not experience a high level of recreation use, although the BLM reports that usage has increased over the last several years (BLM 2006b). The surrounding Delamar Mountain and Meadow Valley Range Wildernesses support dispersed recreation activities such as hiking, sightseeing, camping, hunting and wildlife viewing. Construction activities along portions of Kane Springs Road may temporarily restrict access into these areas. Conducting OHV competitions along Kane Springs Road would continue to require a Special Recreation Permit from the BLM. The Proposed Action would not preclude the use of these areas, but rather would temporarily displace recreational users to surrounding recreation areas if access roads are restricted due to construction. Operation and maintenance of the project facilities would not limit public access to recreation opportunities in the surrounding area.

Implementation of the Proposed Action would not, in and of itself, increase recreation use in the area. Permanent project facilities would not restrict access to the surrounding Wilderness.

### **4.8.2 Alternative 1**

Construction activities associated with Alternative 1 would convert previously undisturbed desert to utility-related uses. A permanent (dirt) road would be required between Highway 93 and the Emrys Jones Substation for routine maintenance activities. Unless restricted by some type of barrier control, such as a locked gate, fences or boulders, any new access road along this corridor could increase public accessibility, including OHV use, into a previously undisturbed area. Use and maintenance of the new access road would require coordination between the land manager (BLM) and public utility (LCPD and LCT).

### **4.8.3 No Action Alternative**

Under the No Action Alternative, the Proposed Action would not be constructed or operated, and the impacts described above would not occur.

### **4.8.4 Mitigation**

No additional mitigation required.

## **4.9 AIR QUALITY**

### **4.9.1 Proposed Action**

Nearly all air emissions and air quality impacts associated with the Proposed Action would be temporary and would occur as the result of project construction. Construction activities can be grouped into those occurring on site and off site. Air pollutant emissions during on-site construction would principally consist of dust generated from travel on unpaved surfaces and material handling and exhaust emissions from mobile diesel and gasoline-powered construction equipment. Off-site exhaust emissions would result from the workers commuting to staging areas, transporting workers from staging areas to the work sites, trucks hauling materials to the work sites, and dump trucks hauling away construction debris.

Diesel-fired portable engines and equipment would likely provide temporary power during construction. Operation of any stationary internal combustion engine that has a rating for output greater than 250 hp would require an operating permit from the NDEP. Diesel-fired electrical generators would be subject to regulation through state and local air quality permitting programs. Permitted equipment would be required to meet applicable emission standards and control requirements.

Construction of pipelines, transmission lines and associated facilities (including new substations) would result in temporary emissions of fugitive dust containing PM<sub>10</sub> and PM<sub>2.5</sub>. These emissions would dissipate following completion of construction. Particulate matter from construction would be emitted at ambient temperature and at ground level. Fugitive dust emissions from construction activities would be minimized through common construction and BMPs, such as application of water to disturbed areas. Environmental protection measures (NA-1 through NA-10), listed in Appendix C, would be used to reduce air quality impacts.

Dust would not be expected to travel great distances from the generation site. Emissions from construction activities would not likely impact measurements at ambient PM<sub>10</sub> and PM<sub>2.5</sub> monitors located in Las Vegas and surrounding suburban areas, nor would they travel far enough to impact the Grand Canyon (nearest Class I airshed).

Temporary gaseous emissions would be generated during construction, including SO<sub>2</sub>, CO, NO<sub>x</sub>, and volatile organic compounds (VOCs) from diesel-powered well-drilling and construction equipment. SO<sub>2</sub> emissions would be limited by state and federal regulations, which limit the amount of sulfur in diesel fuel. Other gaseous emissions from diesel engines would be minimized through proper operation and maintenance. If blasting is used during pipeline construction, ammonium nitrate and fuel oil (ANFO) would be a source of gaseous pollutants. ANFO blasting can cause fugitive emissions of NO<sub>x</sub>, CO and SO<sub>2</sub>. Emissions from blasting agents would be limited by restricting its use to the smallest area possible. The EPA emission estimating software NONROAD2005 was used to estimate emissions from the construction equipment. **Table 4-3** presents the estimated annual construction exhaust emissions.

| <b>Table 4-3<br/>Estimated Construction Equipment Exhaust Emissions</b>   |                     |                                      |             |                       |                       |             |
|---|---------------------|--------------------------------------|-------------|-----------------------|-----------------------|-------------|
| <b>Phase</b>  | <b>Equipment</b>    | <b>Emissions per Unit (ton/year)</b> |             |                       |                       |             |
|   |                     | <b>VOC</b>                           | <b>CO</b>   | <b>NO<sub>x</sub></b> | <b>SO<sub>2</sub></b> | <b>PM</b>   |
| Site Preparation  | Bulldozer           | 0.04                                 | 0.33        | 0.79                  | 0.12                  | 0.05        |
|   | 5-yard Dump Truck   | 0.08                                 | 0.97        | 1.87                  | 0.33                  | 0.12        |
|   | Front-end Loader    | 0.04                                 | 0.31        | 0.69                  | 0.09                  | 0.05        |
|   | Backhoe             | 0.02                                 | 0.09        | 0.14                  | 0.02                  | 0.02        |
| Site Excavation (in areas where ripping or trenching are required)  | Bulldozer           | 0.04                                 | 0.33        | 0.79                  | 0.12                  | 0.05        |
|   | Backhoe             | 0.02                                 | 0.09        | 0.14                  | 0.02                  | 0.02        |
|   | Trencher            | 0.02                                 | 0.11        | 0.30                  | 0.04                  | 0.02        |
|   | 5-Yard Dump Truck   | 0.08                                 | 0.97        | 1.87                  | 0.33                  | 0.12        |
|   | Jackhammer/Rock Saw | 0.00                                 | 0.03        | 0.05                  | 0.01                  | 0.01        |
| Plowing   | Bulldozer           | 0.04                                 | 0.33        | 0.79                  | 0.12                  | 0.05        |
|   | Backhoe             | 0.02                                 | 0.09        | 0.14                  | 0.02                  | 0.02        |
|   | Tractor-Trailer     | 0.08                                 | 0.97        | 1.87                  | 0.33                  | 0.12        |
| Backfilling, Grading, and Restoration   | Bulldozer           | 0.04                                 | 0.33        | 0.79                  | 0.12                  | 0.05        |
|   | Backhoe             | 0.02                                 | 0.09        | 0.14                  | 0.02                  | 0.02        |
| All Operations  | Pick-up Trucks (4)  | 0.18                                 | 0.76        | 2.37                  | 0.47                  | 0.18        |
|   | Refueling Truck     | 0.08                                 | 0.97        | 1.87                  | 0.33                  | 0.12        |
|   | Water Truck         | 0.08                                 | 0.97        | 1.87                  | 0.33                  | 0.12        |
| <b>Total</b>  |                     | <b>0.88</b>                          | <b>7.74</b> | <b>16.48</b>          | <b>2.82</b>           | <b>1.14</b> |
| Fugitive PM <sub>10</sub> emissions were estimated using the following emission factor from EPA's AP-42 Chapter 13.2.3, Heavy Construction Operations:<br>Emissions = 1.2 tons/acre-month of activity<br>VOC – volatile organic compound                      CO – carbon monoxide                      NO <sub>x</sub> – oxides of nitrogen<br>SO <sub>2</sub> – sulfur dioxide    PM – particulate matter |                     |                                      |             |                       |                       |             |

During construction, the PM<sub>10</sub> emissions are estimated at 11.1 tons per month and 66.4 tons for the entire construction period (or for the year).

Operation and maintenance of project pipeline and power transmission facilities may generate small amounts of fugitive dust from travel on unpaved surfaces by maintenance and inspection

crews as well as associated vehicle emissions. This would occur infrequently and for a very short duration.

During scoping, comments were received about the potential for mobilization of radioactive dust during construction activities. The presence or absence of radioactive particulates in the soil substrate within the project area is unknown. During construction, the Applicant would implement site-specific BMPs, including dust suppression measures, to minimize fugitive dust. Applicant-proposed environmental protection measures referenced in Section 2.1.4 - Applicant Proposed Environmental Protection Measures and **Appendix C** - Standard Construction and Operation Procedures would be applied during all phases of construction.

#### **4.9.2 Alternative 1**

Impacts resulting from implementation of Alternative 1 would be similar to those described for the Proposed Action.

#### **4.9.3 No Action Alternative**

The No Action Alternative would have no air quality impacts associated with public land use.

#### **4.9.4 Mitigation**

During construction, the BLM will monitor the effectiveness of the proposed dust control measures and recommend additional air quality protection measures if deemed necessary.

### **4.10 NOISE**

#### **4.10.1 Proposed Action**

Sound levels would be temporarily elevated by the Proposed Action's construction activities and are predicted to be below levels of concern. The EPA has established sound levels that are identified as protective of public health and welfare. The  $L_{dn}$  is the day/night sound level that was adopted by the EPA as a measure of community sound level exposure (Crocker 1982). EPA identified an  $L_{dn}$  of 55 dB for residential areas as an outdoor sound level above which the public health and welfare would be affected (EPA 1974). Noise levels from construction would be below 55 dBA at a distance of 4,000 feet from construction activities.

Long-term noise levels associated with operation of wellhead, pump station and pipeline operations would generally be steady and continuous and are predicted to be at levels lower than construction noise. Typical noise levels from field pumps and pump stations would be approximately 15 dBA (at a distance of 50 feet) lower than typical noise levels from construction. Ambient noise levels in rural areas are typically in the 35 to 40 dBA range.

Equipment used during construction activities would include standard construction and earth-moving equipment (scrapers, excavators, backhoes, graders, trenchers, bulldozers, rock drills, diesel-fired generators and dump trucks) and well development equipment such as drill rigs. Assuming that all equipment operates concurrently at the same location, the combined construction noise level would be approximately 92 dBA at a distance of 50 feet from the

equipment. Standard sound level calculations predict that sound levels would decrease 6 dBA for every doubling of distance from the source. Beyond 4,000 feet from the construction, this noise level would be below 55 dBA. Additionally, the closets residential area is located well beyond 4,000 feet from the project site, and noise from construction would be intermittent and short-term.

If blasting is employed during construction, the estimated sound level at 50 feet would be 94 dBA. Noise from blasting would be an impulse (short-term peak) and would drop below 55 dBA at distances beyond 4,500 feet. Most of the sound pressure generated by blasting is absorbed by the formations being blasted (i.e., it is not like an open-air explosion). Unlike a charge placed in the ground or in rock, an open-air explosion, such as a bomb being exploded above the earth's surface, has less immediate surrounding material to absorb the sound.

There are no established guidelines or standards to predict long-term effects of elevated sound levels on wildlife. It can be assumed that any wildlife in the area have habituated to existing sound levels generated by low-flying military aircraft, vehicular traffic on Kane Springs Road and OHVs in the project area. However, wildlife may be affected by construction activity noise, causing wildlife to temporarily avoid the area during construction. Nonetheless, noise from construction activities would be intermittent and short-term.

Operation of the proposed well field pumps and pump station would emit lower sound levels than those powered by diesel generators. The production wells operating on electric power would emit a sound level of approximately 77 dBA at a distance of 50 feet. For these wells, the EPA  $L_{dn}$  55 dBA guidelines would be met at a radius of 645 feet. The closest residential area is located well beyond 645 feet from the project site. Maximum sound levels generated by transmission line corona discharge would only be perceptible in the immediate vicinity of the transmission lines. Elevated sound levels from maintenance vehicles or activities would be no higher than those predicted for the construction activities.

#### **4.10.2 Alternative 1**

Noise impacts resulting from implementation of Alternative 1 would be similar to those described for the Proposed Action.

#### **4.10.3 No Action Alternative**

Under the No Action Alternative, the ROW would not be granted on federal lands, thereby eliminating the potential for noise impacts from the Proposed Action. However, noise-generating construction activities are expected to continue on private lands.

#### **4.10.4 Mitigation**

Applicant proposed measures to reduce or minimize construction-related impacts are described in Section 2.1.4 - Applicant Proposed Environmental Protection Measures and **Appendix C** - Standard Construction and Operation Procedures. No additional mitigation beyond those implemented as part of the Proposed Action would be required.

## 4.11 VISUAL RESOURCES

The indicators for effects on existing scenic integrity and scenic attractiveness in the ROI are:

- Visibility from nearby Wilderness areas,
- Visibility from travel routes,
- Visibility from recreation facilities or recreational use areas, and
- Compliance with the BLM VRM objectives for facilities located on public lands administered by the Ely/Caliente Field Office.

### 4.11.1 Proposed Action

Direct visual effects generated by construction and operation of the Proposed Action would be experienced by viewers at sensitive viewing areas within the ROI. The only sensitive viewing area within the project area includes the portion of the Proposed Action adjacent to Highway 93, as this area is viewed by the highest number of people on a daily basis.

As described in Section 3.10.2, one KOP (located along Highway 93 near the junction of Kane Springs Road) was selected to analyze typical visual impacts imposed by the Proposed Action on the greatest number of observers. The analysis of the KOP presented in the following paragraphs concluded that, because the viewer exposure is so low, the overall visual sensitivity of the project area within the utility corridor is low as seen from the KOP or other locations along Highway 93. In general, views from the road would be from moving vehicles.

Because there are only minor human modifications in the area, construction of any additional modifications would change the character of the landscape. Views of most of the project area are blocked from the highway by intervening landforms. The duration of views towards the project area would typically be very brief, as motorists would travel beyond the area in a few minutes.

The proposed 700,000-gallon terminal water storage tank would be on private property next to the LCCRDA utility corridor, approximately 3 miles east of Highway 93. The storage tank would be approximately 24 feet tall and 61 feet in diameter. Due to the undulating topography of the local terrain, the visibility of the tank from any existing sensitive viewing area would be limited. The closest highway viewpoint that would most likely provide a view of the tank is about 0.4 mile south of Kane Springs Road. The view towards the storage tank faces east-northeast towards a flat, sparsely vegetated sandy wash. However, the wash meanders through hilly terrain, which would restrict full views of the water tank.

The proposed 138 kV transmission line would span Highway 93 to interconnect with an existing 138 kV transmission line located on the west side of highway. The wood poles of the distribution line would be in the foreground views of travelers along Highway 93. The wooden pole structures would be in the foreground views at the junction of Kane Springs Road and Highway 93 as viewed by travelers along this stretch of the highway. In addition, the lines would be visible from the private parcel west of the highway.

The Emrys Jones Substation would be constructed at the terminus of the 138 kV transmission line, and would be located on private property east of Highway 93 and south of Kane Springs Road in the vicinity of the terminal storage tank. As described for the terminal storage tank, the substation would not be visible from the highway because of distance and from the intervening terrain.

Short-term (3 to 4 months) visual impacts would occur during construction, as views of construction equipment, increased traffic and construction activities are introduced into the local viewshed. Most of the project disturbance would be within the Kane Springs Road ROW. Clearing and excavation activities associated with the installation of project components would remove vegetation communities within the pipeline alignment. Immediately following installation, these areas would be reclaimed and revegetated to pre-construction levels. Construction-related visual impacts would continue to occur in these areas until vegetation has reestablished on disturbed areas. The visual impact of vegetation removal would be minimal because of low color contrast associated with the characteristic vegetation and the underlying soils.

#### **4.11.1.1 Sensitive Viewing Areas**

The proposed overhead transmission line would be constructed within the foreground distance zone of sensitive viewing areas, which is limited to Highway 93. No other proposed facilities would be visible from sensitive viewing areas, as they are isolated from views by distance or intervening terrain (seldom seen distance zone).

None of the proposed facilities on BLM-managed lands would be within the unobstructed viewshed of the KOP or other segments of the highway because proposed facilities on BLM lands are in the seldom-seen distance zone.

The 138 kV transmission line would span Highway 93 at Kane Springs Road to interconnect with an existing electric transmission line located on the west side of the highway ROW. The wood poles of the distribution line would be in the foreground views seen by travelers on Highway 93. The wood poles would be small in scale relative to the existing electric transmission line and would not change the character of the rural landscape. In addition, electric distribution lines on single wood poles are a common human modification of rural landscapes. The impact to viewers would be low.

The viewers with the most sensitivity to changes in the existing natural landscape from the Proposed Action would be those traveling the Kane Springs Road. The Proposed Action would add an industrial element to the existing natural landscape in the foreground distance zone as viewed from Kane Springs Road.

#### **4.11.1.2 BLM Visual Management**

With the exception of the proposed terminal storage tank, the new Emrys Jones Substation and overhead utilities located on private lands, the proposed project facilities would be located on public lands currently managed with VRM Class III objectives. The level of change from the Proposed Action would be moderate, as the natural character of the landscape would be partially retained. The Proposed Action would meet BLM VRM Class III objectives because these

objectives provide for a moderate level of change to the characteristic landscape (BLM 1986). The VRM Class within the utility corridor will change to VRM Class IV with the passage of LCCRDA. The Proposed Action would meet VRM Class IV objectives, which provide for a high level of change to the characteristic landscape.

As described in Chapter 2.0 - Proposed Action and Alternatives, construction and operation of Phase 1 of the Proposed Action would provide up to 1,000 AFY of groundwater to the LCWD service territory produced from up to four wells. The wells would be located within the LCCRDA utility corridor and would not be visible from any sensitive viewing area. Full build out of the Proposed Action, under Phases 2 and 3, would maximize delivery up to 5,000 AFY to the LCWD service territory. The number of wells proposed for Phases 2 and 3 would depend primarily on the well output from Phase 1 but could include two to four additional wells. There would be no additional impact to visual resources from Phases 2 and 3 as viewed from sensitive viewing areas from additional wells located within the VRM Class IV utility corridor. The environmental protection measures referenced in Section 2.1.4 - Applicant Proposed Environmental Protection Measures and **Appendix C** - Standard Construction and Operation Procedures would be applied under Phase 1 of the Proposed Action and would be effective to minimize impacts of the build out condition.

#### **4.11.2 Alternative 1**

Impacts to visual resources under Alternative 1 would be similar to those described for the Proposed Action. However, under Alternative 1, the overhead power line would stay entirely within the LCCRDA corridor between Highway 93 and the Emrys Jones Substation. The only sensitive viewing area for this alternative would be along Highway 93. The proposed power lines would be partially screened from view by existing topography along the highway.

#### **4.11.3 No Action Alternative**

Under the No Action Alternative, the proposed water development facilities would not be installed and operated within the project area; however, the proposed Emrys Jones Substation and the 138 kV transmission line would still be constructed on private or leased lands. There would be no effect on the existing visual condition from the proposed water development facilities including transmission and collection pipelines, wells and associated tie-in roads, well substations and associated tie-in roads, and storage tanks. BLM-managed lands would continue to be managed to protect and maintain existing improvements and uses. Development of private and leased lands within and adjacent to the project area would continue.

#### **4.11.4 Mitigation**

Mitigation measures are meant to minimize undesirable contrasts of project facilities with the existing landscape. Mitigation would enable proposed project facilities to harmonize with the surrounding landscape to the extent feasible and to meet VRM objectives for visual resources. In general, implementation of resource protection measures proposed for erosion control, road construction, rehabilitation and revegetation, and wildlife protection would also mitigate effects to visual quality. As presented in Section 2.1.4 - Applicant Proposed Environmental Protection Measures, the Applicant would implement environmental protection measures as presented in

**Appendix C** – Standard Construction and Operation Procedures. Measures presented in **Appendix C** that would minimize impacts on visual resources presented in this section are measures V-1 through V-7, LP-1 through LP-3, ESC-2, ESC-3, ESC-5, ESC-6 PUC-1, R-1 through R-3, R-8, and R10 through R-15. No additional mitigation beyond those implemented as part of the Proposed Action would be required.

## **4.12 SOCIOECONOMICS**

The ROI for the socioeconomic analysis encompasses Lincoln and Clark Counties, Nevada. Additional labor data are provided for communities located closest to the ROI, as it is likely that the project workforce would reside in the outlying communities of Las Vegas and Mesquite. The communities of Alamo and Caliente in Lincoln County, and Las Vegas and Mesquite in Clark County, are the foci of the analysis for housing, public and other community services; recreation; county and municipal finances; crime; and the local transportation network, as these are the jurisdictions that would experience effects on these aspects of the social and economic environment. Demographic data for Nevada are included to set the Proposed Action in a regional context.

### **4.12.1 Proposed Action**

Implementation of the Proposed Action would have a minimal affect on the social and economic resources from the associated increase in the level of economic activity. Increased economic activity would result from increased payroll earnings during project construction, which would be spent on items such as housing, food, goods and services. These social and economic effects would occur where the Proposed Action workforce would reside, primarily in Clark County.

The Proposed Action would not have any direct growth-inducing effects because it is estimated to take from 90 to 180 days to complete and require a construction workforce of no more than 160 workers. Indirect effects would result from continuing planned developments in Clark and Lincoln Counties.

#### **4.12.1.1 Population and Housing**

Most construction workers that would be required to construct the Proposed Action facilities would commute from the Las Vegas area, which is within a daily commute distance. It is not anticipated that construction of the Proposed Action would result in an influx of new residents into the region. Therefore, there would be no local or regional population impacts and no demand for new permanent housing. In the event that workers migrate into Lincoln County and the Las Vegas area for the construction period, the relatively small number of such workers is unlikely to affect temporary housing stock. There are 43 motel rooms in Alamo and 76 motel rooms in Caliente. While temporary housing in Lincoln County is limited, there are nearly 150,000 hotel rooms in the Las Vegas metropolitan area. Construction of the project would result in no more than 160 temporary jobs that would last for no more than 180 days. Therefore, construction of the Proposed Action facilities would not have a measureable effect on population or housing.

#### **4.12.1.2 Economy and Employment**

In 2005, there was an average of 17 construction workers in Lincoln County. At an average 2005 unemployment rate of 5.1 percent, it was estimated that one construction worker was unemployed in Lincoln County in 2005. Therefore, assuming that the 2007 scenario is similar to that of 2005, most of the project workforce would be based in Clark County, primarily in the Las Vegas area. There were an estimated 101,550 construction workers in Clark County in 2005. This represents more than an ample construction labor force in the Las Vegas area to meet the construction requirements of the Proposed Action.

The development of the project facilities would require approximately 160 workers for up to 120 days. This would provide employment for construction workers primarily from the Las Vegas area, resulting in a minimally positive effect on payroll earnings during project construction. The new construction would benefit the Lincoln County tax base from increased sales and use taxes and from project-related purchases of goods and services. The construction and operation of the Proposed Action would not have any measurable influence on the Clark County economy.

#### **4.12.1.3 Public Utilities and Services**

Solid wastes would be generated primarily by construction. Disposal of the amount of wastes generated from construction and operation would not affect the life expectancy of the municipal solid waste facilities currently operating in regional area. Any hazardous materials would be disposed at an EPA-approved hazardous waste facility.

Because an influx of in-migrating employees and their families is not anticipated to meet the Proposed Action construction labor needs, there would be no effect on public utilities and services, fire protection, police protection, schools or parks and recreation facilities in Lincoln County resulting from increased population.

#### **4.12.2 Alternative 1**

The socioeconomic characteristics and potential impacts of Alternative 1 are similar to those of the Proposed Action.

#### **4.12.3 No Action Alternative**

Under the No Action Alternative, the ROW on federal lands would not be granted to LCWD. No ground disturbance would occur from the Proposed Action, and there would be no associated direct or indirect impacts.

#### **4.12.4 Mitigation**

As described in Chapter 2.0 - Proposed Action and Alternatives, construction and operation of Phase 1 of the Proposed Action would provide up to 1,000 AFY of groundwater to the LCWD service territory. Full build out of the Proposed Action, under Phases 2 and 3, would maximize delivery up to 5,000 AFY to the LCWD service territory. Full build out would not generate additional impacts on socioeconomics. The environmental protection measures referenced in Section 2.1.4 - Applicant Proposed Environmental Protection Measures and **Appendix C** -

Standard Construction and Operation Procedures (Reference Number HM-7) would be applied under Phase 1 of the Proposed Action and would be sufficient to minimize impacts of the build out condition.

## **4.13 ENVIRONMENTAL JUSTICE**

Executive Order 12898 requires an analysis of impacts of a federal action on disproportionate minority and low-income population. There are no such populations within the vicinity of the project area. The Moapa River Indian Tribe is the closest minority community and is located approximately 30 miles south of the project area.

### **4.13.1 Proposed Action**

Potential direct and indirect impacts associated with the Proposed Action would not have a disproportionate effect on low-income or minority populations because these populations are not present in the vicinity of the project area. Based on the information gathered from the U.S. Census Bureau, minority populations comprise less than 5 percent of the population in Lincoln County (see Table 3-16 in Chapter 3.0). This is 1) less than the 50 percent definition of a minority population and 2) not a meaningfully greater percentage than the minority population of the county or state, as cited in the CEQ's Environmental Justice Guidance under the National Environmental Policy Act (CEQ 1997). Therefore, implementation of the Proposed Action would have no impact on environmental justice issues.

### **4.13.2 Alternative 1**

The environmental justice characteristics and potential impacts of Alternative 1 are similar to those of the Proposed Action.

### **4.13.3 No Action Alternative**

Under the No Action Alternative, the ROW would not be granted. No impacts associated with the Proposed Action or Alternative 1 would occur to minority or low-income populations under the No Action Alternative.

### **4.13.4 Mitigation**

No mitigation is required.

## **4.14 HAZARDOUS MATERIALS AND SOLID WASTES**

### **4.14.1 Proposed Action**

Hazardous and toxic materials, such as fuels and solvents, would be transported, used and stored in the project area during both the construction and operation phases of the Proposed Action. Accidental release of hazardous and toxic materials could cause harm to human health and the environment if not handled properly. Measures to minimize potential for accidental spills or hazardous materials are outlined in the Environmental Management Plan and SPCCC Plan prepared by the LCWD. The LCWD, LCPD and LCT would each employ on-site Construction

and Environmental Inspectors who would ensure compliance with all regulatory requirements. Solid wastes would be generated primarily by construction activities. Disposal of the amount of wastes generated from construction and operation would not affect the life expectancy of the municipal solid waste facilities currently operating in the region. Any hazardous materials would be disposed at an EPA-approved hazardous waste facility. Therefore, there would be no impact from the Proposed Action on existing waste facilities in the region.

#### **4.14.2 Alternative 1**

The impacts of hazardous materials and solid waste potential under Alternative 1 would be similar to those for the Proposed Action for both construction and operation activities.

#### **4.14.3 No Action Alternative**

Under the No Action Alternative, the ROW would not be granted, and the potential impacts described above would not occur.

#### **4.14.4 Mitigation**

Applicant proposed measures to reduce or minimize construction-related impacts are described in Section 2.1.4 - Applicant Proposed Environmental Protection Measures and **Appendix C** - Standard Construction and Operation Procedures. These environmental protection measures would be applied during all phases of construction. No additional mitigation beyond those implemented as part of the Proposed Action would be required.

### **4.15 PALEONTOLOGICAL RESOURCES**

#### **4.15.1 Proposed Action**

There are no known impacts on paleontological resources that would result from construction, operation and maintenance of the Proposed Action. However, construction activities (e.g., excavation of pipeline trenches) may result in unanticipated exposure of Holocene and late Pleistocene fossils. If fossil flora and fauna are discovered during construction, BLM would be contacted, according to the standard operating procedures (SOPs) presented in **Appendix C** (CR-1 to 8 and 10), to determine steps necessary to evaluate the need to preserve the fossils.

#### **4.15.2 Alternative 1**

Implementation of Alternative 1 would result in impacts similar to those described for the Proposed Action for construction of the 138 kV transmission line and buried fiber optic line (between Highway 93 and the Emrys Jones Substation) only. If fossil flora and fauna are discovered during construction, BLM would be contacted, according to the SOPs presented in **Appendix C** (CR-1 to 8 and 10), to determine steps necessary to evaluate the need to preserve the fossils.

### **4.15.3 No Action Alternative**

Under the No Action Alternative, the ROW would not be granted. No impacts associated with the Proposed Action or Alternative 1 would occur to paleontological resources.

### **4.15.4 Mitigation**

No mitigation is required for the Proposed Action or Alternative 1.

## **4.16 ARCHAEOLOGICAL RESOURCES AND HISTORIC PROPERTIES**

Compliance with Section 106 of the NHPA requires definition of an APE specific to the proposed undertaking. Direct effects that would result in physical damage to properties and effects that might result in a diminished integrity of setting for properties located outside the area of direct effect are also considered. Areas of direct effect would be associated with production well development; construction of well yards, pipeline and power line; and storage tanks and associated components. The APE associated with linear project elements was defined as a 300-foot corridor extending 150 feet to either side of Kane Springs Road.

The principal measure of effect on archeological resources and historic properties is the potential adverse effects on the integrity or significant characteristics of National Register eligible properties. These effects may result from direct construction ground-disturbing activities or the introduction of visual, atmospheric or audible elements that would diminish the integrity of the property's significant historic features as a result of construction, operation and maintenance of the proposed project.

### **4.16.1 Evaluation of Effects on Historic Properties**

The National Register Criteria for Evaluation (NPS 2006) lists criteria that need to be considered when evaluating the eligibility of a site, district, building, structure or object. If a value possesses integrity of location, design, setting, materials, workmanship, feeling and association, it would be eligible to the National Register if any one of the following criteria is applicable:

1. It is associated with significant events or patterns in history or prehistory;
2. It is associated with the specific contributions of individuals significant in our past;
3. It has engineering, artistic or architectural values or is representative of a distinctive type or style; or
4. It has yielded or is likely to yield important information to address research questions in history or prehistory.

Normally, resources less than 50 years old are not eligible for the National Register.

### **4.16.2 Proposed Action**

The Proposed Action would result in no direct effects to National Register eligible properties or Native American cultural significant properties (Section 5.2). One non-eligible historic property (Old Highway 93) would be impacted by construction, as this road crosses through the APE.

Construction would have no indirect effects on any historic landscape or known rock art site, geoglyph or toolstone quarry eligible under Criteria a, b or c (State Protocol Agreement between the BLM and the SHPO, VII C. 2), as these sites have not been identified in the project area.

Operation and maintenance of the Proposed Action would have no direct or indirect effects on any historic landscape or known rock art site, geoglyph or toolstone quarry eligible under Criteria a, b or c (State Protocol Agreement VII C. 2), as these sites have not been identified in the project area.

Unanticipated subsurface archaeological resources may be discovered during ground-disturbing activities associated with implementation of the Proposed Action. In addition, though unlikely, human remains may be discovered during ground-disturbing activities. Stipulations for identification and treatment of unanticipated discoveries are presented in **Appendix C** (CR-1 to 9).

#### **4.16.3 Alternative 1**

Alternative 1 would result in no direct effects to National Register eligible properties or cultural significant properties (Section 5.2). One non-eligible historic property (Old Highway 93) would be impacted by construction, as this road crosses through the APE. Ground-disturbing activities proposed for this alternative are somewhat less than the Proposed Action; however, unanticipated subsurface archaeological resources and human remains may be discovered during ground-disturbing activities. Stipulations for identification and treatment of unanticipated discoveries are presented in **Appendix C** (CR-1 to 9).

#### **4.16.4 No Action Alternative**

No archaeological resources or historic properties would be affected under the No Action Alternative.

#### **4.16.5 Mitigation**

If previously unidentified cultural resources (including human remains) were discovered, the procedures outlined in State Protocol Agreement, Section VIII (Discovery Situations) would be adhered to. Under the agreement, all related construction activities would cease within 100 meters of the find, and an LCWD representative would notify the BLM authorized officer. The BLM, in coordination with the SHPO, interested persons and Tribal representatives, would determine if construction activities can proceed or if mitigation is required. If mitigation is required, the BLM (in consultation with the SHPO, interested persons and Tribal representatives) would notify LCWD of the need for mitigation, and mitigation measures would be implemented. The BLM would ensure that reports of mitigation efforts for discovery situations are completed in a timely manner and conform to the Department of Interior's Formal Standards for Final Reports of Data Recover Program (42 FR 5377-79). Activities may resume after the BLM notifies the LCWD that the mitigation process is complete.

## 4.17 UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

Unavoidable impacts are those that would occur after implementation of all committed and recommended additional mitigation measures. Unavoidable impacts do not include temporary or permanent impacts associated with the Proposed Action, which would be mitigated. Neither do they include impacts from speculative events such as hazardous waste spills that are not cleaned up promptly in accordance with accepted mitigating measures or future wildland fire events.

The Proposed Action would result in the permanent conversion of approximately 23 acres from undeveloped desert to utility-related use, of which approximately 17 acres would be public lands within the LCCRDA utility corridor. These lands are located within the Kane Springs ACEC and support habitat for desert tortoise and other wildlife. Most of the disturbance would be located along the Kane Springs Road ROW. The introduction of aboveground features would change the visual characteristics of the surrounding landscape, which includes the Delamar Mountains and Meadow Valley Range Wildernesses.

The LCWD has committed to minimizing potential short-term and long-term environmental and social impacts of the Proposed Action through project design and development of site-specific measures. Design, construction and operation features of the Proposed Action that are intended to avoid or minimize impacts are described in Section 2.1.4 – Applicant Proposed Environmental Protection Measures and outlined in **Appendix C** - Standard Construction and Operation Procedures.

If additional mitigation requirements are identified through the NEPA process, the Applicant would develop appropriate measures in consultation with the requesting agency (e.g., USFWS, Corps) and include these in their project design. The USFWS may identify additional measures (“terms and conditions”) to minimize the incidental take of listed species during the Section 7 consultation process; the Applicant would be required to implement these to be in compliance with the incidental take permit. Any additional mitigation or minimization measures would be described in the Final EIS and final POD to be submitted to the BLM prior to construction.

## 4.18 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

This section describes the irreversible and irretrievable commitments of resources associated with implementing the Proposed Action. A commitment of resources is irreversible when primary or secondary impacts limit the future options for a resource. An irretrievable commitment refers to the lost production or use of a resource that would cause the resource to be unavailable for use by future generations. Examples of these types of resources include nonrenewable resources, such as minerals and cultural resources, and renewable resources that would be unavailable for the use of future generations such as loss of production, harvest or habitat.

Constructing, operating and maintaining the Proposed Action would require committing land, soil and vegetation to place aboveground facilities including well yards, access roads and overhead electric power lines. While it is possible that these components could be removed and the natural landscape restored, it is unlikely in the foreseeable future. Therefore, these structures

would constitute an irretrievable commitment of land. Construction of Alternative 1 would require the use of similar amounts of land, soil and vegetation.

The areas occupied by aboveground features would be irreversibly removed from natural habitat. Potential habitat for the desert tortoise would be lost from placing aboveground facilities and access roads. However, implementation of Applicant-proposed environmental protection measures would make it unlikely that individual tortoises would be destroyed. Alternative 1 would result in a greater disturbance to desert tortoise habitat than the Applicant's Proposed Action because its features (including a temporary access road) would use more undisturbed lands for the placement of the overhead lines during construction.

Cultural resources are nonrenewable resources. A Programmatic Agreement is being developed among BLM, Nevada SHPO and the LCWD. This Programmatic Agreement would contain stipulations to ensure that any identified historic and prehistoric properties eligible for nomination to the NRHP would be treated to avoid or mitigate project-related effects to the extent practicable and to satisfy BLM Section 106 responsibilities.

Construction of the Proposed Action would require an irretrievable and irreversible commitment of building materials and fuel for construction equipment. Materials used for constructing the groundwater facilities are ultimately recyclable but would remain an irreversible commitment of resources. Implementation of the Proposed Action would require an irreversible commitment of a limited amount of sand and gravel resources extracted from local sources. As described in Chapter 2.0, it is anticipated that a large portion of the excavated native subsoils encountered during construction would be suitable backfill material. If deemed appropriate, the excavated subsoil would be screened and used as pipe bedding material during installation. Topsoil would not be used for backfill. The use of native material would reduce the amount of imported material hauled into the area and also minimize the disposal of excavated spoils and the amount of truck traffic on access roads and along the ROW.

Small quantities of fossil fuels would be irretrievably consumed during the construction and maintenance of the project. The consumption of fuel would be of relatively short duration and would not constitute a long-term drain on local resources.

## **4.19 SHORT-TERM AND LONG-TERM PRODUCTIVITY**

This section discusses the short-term use of the local environment and the maintenance and enhancement of long-term productivity as a result of implementation of the Proposed Action. For the purposes of this discussion, "short-term" is defined as the 3- to 4-month period during construction and up to 1 year following initial operation. "Long-term" is defined as the entire operational life of the Proposed Action, which is anticipated to be indefinite. Facilities associated with the Proposed Action are expected to be in place for long-term use to move groundwater to the Coyote Spring Valley area and may be replaced or upgraded in the future.

### **4.19.1 Short-Term Uses**

During construction of Phase 1, up to 191 acres would be temporarily disturbed. Of this amount, approximately 167 acres are BLM-managed lands. Short-term impacts to physical resources

would result from land-clearing and construction activities. Personnel and equipment moving around the project area would disperse wildlife and temporarily eliminate habitats. Effects to air quality and ambient noise would be short-term and localized during construction. Up to 500,000 gallons of water would be required for hydrostatic testing of the entire water transmission pipeline.

Impacts to social and economic resources would be primarily short-term (3 to 4 months) effects to the local economy. During construction activities, revenue would likely increase for some local businesses such as construction suppliers, hotels, restaurants, gas stations and grocery stores.

#### **4.19.2 Long-Term Uses**

Approximately 23 acres would be permanently disturbed by utility-related uses. The remaining acreage would be reclaimed to pre-construction levels. Although the Proposed Action would not require a major amount of land to be taken out of production, construction-related disturbances of previously undisturbed biological habitats could result in long-term reductions in the biological productivity of the area, as biological communities in arid regions tend to recover very slowly from disturbances. As described in Chapter 2.0 - Proposed Action and Alternatives, up to 1,000 AFY of groundwater would be pumped from the Kane Springs Valley Hydrographic Basin and transported to the LCWD service territory within the Coyote Spring Valley Hydrographic Basin. Full build out of the Proposed Action, under Phases 2 and 3, would maximize delivery up to 5,000 AFY within the LCWD service territory.

The LCWD would provide a fire hydrant for access/use to support fire suppression activities. Construction of the Proposed Action would contribute long-term socioeconomic benefits to Lincoln County including business development and regional growth.

### **4.20 CUMULATIVE IMPACTS**

#### **4.20.1 Regulations and Guidance**

The CEQ Regulations for Implementing the Procedural Provisions of NEPA define a cumulative impact as:

“...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7).

Past, present and reasonably foreseeable future actions (RFFAs) are analyzed to the extent that “they are relevant and useful in analyzing whether the reasonably foreseeable effects of the agency proposal for action and its alternatives may have an additive and significant relationship to those effects.”

The CEQ regulations require including a discussion of cumulative actions and connected actions in the scope of the environmental review. These terms are defined as follows:

- Cumulative actions are those “which when viewed with other proposed actions have cumulatively significant impacts and would therefore be discussed in the same [environmental review]” [40 CFR 1508.25(a) (2)].
- Connected actions are those closely related. “Actions are connected if they: (i) automatically trigger other actions which may require environmental review; (ii) cannot or would not proceed unless other actions are taken previously or simultaneously; or (iii) are interdependent parts of a larger action and depend on that larger action for their justification” [40 CFR 1508.25(a) (1)].

Cumulative effects can result from individually minor, but collectively significant, actions taking place over time. Cumulative effects can also result from spatial (geographic) and temporal (time) crowding of environmental impacts. Said another way, the effects of human activities would accumulate when a second impact occurs at a site before the system can fully rebound from the effect of the first impact. For the purposes of this analysis and under federal regulations, “impacts” and “effects” are assumed to be interchangeable.

While there is not a universally accepted framework for cumulative effects analysis, eight general principles identified in *Considering Cumulative Effects* under the National Environmental Policy Act (CEQ 1997) have gained acceptance. These eight principles are based on the premise that resources, ecosystems and the human community each can experience effects. For each of these, there are thresholds, or levels, of stress beyond which their desired conditions degrade. The following is a summary of the CEQ’s eight principles of cumulative effects analysis:

- 1) Cumulative effects are caused by the aggregate of past, present and reasonably foreseeable future actions. These include any other actions that affect the same resources.
- 2) Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem or human community of all actions taken, no matter who (federal, non-federal or private) has taken the actions. Effects of individual activities may interact to cause additional effects that are not apparent when looking at individual effects one at a time.
- 3) Cumulative effects need to be analyzed in terms of the specific resource, ecosystem or human community being affected, as opposed to from the perspective of the Proposed Action. Analyzing cumulative effects involves developing an understanding of how the resources are susceptible to effects.
- 4) It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those effects that are truly meaningful. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to affected parties.
- 5) Cumulative effects on a given resource, ecosystem or human community are rarely aligned with political or administration boundaries. Cumulative effects analysis on natural systems must use natural ecological boundaries; analysis of human communities must use actual socio-cultural boundaries to ensure inclusion of all effects.

- 6) Cumulative effects may result from accumulation of similar effects or from the synergistic interaction of different effects. In some cases, the net adverse cumulative effect is less than the sum of the individual effects; in other cases, the net adverse cumulative effect is greater.
- 7) Cumulative effects may last for many years beyond the life of the action that caused the effects. Cumulative effects analysis needs to apply the best science and forecasting techniques.
- 8) Each affected resource, ecosystem or human community must be analyzed in terms of its capacity to accommodate additional effects, based on its own time and space parameters. The most effective cumulative effects analysis focuses on what is needed to ensure long-term productivity or sustainability of the resource.

#### 4.20.2 Methodology for Assessing Cumulative Impacts

The environmental consequences of the Proposed Action were evaluated earlier in this chapter. Based on the analysis of the environmental resources, cumulative impacts were assessed by combining the potential effects of the Proposed Action (direct effects) with the effects of past actions, present actions (including the Proposed Action), and RFFAs (indirect effects) in the cumulative resource ROI. The extent of the cumulative resource ROI varies with each resource, based on the geographic or biologic limit of that resource. For the purposes of this analysis, the cumulative resource ROI includes the following areas:

- The area adjacent to the proposed ROW, nearby off-site areas subject to disturbance from the Proposed Action or alternatives, and those areas beneath new facilities that would remain inaccessible for the life of the project;
- As appropriate, the affected watersheds including Kane Springs Valley, Coyote Spring Valley, Muddy River Springs Area and the Lower Moapa Valley. In the context of this DEIS, these watersheds are synonymous with the Hydrographic Basins recognized by the Nevada State Engineer and U.S. Geological Service; and
- Mormon Mesa Critical Habitat Unit.

In addition, the length of time for cumulative effects analysis varies according to the duration of impacts from the Proposed Action on the particular resource. The timeframe for the cumulative impact analysis encompasses past and present activities in the areas described above, and future activities that may extend up to 20 years in the future.

Information about past, present and reasonably foreseeable future activities in the cumulative resource ROI were gathered from the BLM, USFWS, Lincoln and Clark Counties, and other agencies, adopted plans, environmental documents and personal communications with public agencies and utility companies. Project-related actions that were considered include the following:

- Applications have been submitted to the BLM or other agencies and are in various stages of the approval/permitting process as of April 2007;
- Actions that have been approved or are currently discussed in the public realm and have a reasonable likelihood of being implemented;

- Actions included in an adopted capital improvement program, general plan, regional transportation plan or similar plan;
- Actions anticipated as later phases of approved activities; or
- Actions funded by money budgeted by a public agency.

The resources to be analyzed and the potential interrelated projects that may have cumulative effects are summarized in **Table 4-4**. The locations of interrelated projects relative to the project area for the Proposed Action are depicted on **Map 4-1**.

| <b>Table 4-4<br/>Interrelated Project Analysis for Cumulative Impacts</b>  |  |
|--|--|
| <b>Resource</b>  | <b>Interrelated Projects Analyzed (see legend)</b> |
| Soil Resources   | 1, 2 and 5   |
| Water Resources  | 1, 2, 3, 6 through 13                              |
| Vegetation Resources   | 2 through 7, 13                                    |
| Wildlife Resources   | 2 through 7, 13                                    |
| Land Use   | 1-6, 8, 11, 13, 14                                 |
| Areas of Critical Concerns (ACECs)   | 1, 2, 4, 6, 11                                     |
| Visual Resources   | 2, 4, 6, 11  |
| Socioeconomic Resources  | 1 through 14                                       |
| 1 – Lincoln County Conservation, Recreation, Development Act<br>2 – Coyote Spring Development – Lincoln County<br>3 – Coyote Spring Development – Clark County<br>4 – LS Power Electric Transmission Project (500 kV transmission line in the designated Southwest Inter-tie Corridor)<br>5 – Coyote Springs 138 kV Transmission Line Project<br>6 – Ely Energy Center Project (500 kV transmission line in the designated LCCRDA corridor)<br>7 – Coyote Spring Well and Moapa Transmission System Project<br>8 – Lincoln County Land Act Groundwater Development Project<br>9 – Toquop Energy Project<br>10 – Additional Moapa Valley Water District Groundwater Pumping in Upper Moapa Valley<br>11 – Clark, Lincoln, and White Pine Counties Groundwater Development Project<br>12 – Pumping of Other Existing Undeveloped Coyote Spring Valley Groundwater Rights<br>13 – Alamo Industrial Park and Community Expansion Land Sale<br>14 – Build-Out of the Lincoln County Land Act Area (Toquop Township Planning Area) |  |

### 4.20.3 Cumulative Projects Considered

#### 4.20.3.1 Past Actions

Past human actions in the project area include livestock grazing, isolated mining exploration in the surrounding mountains, construction of Kane Springs Road and Highway 93, OHV recreation use, and the installation of fiber optic and electric transmission lines along Highway 93.

Past natural processes in the project area include wildland fire, flooding, drought, and the spread of invasive species and noxious weeds. In June 2005, a total of 739,000 acres of land in southern Nevada burned over 19 days, with approximately 148,000 acres of the fire occurring in the Meadow Valley portion of the complex, adjacent to Kane Springs Valley.

Intense flooding occurred in the Kane Springs Wash in January 2005 and July 2006. Flood intensity was exacerbated by the loss of vegetative cover as a result of wildland fires in the Kane Springs Valley in 2006 and ongoing drought conditions in the western United States. A consequence of wildland fires is the increased potential for flashflood runoff from surrounding mountain ranges. Until vegetative cover is established, post-fire erosion rates are expected to increase. In addition, these burn areas represent an area of disturbance that favors the spread and establishment of noxious and invasive weed species (Wagonner 2007). Without proper treatment, the proliferation of these species will increase the risk of wildland fire events in the future.

#### **4.20.3.2 Present Actions, Including the Proposed Action**

Present actions include the Proposed Action, which is described in Chapter 2.0 and analyzed earlier in this chapter. Other projects or events, which are currently underway or may occur in the area, include:

##### **Present Natural and Human Processes**

- OHV and other recreational use
- Livestock grazing
- Wildland fire
- Drought
- Flooding in Kane Springs Wash

##### **Energy Development Projects**

- LS Power Electric Transmission Project

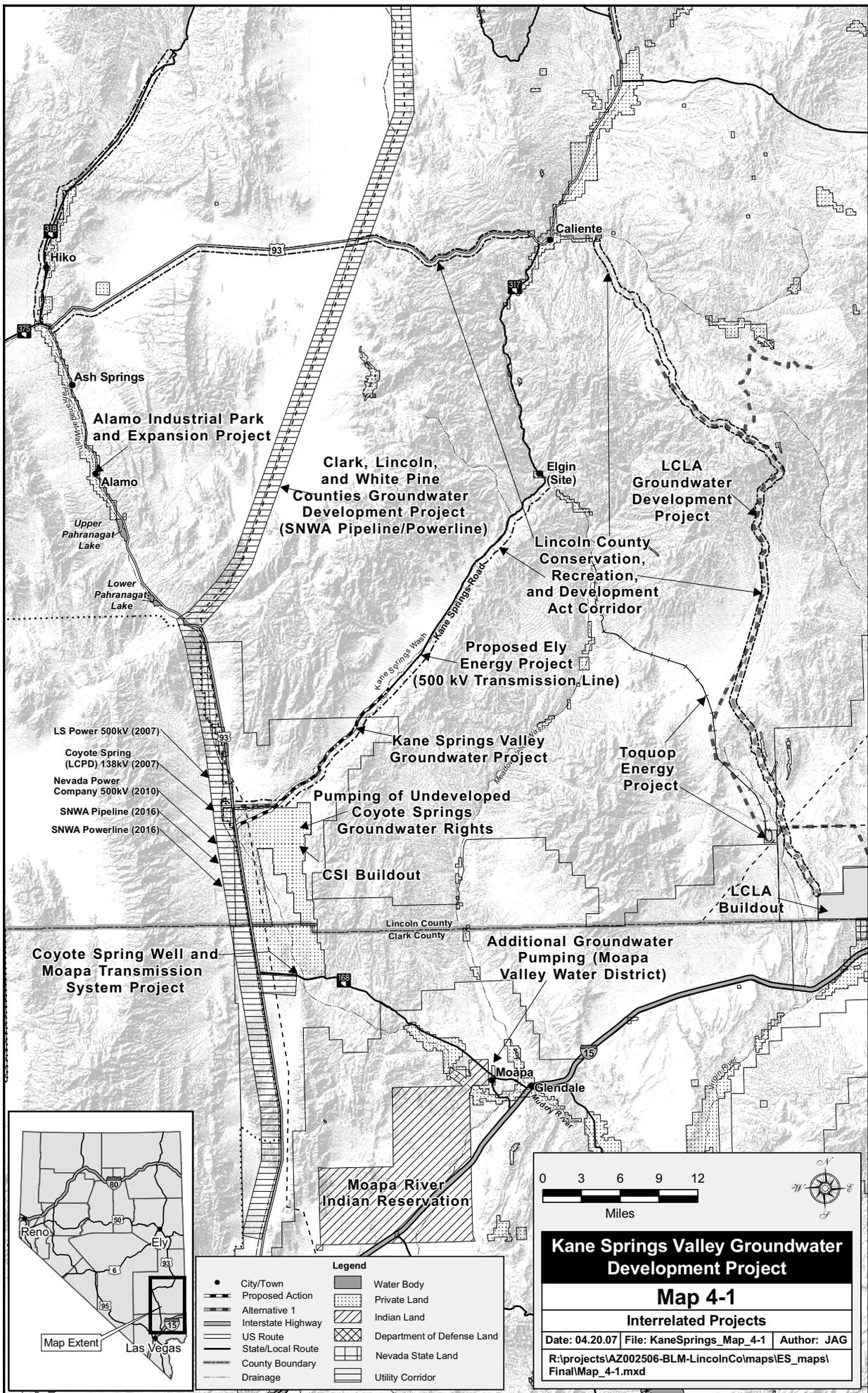
##### **Land Development Projects**

- CSI Development – Clark County
- Alamo Industrial Park and Community Expansion Land Sale

OHV activities and other recreational use within the project area are ongoing. The Kane Springs Road provides access to the Delamar and Meadow Valley Wildernesses and continues on to SR 317. The Lincoln County Transportation Department conducts periodic maintenance (grading and leveling) as needed.

Livestock grazing activities have been limited due to the 2005 fire events and drought conditions. However, some grazing continues at a reduced stocking rate. Stocking rates are coordinated between the BLM and lease holders to maintain a sustainable forage level.

Wildland fire events are expected to occur in the area due to the increased incidence of invasive and noxious weed species. In addition, flashflood runoff from high-magnitude rain events would be exacerbated by existing landcover conditions and any future wildland fires in the area.



**Alamo Industrial Park and Expansion Project**

**Clark, Lincoln, and White Pine Counties Groundwater Development Project (SNWA Pipeline/Powerline)**

**LCLA Groundwater Development Project**

**Lincoln County Conservation, Recreation, and Development Act Corridor**

**Proposed Ely Energy Project (500 kV Transmission Line)**

**Kane Springs Valley Groundwater Project**

**Toquop Energy Project**

- LS Power 500kV (2007)
- Coyote Spring (LCPD) 138kV (2007)
- Nevada Power Company 500kV (2010)
- SNWA Pipeline (2016)
- SNWA Powerline (2016)

**Pumping of Undeveloped Coyote Springs Groundwater Rights**

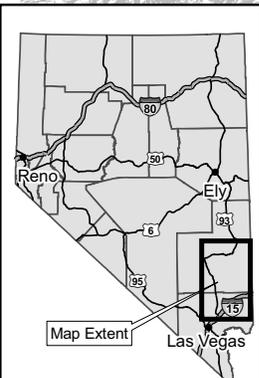
**CSI Buildout**

**LCLA Buildout**

**Coyote Spring Well and Moapa Transmission System Project**

**Additional Groundwater Pumping (Moapa Valley Water District)**

**Moapa River Indian Reservation**



| Legend |                            |
|--------|----------------------------|
| ●      | City/Town                  |
| —      | Proposed Action            |
| —      | Alternative 1              |
| —      | Interstate Highway         |
| —      | US Route                   |
| —      | State/Local Route          |
| —      | County Boundary            |
| —      | Drainage                   |
| ■      | Water Body                 |
| ■      | Private Land               |
| ■      | Indian Land                |
| ■      | Department of Defense Land |
| ■      | Nevada State Land          |
| ■      | Utility Corridor           |



**Kane Springs Valley Groundwater Development Project**

**Map 4-1**

**Interrelated Projects**

Date: 04.20.07 File: KaneSprings\_Map\_4-1 Author: JAG  
 R:\projects\AZ002506-BLM-LincolnCo\maps\ES\_maps\Final\Map\_4-1.mxd

Projects that are currently funded and underway are described in the following section. Impact characteristics of each project are summarized in **Table 4-5**. The environmental impacts associated with these projects have been analyzed.

| <b>Table 4-5<br/>Impact Characteristics of Present Actions</b>   |   |  |   |
|--|---|--|---|
| <b>Project</b>   | <b>Project Type</b>                         | <b>Project Description</b>   | <b>Project Location and Distance from Proposed Action</b>   |
| Coyote Springs Investment Development - Clark County<br><br>Timing: Under construction   | Residential / Commercial Development        | 6,881/ 6,219 acres of private/leased land; up to 49,000 residential units; approximately 1,220 net acres of commercial development. Development located near the Mormon Mesa and Coyote Spring ACECs, and the Meadow Valley Wilderness.                  | Clark County development approximately 9 miles south of project area  |
| LS Power Electrical Transmission Project<br><br>To be located in the previously permitted SWIP corridor.<br><br>Timing: Construction late 2007 | Multi-State Transmission Line               | 540-mile long 500 kV transmission line between Twin Falls, Idaho and the Dry Lake area northeast of Las Vegas. Approximately 383 miles to be located in the BLM Ely district that would parallel the west side of U.S. Highway 93 near the project area. | Parallels the west side of Highway 93; portions of the transmission line would be located west of the project area<br><br>Transmission line to be located in the designated SWIP Corridor |
| Alamo Industrial Park and Community Expansion Land Sale<br><br>Timing: Fall 2007   | Industrial Park and Residential Development | Industrial park including infrastructure: water, sewer, drainage and highway access improvements. 638 acres of residential development.  | Alamo, Nevada, along U.S. Highway 93 in Sections 4, 5, 8 and 9 of T7S, R61 E. Located ~25 miles northwest of the project area   |

ACEC – Area of Critical Environmental Concern

BLM – Bureau of Land Management

SWIP – Southwest Inter-tie Project

#### 4.20.3.2.1 Coyote Spring Development - Clark County

CSI is developing a master planned community encompassing approximately 6,881 acres of private land and approximately 6,219 acres of leased land within Clark County, Nevada. The northern end of this development is approximately 9 miles south of the proposed ROW.

The Clark County community is entitled for 49,000 residential units and approximately 1,220 net acres of commercial development. Notwithstanding the entitlements, the Clark County community is currently being planned and developed for 29,000 residential units; 710 acres of mixed use; 270 acres of commercial development; and 1,210 acres of golf, parks, open space, public facilities and preserve areas. The leased land is designated as the Coyote Spring Resource Management Area and would not be developed. Initial development plans identify a variety of housing options, golf courses, commercial centers, heliport(s), industrial sites, schools and governmental facilities. CSI selected Pardee Homes of Nevada as the master residential developer for the Clark County community. The ground breaking for the Clark County community occurred in late 2005. Golf course, road and utility improvements are under construction. The first phase is anticipated to be completed within 2 to 7.

Conservation measures have been incorporated into the proposed development including perpetual conservation easements, preservation and restoration of waters of the United States, dedication of water rights to the survival and recovery of the Moapa dace, desert tortoise

conservation measures, and natural wash buffer zones (Lincoln County 2006). Reclaimed wastewater would be utilized for golf course, park and common area landscape irrigation to the maximum reasonable extent.

CSI intends to pump its permitted groundwater rights in the Coyote Spring Valley to serve the initial demand of the Clark County community. It is anticipated that an additional 15,000 AFY would be needed to serve the community at build out. CSI anticipates the additional water rights would be obtained from existing certificated rights owned by an affiliate of CSI further to the north in Lincoln County or new appropriations of groundwater in Lincoln County.

#### *4.20.3.2.2 LS Power Electrical Transmission Project*

The LS Power Electrical Transmission (LS Power) Project involves the proposed construction, operation and maintenance of a 540-mile long 500 kV transmission line between Midpoint Substation near Twin Falls, Idaho and the Dry Lake area northeast of Las Vegas. Approximately 383 miles of this project would be located in the BLM Ely District within the approved SWIP corridor, located on the west side of Highway 93. The ROW for the SWIP corridor was granted by the BLM in the 1990s. LS Power is currently developing final engineering and construction plans for the project, with construction anticipated to begin in late 2007.

#### *4.20.3.2.3 Alamo Industrial Park and Community Expansion Land Sale*

Lincoln County, under the LCCRDA, proposes the sale of certain parcels of lands administered by the BLM. The public land consists of four parcels located near the Town of Alamo, Nevada, along Highway 93 in Sections 4, 5, 8 and 9 of Township 7 South, Range 61 East (Township 7 South, Range 61 East); Mount Diablo Base; and Meridian. All four parcels (A through D) have been included for disposal in the Draft RMP/EIS for the Ely District. The proposed use of the lands includes light industrial and housing. An Environmental Assessment (NV-040-07-35) was prepared by the BLM Ely Field Office in March 2007.

BLM anticipates that the proposed land sale would occur in fall 2007. Lincoln County expects to begin construction of the utility infrastructure for the Industrial Park (i.e., water, sewer, drainage and highway access improvements) during late fall 2007. It is anticipated that the initial industrial park tenant would begin construction in late fall 2007. Development of the first phase of the 638 acres of residential land is anticipated in late 2007 (Baughman 2006).

### **4.20.3.3 Reasonably Foreseeable Future Actions**

The RFFAs within the cumulative resource ROI include the following:

#### **Reasonably Foreseeable Natural and Human Processes**

- OHV and other recreational use
- Livestock grazing
- Wildland fire
- Drought
- Flooding in Kane Springs Wash

### Groundwater/Energy Development Projects

- LCCRDA
- Coyote Spring Well and Moapa Transmission System Project
- Lincoln County Land Act Groundwater Development and Utility Right-of-Way Project
- Clark, Lincoln, and White Pine Counties Groundwater Development Project

### Groundwater Development Projects

- Additional Moapa Valley Water District Groundwater Pumping in Upper Moapa Valley
- Pumping of Other Existing Undeveloped Coyote Spring Valley Groundwater Rights

### Energy Development Projects

- Coyote Spring 138 kV Transmission Line Project
- Toquop Energy Project
- Ely Energy Center Project (500 kV transmission line in LCCRDA corridor)

### Land Development Projects

- CSI Development – Lincoln County
- Build-Out of the Lincoln County Land Act Area (Toquop Township Planning Area)

Natural processes and events that are expected to occur in the future include OHV and other recreational use within the project area and surrounding Wilderness, livestock grazing based on sustainable conditions, wildland fires, drought, and flooding of Kane Springs Wash during high magnitude rain events.

RFFAs within the cumulative impacts ROI are described in the following section. Impact characteristics of these projects are summarized in **Table 4-6**. Analysis of the environmental impacts associated with these projects has either been completed, is underway or is planned by an agency.

#### 4.20.3.3.1 *Lincoln County Conservation, Recreation and Development Act*

The LCCRDA contains six titles, or key provisions. They include: 1) Land disposal; 2) Designation of Wilderness areas, 3) Establishment of 2,640-foot wide corridor for utilities, 4) Management of the Silver State Off-Highway Vehicle Trail, 5) Conveyance of BLM-managed lands to the State of Nevada for the conservation of natural resources or public parks, and 6) Transfer of administrative jurisdiction of land between the BLM and USFWS. Title I (Land Disposal) and Title III (Establishment of a designated utility corridor) apply to the cumulative impacts analysis of the Proposed Action.

| <b>Table 4-6<br/>Impact Characteristics of RFFAs</b>   |  |   |  |
|--|--|---|--|
| <b>Project</b>   | <b>Project Type</b>                          | <b>Project Description</b>  | <b>Project Location and Distance from Proposed Action</b>  |
| <p>Lincoln County Conservation, Recreation and Development Act (LCCRDA)</p> <p>Timing: The LCCRDA contains six titles. Establishment of utility corridors is subject to NEPA. Environmental analysis conducted on a case-by-case basis.</p>            | Federal action                               | <p>The LCCRDA designated approximately 770,000 acres of Wilderness and designated utility corridors in Lincoln County for SNWA and LCWD.</p> <p>The LCCRDA also directed the Secretary of the Interior to dispose of up to an additional 70,000 acres of federal land in Lincoln County for privatized development initiatives with 10 percent of the revenues going to Lincoln County for economic development, 5 percent to the State of Nevada for education, and 85 percent being retained by the federal government.</p> | Within project area. Portions of the LCCRDA corridor traverse Lincoln County.  |
| <p>Coyote Spring Investment Development – Lincoln County</p> <p>Timing: Pending. No construction to date. Awaiting completion of the Coyote Spring Investment Multiple Species Habitat Conservation Plan. Agreements in place with Lincoln County.</p> | Residential / Commercial Development         | <p>22,174/7,548 acres of private/leased land; up to 111,000 residential units; up to 4,500 acres of commercial development.</p> <p>Development located in or near portions of the Kane Springs ACEC, and the Delamar and Meadow Valley Wildernesses.</p>  | South of, and immediately adjacent, to Proposed Action   |
| <p>Coyote Spring 138 kV transmission line</p> <p>Timing: Plan of Development submitted to Ely Field Office in October 2006. In-service date anticipated Spring 2008.</p>   | Electric Transmission Project                | <p>A new 138 kV transmission line would interconnect into the proposed Scott Substation, located approximately 5 miles south of the intersection of Kane Springs Road and Highway 93.</p> <p>Ancillary facilities: five new substations, new distribution facilities and upgrade of existing facility.</p>  | Portions of the transmission line would be co-located in the SWIP corridor.  |
| <p>Ely Energy Center and Electric Transmission Project</p> <p>Timing: EIS under development. Applicant proposed in-service date 2011 – 2013.</p>   | Transmission Line and Coal-fired Power Plant | 500 kV Transmission line from northeast Nevada to the Las Vegas area, mostly within existing BLM ROW  | Due to limited capacity within the SWIP corridor, a portion of the transmission line may be constructed through the Delamar Valley south into Kane Springs Valley. Phase II may include construction of the proposed 500 kV line along Kane Springs Road within the LCCRDA corridor. |

| <b>Table 4-6 (continued)</b><br><b>Impact Characteristics of RFFAs</b>  |  |   |  |
|---|--|---|--|
| <b>Project</b>  | <b>Project Type</b>  | <b>Project Description</b>  | <b>Project Location and Distance from Proposed Action</b>  |
| Coyote Spring Well and Moapa Transmission System (Coyote Spring Project)<br><br>Timing: Under development / Draft EA issued August 2006                           | Development of existing groundwater rights in Coyote Spring Valley Hydrographic Basin. | Withdrawal of up to 9,000 AFY of groundwater in Coyote Spring Valley Hydrographic Basin using new and existing facilities.  | ~ 11 miles due south of proposed project area  |
| Lincoln County Land Act Groundwater Development and Utility Right-of-Way Project<br><br>Timing: EIS under development.  | Groundwater Development Project  | Construction and operation of groundwater facilities to withdraw up to 9,340 AFY from the Tule Desert Hydrographic Basin and up to 14,481 AFY from the Clover Valley Hydrographic Basin   | Tule Desert and Clover Valley Hydrographic Basins; east of the project area.<br><br>Portions of the proposed ROW are located within the designated LCCRDA utility corridor.  |
| Toquop Energy Project<br><br>Timing: EIS under development  | Coal-Fired Power Plant in Lincoln County   | 750 megawatt (MW) coal-fired power plant in southeastern Lincoln County on lands administered by the BLM Ely Field Office. Use of up to 2,100 AFY (permitted) groundwater from the Tule Desert Hydrographic basin. Project includes construction of a 31-mile rail from existing UP Railroad track in Meadow Valley Wash. | ~28 miles southeast of the project area.   |
| Additional Groundwater Pumping by the Moapa Valley Water District<br><br>Timing: Unknown at this time.  | Groundwater Development (existing rights)  | The existing water right permit allows for phased increases in groundwater pumping from wells in the Upper Moapa Valley Hydrographic Basin (aka Muddy River Springs). Currently pumping up 2,400 AFY; up to 7,200 AFY is allowed.   | Upper Moapa Valley; More than 30 miles southeast of project area.  |
| Clark, Lincoln, and White Pine Counties Groundwater Development Project<br><br>Timing: EIS under development; anticipate project would be constructed after 2010. | Groundwater Development  | The proposed facilities include approximately 285 miles of pipeline, three pumping stations, six regulating tanks, a buried storage reservoir and a water treatment facility, Withdrawal of up to 168,000 AFY (pending)   | Project facilities to be located in Spring, Snake, Cave, Dry Lake, Delamar, Lake Valley and Coyote Spring Valleys. Portions of the water transmission pipeline would be located immediately west of U.S. Highway 93. |
| Clark, Lincoln, and White Pine Counties 230 kV Transmission Line<br><br>Timing: EIS under development; anticipate constructed after 2010.                         | Multi-State Transmission Line  | 315 miles of overhead power lines, two electrical substations and two hydro-turbine energy recovery facilities.   | A portion of the transmission line would parallel the west side of U.S. Highway 93; west of the project area<br><br>Transmission line to be co-located in the SWIP Corridor  |

| <b>Table 4-6 (continued)</b><br><b>Impact Characteristics of RFFAs</b>  |                                      |  |  |
|---|--------------------------------------|--|--|
| <b>Project</b>  | <b>Project Type</b>                  | <b>Project Description</b>   | <b>Project Location and Distance from Proposed Action</b>  |
| Pumping of Other Existing Undeveloped Coyote Spring Valley Groundwater Rights<br><br>Timing: Unknown at this time   | Groundwater Withdrawal               | Nevada Power Company has approved groundwater rights for 2,500 AFY. No groundwater facilities for development of these rights have occurred.   | Located ~ 11 miles south of project area.  |
| Build-out of the Lincoln County Land Act Development (Toquop Township Planning Area)  | Residential / Commercial Development | Development of up to 13,100 acres in southeastern Lincoln County. Preliminary build out is expected at 3.3 dwellings per gross acre over a 6,478-acre area, for a total build out of 21,377 dwellings. The build out is expected to proceed over a 20-year period. | Southeast corner of Lincoln County; north of the City of Mesquite. More than 50 miles southeast of the project area. |
| ACEC – Area of Critical Environmental Concern<br>EA – Environmental Assessment<br>LCWD – Lincoln County Water District Act<br>RFFA – Reasonably Foreseeable Future Action Authority<br>SWIP – Southwest Inter-tie Project |                                      |  |  |
| AFY – acre-feet per year<br>EIS – Environmental Impact Statement<br>MW – megawatt<br>ROW – right-of-way<br>LCCRDA – Lincoln County Conservation, Recreation, and Development Act  |                                      |  |  |
| BLM – Bureau of Land Management<br>kV – kilovolt<br>NEPA – National Environmental Policy Act<br>SNWA – Southern Nevada Water Authority  |                                      |  |  |

Title I directed the Secretary of the Interior to dispose of up to an additional 70,000 acres of federal land in Lincoln County for privatized development initiatives with 10 percent of the revenues going to Lincoln County for economic development, 5 percent to the State of Nevada for education, and 85 percent being retained by the federal government. RFFAs related to Title I include the Alamo Industrial Park and Community Expansion Land Sale (see Section 4.20.3.2.3) and Toquop Township Planning Area (see Section 4.20.3.3.11).

Title III established a utility corridor for use by the SNWA and the LCWD contingent upon the successful compliance with requirements of NEPA. The legislation designates ROWs for the roads, wells, pipelines and other infrastructure needed for the construction and operation of a water conveyance system in Clark and Lincoln Counties. Another provision of Title III is the relocation of an existing utility corridor from the east to the west side of Highway 93 between the Highway 93-Highway 168 junction and the Kane Springs Road-Highway 93 junction. The owners of the private property to the east of Highway 93 would pay the federal government fair market value for the appreciation of their property due to this provision.

#### 4.20.3.3.2 Coyote Springs Development - Lincoln County

CSI proposes to develop a master planned community encompassing approximately 22,174 acres of private land and approximately 7,548 acres of leased land within Lincoln County, Nevada. A portion of the Proposed Action (terminal storage tank, 138 kV transmission line, Emrys Jones Substation) would be located on private or leased lands held by CSI.

The Lincoln County community is entitled for approximately 111,000 residential units and 4,500 acres of commercial development. Initial development plans identify a variety of housing

options, golf courses, commercial centers, heliport(s), industrial sites, schools, open space, and governmental and public facilities. CSI selected Pardee Homes of Nevada as the master residential developer for the Lincoln County community. CSI is seeking a Section 404 permit from the Corps and a Section 10 permit from the USFWS for the incidental take of Threatened or Endangered species protected by the ESA. CSI is currently developing a Multiple Species Habitat Conservation Plan (MSHCP) that will identify measures to minimize and mitigate incidental take of federally listed species that could occur as a result of CSI's planned development. The Lincoln County community would not be developed until some time after these authorizations are obtained.

Conservation measures are being incorporated into the proposed development, including perpetual conservation easements, open space, preservation and restoration of waters of the United States, dedication of water rights to the survival and recovery of the Moapa dace, desert tortoise conservation measures, and natural wash buffer zones (Lincoln County 2006). Reclaimed wastewater would be utilized for golf course, park and common area landscape irrigation to the maximum reasonable extent.

CSI anticipates 55,000 AFY would be needed to serve the development's water needs at build out. CSI anticipates the Proposed Action would allow delivery of the initial water supply appropriated by LCWD within the Kane Spring Valley to the community. CSI anticipates that additional water rights would be obtained from existing certificated rights owned by an affiliate of CSI further to the north in Lincoln County or new appropriations of groundwater in Lincoln County. CSI anticipates that this need being met in multiple phases by groundwater produced from various basins within Lincoln County rather than being identified at one time or produced from one location. The utilization of all such water rights within the community is and would be subject to the jurisdiction of an authorization by the Nevada State Engineer.

#### *4.20.3.3.3 Coyote Springs 138 kV Transmission Line Project*

In order to provide reliable electrical service to the CSI development, LCPD is proposing to upgrade a portion of its existing transmission system from 69 kV to 138 kV and construct up to five new substations to accommodate the upgrade. Up to 11.2 miles of transmission line would be upgraded between the proposed Scott Substation to the proposed Sheep Mountain Substation. The proposed Scott Substation would be located on private property east of Highway 93 (within Lincoln County), approximately 5 miles south of the intersection of Kane Springs Road and Highway 93. The proposed Sheep Mountain Substation would be located on BLM-managed land west of Highway 93. Ancillary facilities would include three additional substations, step-down transformers for fiber optic and cellular tower facilities and related electrical components. These facilities would be primarily located along Highway 168.

#### *4.20.3.3.4 Ely Energy Center*

Nevada Power Company, in conjunction with Sierra Pacific Power Company, has applied to the Public Utility Commission of Nevada to construct and operate a new coal-fired electrical generation facility and associated transmission, switching station and communication facilities. These facilities would primarily be located on federal land administered by the BLM, Ely, Elko and Las Vegas Offices. A portion of the 500 kV transmission line, between the Robinson Summit Switching Station near Ely and the Harry Allen Switching Station northeast of the

intersection of Highway 93 and I-15, is proposed to be constructed through the Delamar Valley to Kane Springs Valley and west along the Kane Springs Road within the 2,640-foot wide LCCRDA corridor to Highway 93. A separate EIS is being prepared for this project. Scoping meetings were held in February 2007.

#### 4.20.3.3.5 Coyote Spring Well and Moapa Transmission System Project

The SNWA is proposing to develop its existing groundwater rights in Coyote Spring Valley Hydrographic Basin. The Nevada State Engineer has permitted 16,300 AFY of groundwater in Coyote Spring Valley, of which 9,000 acre-feet are owned by SNWA. The Coyote Spring Well and Moapa Transmission System Project (Coyote Spring Project) would develop and convey 9,000 AFY of groundwater from Coyote Spring Valley in northeastern Clark County using new and existing facilities. A Draft Environmental Assessment was issued for this project in August 2006.

Development of groundwater resources for this project is subject to Nevada State Engineer Order 1169, which relates to groundwater applications in several adjacent groundwater basins, including Coyote Spring Valley, and holds various permits in abeyance pending the completion of a study of the regional carbonate aquifer system. In addition to Coyote Spring Valley, Hydrographic Basins included in Order 1169 include Black Mountains Area (Basin 215), Garnet Valley (Basin 216), Hidden Valley (Basin 217), Muddy River Springs (aka Upper Moapa Valley) (Basin 219), and Lower Moapa Valley (Basin 220). While California Wash (Basin 218) was not included in Order 1169 (March 2002), the Nevada State Engineer, in Ruling 5115 (April 2002), held applications in California Wash in abeyance pending completion of the Order 1169 study.

Order 1169 requires major groundwater rights holders in the Coyote Spring Valley Basin to participate in a 5-year study to provide information on the effects of pumping existing permitted water rights in Coyote Spring Valley. As of December 2006, only about 4,600 AFY of the permitted 16,300 AFY of water rights in Coyote Spring Valley have been pumped. Order 1169 requires that at least 8,150 AFY (at least half of the permitted groundwater rights in Coyote Spring Valley) be pumped for at least 2 consecutive years. Funding is being provided by the Las Vegas Valley Water District, SNWA, CSI, Nevada Power Company and the Moapa Valley Water District.

In addition to the conservation measures that would be implemented by SNWA as part of the proposed action for the Coyote Spring Project, SNWA (in addition to CSI, USFWS, Moapa Band of Paiute Indians, and the Moapa Valley Water District) has entered into an MOA for the protection and recovery of the Moapa dace and its habitat. The following section outlines specific conservation measures described in the MOA. For a full listing, see **Appendix A**.

- Establishment by all parties of a Recovery Implementation Program for the protection and recovery of Moapa dace;
- Dedication by the Moapa Valley Water District of its entire 1.0 cfs Jones Spring water right to provide in-stream flows beneficial to Moapa dace;
- Both the USFWS and SNWA have agreed to provide funding in the amount of \$125,000 to develop an ecological model for the Moapa dace; and SNWA agreed to provide

funding in the amount of \$50,000 to construct fish barriers for USFWS/SNWA in consultation with the other parties to the Stipulation;

- Construction of a set of fish barriers on the Muddy River by BLM and USFWS to prevent further migration of non-native fishes;
- Establishment of a Hydrologic Review Team by all parties;
- Operational coordination among USFWS, SNWA, CSI and Moapa Valley Water District;
- Carrying out adaptive management measures by the parties including funding preparation and implementation of biological and hydrological studies and activities supporting recovery of Moapa dace; establishing a regional monitoring and management plan; assessing the feasibility of augmenting and restoring in-stream flows; and continuing to reevaluate necessary measures to protect and recover Moapa dace; and
- If flow levels, as measured at the Warm Springs West flume, reach 3.0 cfs during the Order 1169 pumping study, the Moapa Valley Water District would shut down the Arrow Canyon well.

#### 4.20.3.3.6 *Lincoln County Land Act Groundwater Development and Utility Right-of-Way Project*

The LCWD has submitted ROW applications for development of up to 15 production water wells to be located in the previously permitted Toquop Energy Project proposed well field area located in the Tule Desert Hydrographic Basin and up to 15 production water wells to be located in the Clover Valley Hydrographic Basin of southeastern Lincoln County. Collectively, wells in the Tule Desert basin would pump up to 9,340 AFY. Wells in the Clover Valley would pump up to 14,480 AFY. A system of pipelines would collect pumped water for conveyance through a main transmission pipeline southeast to the LCLA development area following, in part, the 2,640-foot wide LCCRDA corridor. Other utilities, including natural gas, telecommunications and electrical power, would be brought into the LCLA area along portions of the water pipeline alignment.

The existing Tule Desert well field is currently permitted to produce and export 2,100 AFY of groundwater. The LCWD has applications pending before the Nevada State Engineer for an additional 7,240 AFY in the Tule Desert Basin.

The BLM Ely District is preparing a separate EIS to identify and disclose the direct and indirect effects associated with this project. The decision about how much additional water would be permitted, if any, rests with the Nevada State Engineer.

#### 4.20.3.3.7 *Toquop Energy Project*

Toquop Energy, LLC (a subsidiary of Sithe Global Power, LLC), a privately held, independent power company is proposing to construct a 750 megawatt (MW) coal-fired power plant in southeastern Lincoln County on lands administered by the BLM Ely Field Office. The power plant would be constructed on the same site as and instead of a natural gas-fired power plant for which a ROW was approved by the BLM Ely Field Office in April 2003. In April 2003, BLM Ely Field Office issued a Final EIS for the Toquop Energy Project, proposed by Toquop Energy, Inc. The current EIS will assess the potential impacts of a ROW for the proposed coal-fired facility and a new railroad line to transport coal to the facility.

#### 4.20.3.3.8 *Additional Moapa Valley Water District Groundwater Pumping in Upper Moapa Valley*

The Moapa Valley Water District's existing water right permit allows for phased increases in groundwater pumping from wells in the Upper Moapa Valley Hydrographic Basin (aka Muddy River Springs). Current pumping by the Moapa Valley Water District is approximately 2,400 AFY (up to 7,200 AFY are allowed). Similar to the Stipulation Agreement between USFWS and LCWD, Moapa Valley Water District has agreed to restrict groundwater pumping if the 2.7 cfs "trigger level" at the Warm Springs West flume is reached.

#### 4.20.3.3.9 *Clark, Lincoln, and White Pine Counties Groundwater Development Project*

In August 2004, SNWA filed an application with the BLM Ely Field Office for ROWs for a proposed system of regional groundwater production, conveyance and treatment facilities and power conveyance facilities in Clark, Lincoln, and White Pine Counties. The proposed facilities include approximately 285 miles of pipeline, three pumping stations, six regulating tanks, a buried storage reservoir, a water treatment facility, 315 miles of overhead power lines, two electrical substations and two hydro-turbine energy recovery facilities. Portions of these project facilities (i.e., water transmission pipeline and electric transmission lines) would be located west of the Kane Springs Valley project area. SNWA anticipates major facility construction between 2009 and 2014.

The facilities proposed for development would be located in the following valleys: Spring, Snake, Cave, Dry Lake, Delamar and Coyote Springs. SNWA holds groundwater applications for approximately 168,000 AFY in Spring, Snake, Cave, Dry Lake, Delamar and Coyote Spring Valleys. On April 16, 2007, the Nevada State Engineer approved a portion of SNWA's groundwater rights applications submitted for the Spring Valley in White Pine County, enabling the SNWA to develop a maximum of 60,000 AFY from the basin.

Under terms of the decision, the SNWA can pump 40,000 AFY from the basin for 10 years. At that point, the SNWA would be allowed an additional 20,000 AFY from the basin based on the results of monitoring and impact analysis. The State Engineer's decision includes:

- A determination of the basin's perennial yield of 80,000 AFY;
- A total combined approved duty of 60,000 AFY, which includes:
  - Staged water development (40,000 AFY may be pumped in the initial 10 years after a period of baseline data collection)
  - A determination that an additional 20,000 acre-feet may be pumped based on the results of 10 years of monitoring and impact analysis

The remaining applications are being adjudicated through the Nevada State Engineer's water rights process.

#### 4.20.3.3.10 *Pumping of Other Existing Undeveloped Coyote Spring Valley Groundwater Rights*

Nevada Power Company holds 2,500 AFY of existing permitted water rights in the Coyote Spring Valley Hydrographic Basin. Although these are existing permitted rights, Nevada Power

has not identified any projects or proposals to develop these rights. Because there is no proposed project to develop these water rights, there is no information to analyze potential cumulative effects of project construction and operation. However, because these are existing permitted rights, the potential hydrologic effects of groundwater pumping are considered in the analysis of cumulative impacts to water resources.

#### 4.20.3.3.11 *Build-Out of the Lincoln County Land Act Area (Toquop Township Planning Area)*

The LCLA of 2000 was finalized through provisions in the LCCRDA of 2004. In February 2005, the BLM sold 13,300 acres of land in eight parcels in southeastern Lincoln County for \$47.5 million. The parcels varied in size from 666 to 4,257 acres. Lands are currently undeveloped but are being planned by Lincoln County as a Planned Unit Development referred to as the Toquop Township Planning Area (Lincoln County 2006). The Toquop Township Planning Area “will be developed in village settings to maximize the scenic attributes of the area, provide for a connected transportation system and become self sufficient through its provisions of services” (Lincoln County 2006).

Development and Conveyance Agreements among the developers and Lincoln County will require development plans outlining proposed uses of the acquired property. Preliminary build out density for the LCLA development area is expected at 3.3 dwellings per gross acre, for a total build out estimated at 44,000 dwelling units. The build out is expected to proceed over a 30-year period.

### 4.20.4 Cumulative Impacts Analysis

As described in Chapter 4.0 - Environmental Consequences, the Proposed Action would not impact the following resources: Geological Resources, Mineral Resources, Livestock Grazing, Transportation, Wilderness, Recreation, Air Quality, Noise, Environmental Justice, Hazardous and Solid Waste, Paleontological Resources, and Heritage Resources and Historical Properties. Therefore, there would be no cumulative impacts to these resources from the Proposed Action.

#### 4.20.4.1 Soil Resources

The ROI for the cumulative resource analysis for soil resources is the area adjacent to the proposed ROW, nearby off-site areas subject to disturbance from the Proposed Action or Alternatives, and those areas beneath new facilities that would remain inaccessible for the life of the project. RFFAs evaluated for soil resources include the Proposed Action and future development in the northern portion of the CSI development area in Lincoln County; the proposed 500 kV transmission line associated with the Ely Energy Center; and future OHV use, livestock grazing, wildland fire, drought and flooding.

Past actions associated with OHV use, livestock grazing, wildland fire, drought, and flooding have caused impacts to the soils within the cumulative impact ROI. Construction activities occurring at the same time, and within the same drainage, have the potential to cumulatively increase the amount of disturbed land subject to erosion and sedimentation. However, impacts to soil resources from the Proposed Action and other RFFAs within the cumulative impacts ROI would be minimized by erosion and sediment control measures incorporated in their respective

development designs and construction methods. Therefore, no cumulative impacts to soil resources would occur as a result of the Proposed Action.

#### 4.20.4.2 Water Resources

The cumulative resource analysis area for water resources includes the following Hydrographic Areas: Kane Springs Valley (No. 206), Coyote Springs Valley (No. 210), and Muddy River Springs Area (No. 219).

Cumulative impacts to water resources and hydrology are primarily related to groundwater withdrawals that could result in a decline in groundwater levels and flows at downgradient locations, specifically the Muddy Springs Area, which is a major regional discharge point for White River Flow System.

RFFAs with potential effects on water resources and hydrology include the actions associated with the implementation of LCCRDA including the Proposed Action; the Clark, Lincoln, and White Pine Counties Groundwater Development Project; the build out of the CSI development area and associated water rights development in southern Lincoln County; the Coyote Spring Project; pumping of existing undeveloped Coyote Spring Valley groundwater rights by the Nevada Power Company; and additional groundwater pumping by the Moapa Valley Water District in Upper Moapa Valley. **Table 4-7** summarizes existing water rights and applications in the cumulative impacts area.

| <b>Hydrographic Area</b> | <b>Perennial Yield<sup>1</sup><br/>(AFY)</b> | <b>Permitted Water Rights<sup>3</sup> (AFY)</b> | <b>Pending Water Rights Applications<sup>3</sup><br/>(AFY)</b> |
|--------------------------|--|---|--|
| Kane Springs Valley      | less than 500                                | 1,000 <sup>2</sup>                              | 17,380   |
| Coyote Spring Valley     | 18,000                                       | 35,096  | 202,479  |
| Muddy River Springs      | 37,000                                       | 40,399  | 11,587   |
| <b>Total</b>             | <b>55,500</b>                                | <b>76,495</b>                                   | <b>231,446</b>   |

<sup>1</sup> Perennial yield estimated as of 1992  
<sup>2</sup> Nevada State Engineers Ruling 5712 (2007)  
<sup>3</sup> Reported diversion rates in cfs were converted to AFY for comparison purposes. However, cfs represents instantaneous measurement that would not be representative of, and would likely overestimate a flow rate for, the whole year  
 AFY – acre-feet per year

Based on the water rights summarized above, a total of 76,495 AFY is currently permitted in the Hydrographic Areas included in the cumulative analysis. An additional 231,446 AFY of water right applications, including 17,380 AFY submitted by LCWD, are still pending.

Cumulative effects from existing permitted rights in combination with proposed future groundwater pumping have been evaluated within the last 5 years. All of these studies focused on impacts to reduced flow at the Muddy Springs area.

The SNWA, in conjunction with the Las Vegas Valley Water District, sponsored an analysis which included a portion of the Clark, Lincoln, and White Pine Counties Groundwater

Development Project (up to 27,512 AFY in the Coyote Spring Valley Hydrographic Area – still pending); the CSI development (4,600 AFY); the Nevada Power Company groundwater rights (2,500 AFY); and the Moapa Valley Water Districts pumping in Upper Moapa Valley (7,200 AFY). The cumulative analysis predicted a decline in the carbonate aquifer levels in the Muddy Springs area of less than 10 feet, and a decrease of about 4 cfs of flow from the Muddy Springs, after pumping over a 61-year period (LVVWD 2001).

Another model was developed by Department of Interior agencies (BLM, NPS and USFWS) and included the Coyote Spring Valley portion of the Clark, Lincoln, and White Pine Counties Groundwater Development Project (the pending applications for 27,512 AFY); the CSI development (4,600 AFY); and the Nevada Power Company groundwater rights (2,500 AFY). The cumulative analysis predicted a reduction in Muddy River stream flows of about 33 and 22 percent at the Moapa gauge and Muddy River Narrows, respectively, after pumping over a 50-year period (GeoTrans 2001).

USFWS analyzed the potential cumulative effects of groundwater development of up to 16,100 AFY from Coyote Spring Valley and California Wash (USFWS 2006). This analysis predicted that, after 5 years of pumping, groundwater levels would decline about 8.5 feet, a possible loss of 31 percent of flow on the Pederson Unit, and an overall reduction in flow of the Moapa Valley Wildlife Refuge Area at its confluence with the Muddy River of 6 percent, compared to 1998 conditions (USFWS 2006).

No detailed cumulative effects modeling has been completed for the Proposed Action or other groundwater development projects in the ROI. The groundwater application for the Clark, Lincoln, and White Pine Counties Groundwater Development Project has not been approved by the Nevada State Engineer. The SNWA/LVVWD applications in Coyote Spring Valley would depend on the results of Order 1169 pumping study addressing effects on groundwater levels in Coyote Spring and Upper Moapa Valleys and spring flow of the Muddy Springs.

Groundwater applications for the Clark, Lincoln, and White Pine Counties Groundwater Development Project that are located in Spring and Snake Valleys address a separate flow system (Great Salt Lake Desert flow system); therefore, groundwater development in those basins would not affect the Kane Springs Valley, Coyote Spring Valley or Muddy Springs Hydrographic Areas. Cumulative impacts of the Clark, Lincoln, and White Pine Counties Groundwater Development Project, in conjunction with existing permitted rights, would be analyzed in detail in the EIS being prepared for that project.

A large-scale modeling study by Schaefer and Harrill (1995) simulated effects of proposed groundwater pumping (180,800 AFY) on regional groundwater flow, as well as on large regional springs in 17 basins in east-central and southern Nevada. Analysis included pumping from the White River Flow System including Cave, Dry Lake, Delamar and Coyote Spring Valleys. No pumping was simulated within the Kane Springs Valley, but 5,000 AFY was extracted from the Coyote Spring Valley. The simulation of pumping in the carbonate-rock province of the Great Basin indicated that water levels, the flow of regional springs and groundwater discharge by evapotranspiration would be affected. They concluded that approximately 10 feet of drawdown in the deep carbonate aquifer would occur in the Coyote Springs area after 100 years of pumping. The simulations also showed that discharge from several regional springs could be

affected. After about 100 years of simulation, flow from Muddy River Springs would be reduced by about 6 cfs (11 percent).

SNWA, CSI and Moapa Valley Water District hold rights to withdraw up to 20,800 AFY from the Coyote Spring and Upper Moapa Valleys, which could cumulatively affect flow of the Muddy Springs. These potential effects are offset, however, by the conservation commitments from an MOA entered in April 2006 between these major groundwater right holders and USFWS (**Appendix A**). Similar to the Stipulation Agreement between USFWS and LCWD described in Section 1.4.2, the potential effects of groundwater production would be managed to protect instream flow levels, as measured at Warm Spring West flume (part of Muddy Springs). Groundwater pumping would have to be reduced or completely restricted if predetermined “trigger levels” are reached at Warm Spring West flume.

Based on the MOA, if water flows reach 3.0 cfs during the pump test, MVWD shall cease pumping from the Arrow Canyon well, and SNWA will provide the MVWD with water quantity to meet their municipal demands. If water flows reach 3.0 cfs or less, SNWA and CSI will restrict groundwater pumping from wells identified in the MOA. At the 2.7 cfs or less trigger level, SNWA and CSI will restrict groundwater pumping from wells identified in the MOA, and the Moapa Band of Paiute Indians will restrict their pumping in California Wash.

Regardless of which groundwater development project or whether potential future climatic conditions are the source of effects, the commitments under the MOA require the reduction or cessation of pumping the groundwater rights which are the subject of the MOA if specified spring flow trigger levels are reached. The measures included in the MOA, including reductions in groundwater pumping and movement of groundwater production to locations more distant from the Muddy Springs, would also alleviate potential cumulative impacts of other more distant projects.

The LCWD groundwater development project in Tule Desert and Clover Valley Hydrographic Areas that would collectively pump up to 23,820 AFY would not contribute to cumulative impacts in conjunction with groundwater pumping under the Proposed Action. These two Hydrographic Areas are not part of the White River Flow System; therefore, groundwater development in these basins would not affect the flows at the Muddy River Springs. Additionally, The Nevada State Engineers Ruling 5181 (2002) requires additional study to estimate the amount of groundwater available from Tule Desert Groundwater Basin, recharge to the area, and the direction of groundwater flow. Groundwater modeling is currently being performed by the National Park Service to evaluate the regional flow systems in the area and to determine if cumulative pumping in the region would influence spring flows in the Virgin River Hydrographic Area.

As discussed in the previous paragraphs, in the absence of conservation and mitigation measures, groundwater development in the cumulative impact area could potentially affect flow rates in the Muddy River System. However, several rulings and agreements were drafted to protect the flows at Muddy River Springs. These rulings are presented in **Appendix A** and include:

- Nevada State Engineer Order 1169 (described in Section 4.20.3.3.5) which relates to groundwater applications in several adjacent groundwater basins, including Coyote

Spring Valley, and holds various permits in abeyance pending the completion of a study of the regional carbonate aquifer system. Order 1169 requires major groundwater rights holders in the Coyote Spring Valley Basin to participate in a 5-year study to provide information on the effects of pumping existing permitted water rights in Coyote Springs Valley. These right holders include the Las Vegas Valley Water District, SNWA, CSI, Nevada Power Company and the Moapa Valley Water District. Signatory agencies for Order 1169 include BLM, Bureau of Indian Affairs, USFWS and the National Park Service.

- The Stipulation Agreement between the LCWD and USFWS (described in Section 1.4.2) agrees to cooperatively manage the development of LCWD water rights in the Kane Springs Valley Hydrographic Area including reduction or cessation of pumping if specified spring flow trigger levels at Muddy River Springs are reached.
- The MOA (as described above and in Section 4.20.3.3.9) agreement among SNWA, CSI, Moapa Valley Water District and USFWS requires the reduction or cessation of pumping if specified spring flow trigger levels are reached.

The above listed conservation measures would prevent any adverse cumulative impacts to Muddy River Springs flows. Even though BLM is not a legal party to the latter two agreements, BLM will continue to coordinate with LCWD, major groundwater rights holders and other agencies in the cumulative impact area to ensure that the groundwater development would not adversely impact the flows at Muddy River Springs.

#### **4.20.4.3 Vegetation Resources**

The cumulative resource analysis area for vegetation includes all projects occurring within the Mormon Mesa Critical Habitat Unit. Ten of the 14 interrelated projects are located within the Mormon Mesa Critical Habitat Unit. Cumulative impacts on vegetation resources are generally additive and proportionate to the amount of ground disturbance within specific habitat areas. Both Lincoln County and the developers of the CSI development area are preparing separate Habitat Conservation Plans that would address cumulative effects on biological resources for development and construction activities within Lincoln County and CSI lands. The Southeastern Lincoln County Habitat Conservation Plan and the CSI MSHCP would address sensitive and protected biological resources on private and public lands in Lincoln County. In addition, the BLM and USFWS are responsible for the management of critical and sensitive habitats under their jurisdiction. Through a cooperative agreement, the federal, state and local agencies are working to ensure conformance of any action that would impact the biological viability of the region.

Construction of the interrelated projects analyzed in this DEIS would result in the loss of native vegetation, potential loss of special status species, and the increased potential for the spread of invasive and noxious weeds. For projects located on federal lands, specific mitigation measures to minimize these impacts would be a requirement of their approval. Projects located on private lands would be subject to either the approved Lincoln County Habitat Conservation Plan or the CSI MSHCP.

Cumulative impacts of groundwater pumping on vegetation resources include potential impacts to riparian vegetation in the Muddy Springs area. These potential effects are offset, however, by the conservation commitments, such as the LCWD Stipulation Agreement with the USFWS, and others described in Section 4.20.4.2 – Water Resources. While BLM does not have the authority to mandate certain monitoring and mitigation strategies, they would work collaboratively with other agencies under existing agreements to ensure there would be no cumulative impacts from the Proposed Action or that actions would be taken to minimize/mitigate cumulative impacts.

#### **4.20.4.4 Wildlife Resources**

The cumulative resource analysis area for wildlife resources is the Mormon Mesa Critical Habitat Unit. Ten of the 14 interrelated projects are located within the Mormon Mesa Critical Habitat Unit. As described in the previous section, cumulative impacts on biological resources are generally additive and proportionate to the amount of ground disturbance within specific habitat areas. The Lincoln County Habitat Conservation Plan and CSI MSHCP would address sensitive and protected wildlife resources on private and public lands in Lincoln County.

Potential cumulative impacts from construction of interrelated projects analyzed in this DEIS include loss and fragmentation of wildlife habitat and disturbance to special status wildlife species. Because impacts to sensitive biological resources are regulated by the USFWS, NDOW and other resource management agencies, potential impacts resulting from project development would require consultation with responsible agencies and implementation of mitigation measures. The evaluation of project impacts would take into account the cumulative nature of impacts to wildlife resources through loss of habitat, severance of wildlife corridors and disturbance by human activities. Implementation of mitigation measures for impacts to these resources would be required for each project as a condition of approval. Specific estimates of impact acreages to wildlife species resulting from cumulative actions within the Mormon Mesa Critical Habitat Unit were not estimated due to the dynamic nature of the projects involved as well as a lack of information with an appropriate level of detail.

The following section addresses potential cumulative impacts to sensitive species known to occur in the ROI.

##### *4.20.4.4.1 Desert Tortoise*

Interrelated projects that could have cumulative effects on desert tortoise include those which would be developed within desert tortoise critical habitat, which includes portions of southern Lincoln County and northern Clark County. As such, development activities in southern Lincoln County would be subject to the applicable MSHCP and would require consultation with the appropriate resource management agency (BLM, USFWS NDOW) to implement site-specific desert tortoise protection measures. For projects on federal lands, any disturbance would be required to undergo consultation under Section 7 of the ESA. Projects on private lands would undergo Section 10 or Section 7 consultation as appropriate. Specific acreages of impact to desert tortoise critical habitat resulting from cumulative actions within the Mormon Mesa Critical Habitat Unit were not calculated due to the dynamic nature of the projects involved as well as a lack of information with an appropriate level of detail.

#### *4.20.4.4.2 Special Status Species*

Construction of the interrelated projects analyzed in this DEIS would result in the loss of habitat occupied by special status species including the western burrowing owl, the banded Gila monster and the chuckwalla. Cumulative loss of wildlife habitat in the region would affect the special status species that utilize that habitat. For projects located on federal lands, specific mitigation measures to minimize these impacts would be a requirement of their approval. Projects located on private lands would be subject to either the Southeastern Lincoln County Habitat Conservation Plan or CSI MSHCP.

Cumulative groundwater pumping could affect habitat for special status fish and aquatic species or special status species that rely on riparian habitats in the Muddy Springs area. These potential effects are offset, however, by the conservation commitments, such as the LCWD Stipulation Agreement with the USFWS, and others described in Section 4.20.4.2 – Water Resources. While BLM does not have the authority to mandate certain monitoring and mitigation strategies, they would work collaboratively with other agencies under existing agreements to ensure there would be no cumulative impacts from the Proposed Action. The cumulative effect of these projects should be no greater than the individual effect of the Proposed Action. The conservation measures identified under the MOA for the Moapa dace, including the additional flows from the dedication of the Jones Spring water right and the restoration of habitat, would improve habitat conditions for these species.

#### *4.20.4.4.3 Migratory Birds*

Construction of the interrelated projects analyzed in this DEIS has the potential to disturb or destroy migratory bird nests and fledglings. In addition, the proliferation of overhead transmission lines in the region increases the potential for transmission line collisions and electrocution to migratory birds. For projects located on federal lands, specific mitigation measures to minimize these impacts would be a requirement of their approval. Projects located on private lands would be subject to either the Southeastern Lincoln County Habitat Conservation Plan or CSI MSHCP.

#### **4.20.4.5 Land Use**

The cumulative resource ROI for land use is the southern portion of Lincoln County from Alamo to the southern extent of the CSI development area, which extends to SR 168 in Clark County, and the LCLA area. RFFAs evaluated for land use include the LCCRDA, CSI development in Lincoln and northern Clark Counties, the sale and build out of the Alamo land disposal area, the build out of the LCLA area in southeastern Lincoln County, the transmission line projects proposed to be constructed within the permitted SWIP corridor, and the 500 kV transmission line associated with the Ely Energy Center.

Because most private lands within Lincoln County are located adjacent to or near federal lands, it is anticipated that future development would likely affect land use on both private and public lands. Approximately 29,000 acres of privately owned land would be converted from uninhabited desert space to multi-use residential/commercial uses in the CSI area. The LCLA development area would convert approximately 13,000 acres of privately owned land with similar habitat to multi-use residential/commercial uses in southeastern Lincoln County. Both

the CSI and LCLA developments are expected to occur over a 30- to 50-year period. Nearly 850 acres near Alamo would be converted to residential/commercial as early as 2008.

The electric transmission projects proposed by LS Energy, LCPD and SNWA within the permitted SWIP corridor, in addition to the electric transmission projects within the 2,640-foot wide LCCRDA along Kane Springs Road, would increase the density of utility-related land use in the area. Collectively, these projects would have a cumulative impact on future land use in Lincoln County. Increased population and economic growth would likely result in an increased number of projects on adjacent federal lands including water development projects, recreation and non-recreation special uses, utility corridors and infrastructure, road improvements, travel management plans, rangeland management and grazing, and additional recreation/tourism facilities. Any future action on federal land would require compliance with applicable federal laws and regulations.

Lincoln County planning agencies, in cooperation with federal resource managers (e.g., BLM, USFWS Corps) and newly formed municipal agencies (e.g., CSI GID, LCLA GIDs), would be responsible for long-range planning of future development and resource management within Lincoln County.

#### **4.20.4.6 Areas of Critical Environmental Concern**

The cumulative impact analysis area for ACECs includes the Kane Springs ACEC. Cumulative impacts to ACECs would occur from the Proposed Action and other planned projects within the ACEC. These RFFAs include the actions associated with the implementation of LCCRDA including the Proposed Action, the Clark, Lincoln, and White Pine Counties Groundwater Development Project, the construction of the 500 kV transmission line associated with the Ely Energy Center, the build out of the CSI development in Lincoln County, and the LS Power transmission line in the SWIP corridor.

The Kane Springs ACEC currently contains 65,900 acres of public lands. The primary resource value of the ACEC is the protection of desert tortoise critical habitat. As described in section 4.20.4.4 – Wildlife Resources, the interrelated projects would have a cumulative effect on desert tortoise and their habitat. All development activities within the ACEC require consultation with resource management agencies including BLM, USFWS, NDOW, Lincoln County Planning Department and the local GID to implement site-specific desert tortoise protection measures in their development plans. For projects on federal lands, any disturbance would be required to undergo consultation under Section 7 or Section 10 of the ESA and implement reasonable and prudent measures to minimize take of desert tortoise.

#### **4.20.4.7 Visual Resources**

The cumulative impact ROI includes the project area and areas that would be affected by the Proposed Action or Alternative 1 that would be visible from off-site viewpoints. Potential cumulative impacts to visual resources would result from other planned or foreseeable development activities which are planned to occur within the ROI.

Historically, the project area has been managed for grazing and recreational use. Other management activities that have occurred within the ROI include road construction, water

development facilities, power lines and utility corridors (water and gas lines). Concurrent management activities, which are taking place at the present time, are a continuation of existing uses.

RFFAs that would be located in the cumulative impacts ROI include a 500 kV transmission line proposed by Nevada Power along Kane Springs Road (Ely Energy Center Project), five electric transmission projects, and one water pipeline project along the permitted SWIP corridor west of Highway 93. If approved, the 500 kV transmission line proposed by Nevada Power would be located within the 2,640-foot wide LCCRDA corridor and would be the dominant human element within the corridor once it has been installed. The cumulative effect of these projects would be an increase in the number of electric transmission facilities that are visible from Highway 93.

Under BLM management in the current Caliente MFP, the LCCRDA corridor is located on lands managed under VRM Class III. The objective of VRM Class III is to provide for management activities that may contrast with the basic landscape elements but remain subordinate to the existing landscape character. The nearby Delamar Mountains and Meadow Valley Range Wildernesses are managed under VRM Class I objectives.

With the passage of LCCRDA, the VRM Class has changed to VRM Class IV. VRM Class IV objectives provide for management activities which require major modification of the existing character of the landscape. The Proposed Action, in addition to RFFAs within the cumulative impact ROI, would increase the visual impacts within the project area. Design and visual impacts of future development activities within the cumulative impact ROI would be regulated by the BLM on federal lands and Lincoln County or the local GID on private lands.

#### **4.20.4.8 Socioeconomics**

The cumulative impact ROI for social and economic resources encompasses Lincoln and Clark Counties.

The cumulative effects of past, ongoing and reasonably foreseeable future activities in and near communities to the social and economic structure of Lincoln and Clark Counties would be substantial; moreso for Lincoln County than Clark County because Lincoln County's population is so small compared to that of Clark County. Some social conflict and lifestyle changes are unavoidable as the long-term residential and commercial developments expand over much of the available private land in the counties. Construction and operation of the Proposed Action or Alternative 1 would supply a small, but initially substantial, portion of the total water requirements for the CSI development projects in Lincoln County. Development of CSI does not depend on the KSV project because CSI has its own permitted groundwater rights, and it would be constructed regardless of the approval of the KSV ROW. The indirect effect of the withdrawal and transport of groundwater by itself would not have growth-inducing effects and other effects related to induced changes in the pattern of land use, changes to population density or growth rate. There would be no cumulative effects from construction, operation and maintenance of the Proposed Action when combined with other past, present and reasonably foreseeable future actions because those effects would occur with or without Proposed Action. The Proposed Action would have no additive and significant relationship to those effects.

Other planned and foreseeable projects with a potential effect to the social and economic structure of Lincoln and Clark Counties are being developed in response to the rapidly growing population and economy of Las Vegas and the surrounding metropolitan area. Community services and infrastructure would need to be increased as a result of ongoing residential and commercial development in the region to keep pace with the growing population and economy of the area.

#### **4.20.5 Other Actions Not Analyzed**

The Draft RMP/EIS for the Ely District describes construction of a road from Caliente to Mesquite and paving of Kane Springs Road as RFFAs. There are multiple dirt roads between Caliente and Mesquite. These roads, along with the Kane Spring Road, are located on lands managed by both the BLM and Lincoln County. According to the Lincoln County Planning Department, the county has not allocated funds, nor do they anticipate future funding for these actions (Dixon 2006). There is anecdotal discussion about widening of Highway 93 between I-15 and Ely; however, at this time, the NDOT has not included this action in any regional transportation plan.

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