Chapter 3. Affected Environment and Environmental Consequences

This chapter summarizes the physical, biological, social and economic environments of the project area and the effects of implementing each alternative on that environment. It also presents the scientific and analytical basis for the comparison of alternatives presented in the alternatives chapter. This chapter shows the present condition (i.e., affected environment) within the analysis area and the changes that can be expected from implementing the action alternatives or taking no action at this time. The No Action Alternative sets the environmental baseline for comparing effects of the action alternatives.

The significant issues (see Chapter 1) help define the scope of the environmental concern for this analysis. The environmental effects (changes from present baseline condition) that are described in this chapter address the significant issues identified through the public involvement process.

Specialists have taken the quantitative data for each of the measures listed in Chapters 1 and 2, as well as other qualitative measures, and used them to help describe the affected environment and the alternatives. These measures were also used to evaluate direct, indirect and cumulative impacts.

Note: Environmental effects are estimated with the assumption that all mitigation measures listed in Chapter 2, Table 5 would be implemented. Special reference to a mitigation listed in Table 5 is made with (MM No.). Mitigation measures specific to an alternative are included in the resource discussion to which it is related.

Soil and Water 3/

Affected Environment

The alternatives and option are within the Ojo Caliente and Aguaje de la Petaca 5th code watersheds. These watersheds are very large and analysis at such a scale would not put the alternatives in proper context. Instead, cumulative effects on soils and water will be evaluated at the next lower watershed level. Seven 6^{th} code watersheds overlap the alternatives and the option (Figure 11). A 14-digit Hydrologic Unit Code (HUC) is used to differentiate each watershed. For ease of discussion, a number from 1 to 7 has been assigned to each. Table 7 lists the watersheds with their HUC, analysis number, size in acres and which alternatives they overlap. The watershed area noted for each alternative is the land area used to study cumulative effects for that alternative or the cumulative effects area.

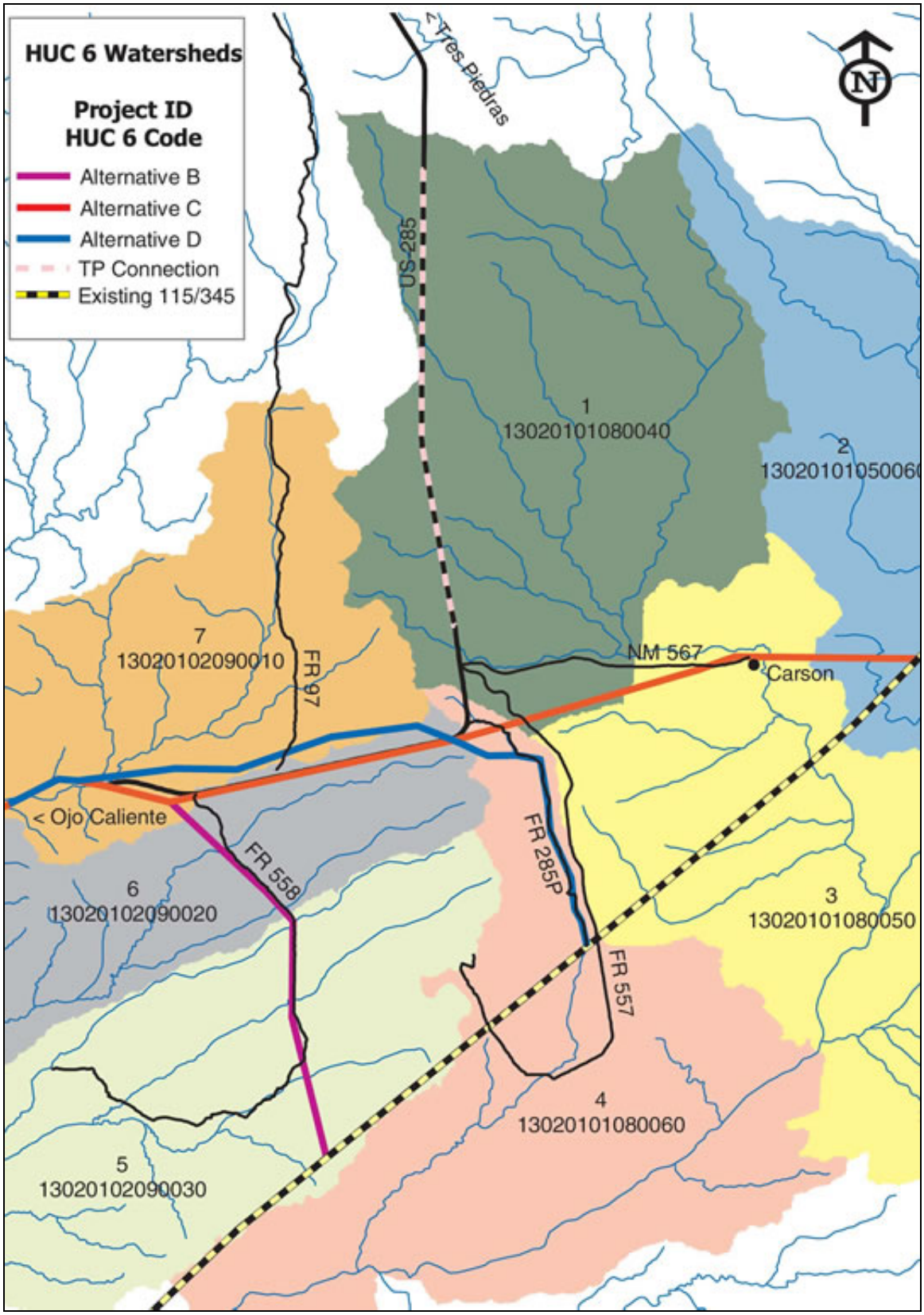

Figure 11. Sixth code watersheds used in cumulative effects analysis.

Table 7. Watersheds used for soil and water cumulative effects analysis by alternative

HUC	Analysis No.	Alternative			Option (acres)
		B (acres)	C (acres)	D (acres)	
13020101080040	1	---	33,610	---	33,610
13020101050060	2	---	29,647	---	---
13020101080050	3	---	39,502	---	---
13020101080060	4	---	30,170	30,170	---
13020102090030	5	40,098	---	---	---
13020102090020	6	26,965	26,965	26,965	---
13020102090010	7	34,284	34,284	34,284	---
Total Area		**101,347**	**194,178**	**91,419**	**33,610**

The general landform of all the watersheds is a gentle sloping plain declining either to the east toward the Rio Grande Gorge or to the west toward the Rio Ojo Caliente. The area is bisected by intermittent drainages, deeply cut localized arroyos, and high points such as Cerro Azul or Mesa Vibora. The north-facing slopes generally have subtle changes in vegetation indicating changes in moisture and slight changes in temperature.

Since perennial streams or watercourses are absent in most of the study area, it lacks riparian vegetation. The Aguaje de la Petaca crosses the existing power line in the Carson area. La Petaca contains some riparian, but this vegetation type is found up the arroyo outside the study area. Other drainage bottoms tend to be fairly flat with deep alluvial soils.

The Rio Ojo Caliente and the Rio Grande are the only perennial streams within any of seven watersheds. The Ojo Caliente flows through watersheds 5, 6 and 7. It is identified in the State of New Mexico's 2002-2004 §303(d) List for Assessed River/Stream Reaches Requiring Total Maximum Daily Loads (TMDLs) (commonly known as the "303(d) list") in 2002 (http://www.nmenv.state.nm.us/swqb/ 2002-2004_Draft_NM_CWA_303d_List.pdf). [276] This list directly assessed the Rio Ojo Caliente (from the mouth of the Rio Chama to the confluence of the Rio Vallecitos and Rio Tusas) as "Partially Supporting" the designated or attainable use of a "Warm Water Fishery." Probable causes of nonsupport are stream bottom deposits. The probable sources of nonsupport are: (1) removal of riparian vegetation; (2) recreation (recreational activities); (3) range grazing (riparian and/or upland); (4) natural sources; (5) irrigated crop production; (6) hydromodification (water diversions); (7) habitat modification (other than hydromodification); (8) grazing related sources; (9) crop-related sources; (10) channelization; (11) streambank modification/destabilization; and (12) agriculture.

The Rio Grande flows through watersheds 2 and 3. Only Alternative C, which is the existing corridor, could have any effect to watershed conditions in these two watersheds. The 303(d) assessment identifies the San Juan Pueblo to the Rio Pueblo de Taos as "Not Supporting" the designated or attainable use of either a "Warm Water Fishery" or "Marginal Cold Water Fishery." The probable cause of impairment is turbidity, and the probable sources are: (1) removal of riparian vegetation; (2) range grazing (riparian and/or upland); (3) irrigated crop production; (4) habitat modification (other than hydromodification); (5) grazing related sources; (6) crop-related sources; and (7) agriculture. No other water quality information is available for the ephemeral drainages within the other watersheds.

Since watershed condition is directly related to the condition of and effects on soils within a watershed, this analysis will focus on the amount of surface soil disturbance generated by each of the alternatives and the option. A discussion of the effects of this ground based disturbance on water quality relative to constructing a substation and 2 miles of transmission line construction near the Rio Ojo Caliente will be included in this analysis. The evaluation considerations for soils is described in the following paragraphs.

Soil Erosion

Soil erosion occurs naturally, but can be accelerated by management activities or natural disturbance agents that reduce or remove vegetative ground cover and canopy cover or both. Other site factors influencing erosion rates include the presence and amount of rock fragments, the susceptibility of the surface soil to erosion, and local topography. The amount of vegetative ground cover (vegetation and litter) for a soil unit can be proportional to its soil loss. Those that sustain low levels of ground cover are more susceptible to erosion (with the exception of rock).

Sources of accelerated erosion rates associated with the installation of a linear power line are the development of a two-track route to accommodate construction and maintenance vehicles in the utility corridor and a cleared area around each of the pole sites. Accelerated soil erosion can directly affect the long-term productivity of the site by removal or displacement of the “surface A horizon” which is typically rich in organic matter and serves as the source of much biologic activity that enables these organic inputs to be recycled and returned to the soil profile for plant use.

Sheet and rill erosion is the estimated rate of annual soil loss as predicted by a model called the Universal Soil Loss Equation. Erosion hazard is predicted on the basis of relative susceptibility to erosion upon removal of vegetation and litter. Soil loss rates are useful as an index, thus are not considered absolute values. Tolerance is the maximum rate of soil loss that can occur while sustaining inherent site productivity. Soils with current erosion rates that exceed their tolerance rates are considered unstable or erosive and can be sensitive to disturbance. Such soils tend to move during rainfall events or, if denuded, tend to move with wind events.

Revegetation potential refers to the probable success and ease in establishment of native grasses and improving the ground cover. This rating is influenced by climate, kinds of soils and terrain. Soils with a “high” rating offer the best opportunity for successful revegetation. A “low” or “moderate” rating points to potential problems for an area, where mitigation measures should be considered.

Soil Compaction

Compaction of the surface or subsurface soil layers results in a decrease in soil porosity and increase in soil bulk density. The most common source of soil compaction associated with the construction of a linear power line is the result of forces such as weight or vibration applied to the soil surface by heavy machinery. Long-term direct impacts of soil compaction can include reduced vegetation growth due to reduced water supply in the root zone. Other direct impacts include reduced infiltration of water and increased surface runoff. Indirect effects resulting from soil compaction can be increased erosion losses resulting from a lack of vegetation ground cover and an increase in surface runoff.

As a measure of potential compaction from the alternatives, the risk of soil damage resulting from compaction is proportional to the number of acres of disturbed soils with moderate to severe limitations due to low bearing strength. Unsurfaced road limitations pertain to the use of soils in place for roads. With regard to unsurfaced roads, a severe rating indicates low bearing strength. This is the evaluation criterion to assess the risk of compaction damage that may occur from the use of a two-track route by construction and maintenance vehicles in the utility corridor and heavy machinery around each of the pole sites. This can also result in indirect effects of additional contribution of sediment delivery during significant runoff events.

Organic Matter Removal

Loss of onsite organic matter would most likely occur by removing vegetation during pole installation and line pulling. Organic matter consists of humus, litter and all sizes of dead woody material, which reside on or partially within the surface soil layer. These materials are important because they serve as a base for insect and microbial activity, increase infiltration of water into the soil profile, improve porosity and aeration of the soil, retain moisture and serve as microsites for seedling establishment, and are a reservoir of short- and long-term nutrient supply (Harvey et al. 1981). Since each size class of organic matter performs a different function in maintaining long-term site productivity, the desired arrangement is a balanced distribution of small, medium and large size classes of materials.

The proposed activities of pole installation and the creation of temporary access routes to the pole sites would remove organic matter. However, the impacts would be relatively minor compared to the amount and duration of other activities in the area, particularly off-road vehicle use for firewood gathering and recreation. The existing road system reflects the amount of use it receives in the past. The excessive mortality of piñon trees in the area may encourage firewood gatherers, however, the Forest Service is not likely to encourage this activity. The evaluation of potential effects of each alternative on organic matter removal is based on the amount of new access created for firewood gatherers and recreationists.

Long-Term Soil Productivity

The evaluation of effects of proposed activities on long-term soil productivity involves the evaluation of potential effects of soil erosion losses, soil compaction and removal of organic matter from the site. Literature reviews on forest soils indicate that organic matter removal and soil compaction were the factors most often associated with productivity decline (Alban 1991 and Powers et al. 1990).

The potential to cause damage to long-term soil productivity is difficult to assess directly. It is more likely that an evaluation of potential effects from soil erosion, soil compaction and organic matter removal in the short term (less than 5 years) and the likelihood these effects could persist for a period of time greater than 5 years is the most reasonable means of making this assessment.

Terrestrial Ecosystem Survey

Soils within the study area have been mapped using the Terrestrial Ecosystem Survey (TES) for the Carson National Forest. [6] Soils on lands administered by BLM are mapped using Taos County soil survey data. The TES contains information that is intended for use in land use planning and management on the Carson National Forest. For consistency in analysis, TES data

has been extrapolated to reflect similar conditions found on BLM (and private) as those on national forest. This was done by on-the-ground evaluations and comparing information from the Soil Survey Taos County [9]. This is limited to the areas within alternatives where direct effects of construction might occur.

TES provides predictions for suitability, limitations and hazards of soil and vegetation behavior for selected land uses. The TES also highlights hazards or capabilities inherent in the soils and geology, and aids in determining impacts of selected uses on the environment. It utilizes terminology that has been standardized to describe limitations and hazards associated with the physical and biological characteristics of the soil. The survey is intended to alert the land manager of certain risks associated with a proposed land use. For this analysis, the TES data is used to identify and compare existing soil conditions and determine effects.

TES data interprets map units for road capabilities based on slope, soil strength and drainage without additional surfacing. Potential for revegetation is an important consideration. The combination of various interpretations of survey information provides information on where best management practices (BMPs) or mitigation measures need to be applied, or what areas need to be avoided. Field observations of soil type responses to various activities are also important in evaluating interpretations and the range of limitation ratings.

The cumulative effects study area contains 33 different soil types or Terrestrial Ecosystem Units (TEU). Six soil types are directly or indirectly affected by the alternatives or the option. The vast majority of any alternative affects only TEU 3, 138 and 153. The option is entirely within TEU 142. Table 8 displays the interpretations for selected limitation ratings for the six affected soil types contained in the Terrestrial Ecosystem Survey data.

Table 8. Terrestrial ecosystem units in the Ojo Caliente transmission line study area

TEU	Per-cent Slope	Sheet/Rill Erosion	Erosion Ratio Tol:Cur	Current Ground Cover (%)	Revegetation Potential	Unsurfaced Roads
3	0-15	Slight-Moderate	6.7:0.5	35	High	Moderate
138	0-15	Slight	6.7:0.8	25	Low Too alkaline	Moderate
142	0-15	Moderate	6.7:1.7	35	High	Moderate
153	0-15	Slight	6.7:0.8	30	Low (sandy) High (loamy)	Slight
194	15-40	Severe*	6.7:15.0	15	Moderate	Moderate
268	0-40	Not interpreted	6.7:4.4	40	No interpretations	No interpretations

** A severe rating does not necessarily mean that management activities should be excluded from these areas. It is a caution used to consider or implement mitigation measures.*

Typically, no single rating should be used exclusive of others in an analysis. The combination of various interpretations are necessary to properly assess impacts, significance of certain actions, as

well as developing proper mitigation measures. Verification of what is actually happening on the ground provides site-specific information that has also been incorporated into this analysis.

Figure 12 shows the distribution of all the TES map units across the study area. TES data is relatively general and based on fairly gross mapping units. Various small inclusions describing differences in soil types, vegetation and slope are fairly common. Thus site-specific interpretations may vary somewhat from the general limitations listed in the handbook table. The following discussions of the terrestrial ecosystem units encountered by one or more alternatives provides some site-specific discussion. All of the following soil units contain multitaxa ecosystem components.

TEU 3. Soils in this unit are generally found in long, relatively narrow swales of sagebrush grasslands with scattered piñon-juniper. Slopes are relatively shallow. TEU 3 can be subject to damage by off-road vehicles and tends to drain moisture from adjacent areas. Its potential for sheet and rill erosion is slight to moderate. Potential for compaction is moderate. It has a high revegetation potential, which means seeding and other activities to increase ground cover following disturbance should be successful. TEU 3 has relatively high ground cover compared to the other soil types in the area. The exception to these properties occurs where convergence of drainages creates a dry wash.

Within the study area, Forest Road 285P runs almost the entire length of this soil type and shows little sign of erosion problems. Headcutting can be found in a couple of locations where roads climb steeper slopes to an adjacent soil type.

TEU 138. Soils in this unit are usually found on mildly rolling sagebrush grasslands. Within and just west of the community of Carson is the only area where this soil type would be affected by an alternative. Its potential for sheet and rill erosion is slight. Fairly high clay content in the subsoil may result in moderate compaction. Ground cover is rather sparse and the potential for natural revegetation is generally considered low, due to high levels of calcium carbonates in the soil. However, a number of locations within this unit have been plowed and revegetated with crested wheatgrass. The existing 25 kV line goes through this soil type near Carson, and the old road that runs underneath the line is barely visible from natural revegetation, indicating that revegetation is attainable. Existing roads on this soil type typically do not exhibit any excessive erosion.

TEU 142. Soils in this unit are typically found on gently rolling to flat terrain with a mosaic of piñon-juniper and sagebrush. The only location where TEU 142 would be affected is along U.S. 285 where the Tres Piedras Connection is proposed. Its potential for sheet and rill erosion and compaction is moderate and it responds to seeding with drought tolerant species. The southern portion of the existing distribution line coming south from Tres Piedras runs through TEU 142. Its corridor shows no signs of erosion or problems with revegetation.

TEU 153. Soils in this unit are found on slightly rolling elevated plains dominated by sagebrush and piñon-juniper. Varying from sandy to sandy loam, TEU 153 is the most common soil type within the study area. Its potential for sheet and rill erosion is slight. This soil’s sandy character explains why it is not very fertile and has little water holding capacity. The potential for compaction is slight. Potential revegetation ranges from low to high. The extremely sandy soils are not very successful in revegetation. The less sandy soil textures have more soil properties

favorable for plant growth. The existing 25 kV line that runs along U.S. 285 is in TEU 153. The soils have more of a loamy character; therefore, revegetation along the corridor is high.

TEU 194. Soils in this unit are similar to TEU 153, but are steeper and more sparsely wooded, mainly with junipers. Only a very small portion of this soil type is affected by an action alternative. It has a relatively high fertility. Production potential is limited only by lack of soil moisture during the growing season. Its potential for sheet and rill erosion is considered severe. Current soil loss exceeds tolerance and ground cover is low. The potential for compaction is moderate. Even though this soil type has a moderate revegetation potential, maintaining adequate vegetation cover should be stressed to minimize soil loss.

TEU 268. Soils in this unit consist of multitaxa terrestrial ecosystem components. Components occur on an intricate pattern and are not separable. It is normally found on plains and hills, moderate slopes. Like TEU 194, only a small portion of this soil type is affected by two of the alternatives. It occurs where U.S. 285 turns sharply, where the eastern plain breaks off the Comanche Rim to the west. A pair of gravel pits sit on the south side of the highway in this unit. Revegetation potential is typically low, likely due to rocky conditions, however the high rock content makes the site fairly durable and reduces likelihood of vehicular damage.

Biological Soil Crusts (Cryptogams)

Biological soil crusts are also known as cryptogamic, microbiotic, cryptobiotic and cirophytic crusts. Each of these names is meant to indicate common features of the organisms that compose the crusts. Biological crust is the most inclusive term as it distinguishes them from physical crusts while not limiting crust components to plants.

Living organisms and their byproducts, creating a crust of soil particles bound together by organic materials, form biological crusts. These crusts generally cover soil spaces not occupied by vascular plants. Biological soil crusts serve several ecological functions. Not all inclusive, crusts aid in soil stability, water infiltration, and plant health, and may affect plant germination.

Biological soil crusts are well adapted to severe growing conditions and are commonly found in semiarid or arid environments. If disturbed, soil crusts can have visual recovery in 1 to 5 years. Limiting the size of disturbance also increases the rate of recovery.

Past, Present and Reasonably Foreseeable Activities

The cumulative effects area for this analysis has had some type of human use for thousands of years. Cultural resource sites have been located throughout the area near Ojo Caliente and along the Comanche Rim. In addition to prehistoric sites, evidence of historic settlement and abandoned railroad grades exist. Present, historic and prehistoric uses include hunting, farming, removal of firewood, fence posts, collection of piñon nuts and other plant material for foodstuffs, and both domestic sheep and cattle grazing.

Historic, prehistoric, and recent use by humans, and natural events, including insect and disease occurrence, have all contributed to the current ground cover conditions. Climatic conditions, wet and drought cycles have also altered the condition. During wetter periods, tree numbers increase and grass cover decreases. During drought, tree numbers decrease and grass cover increases.

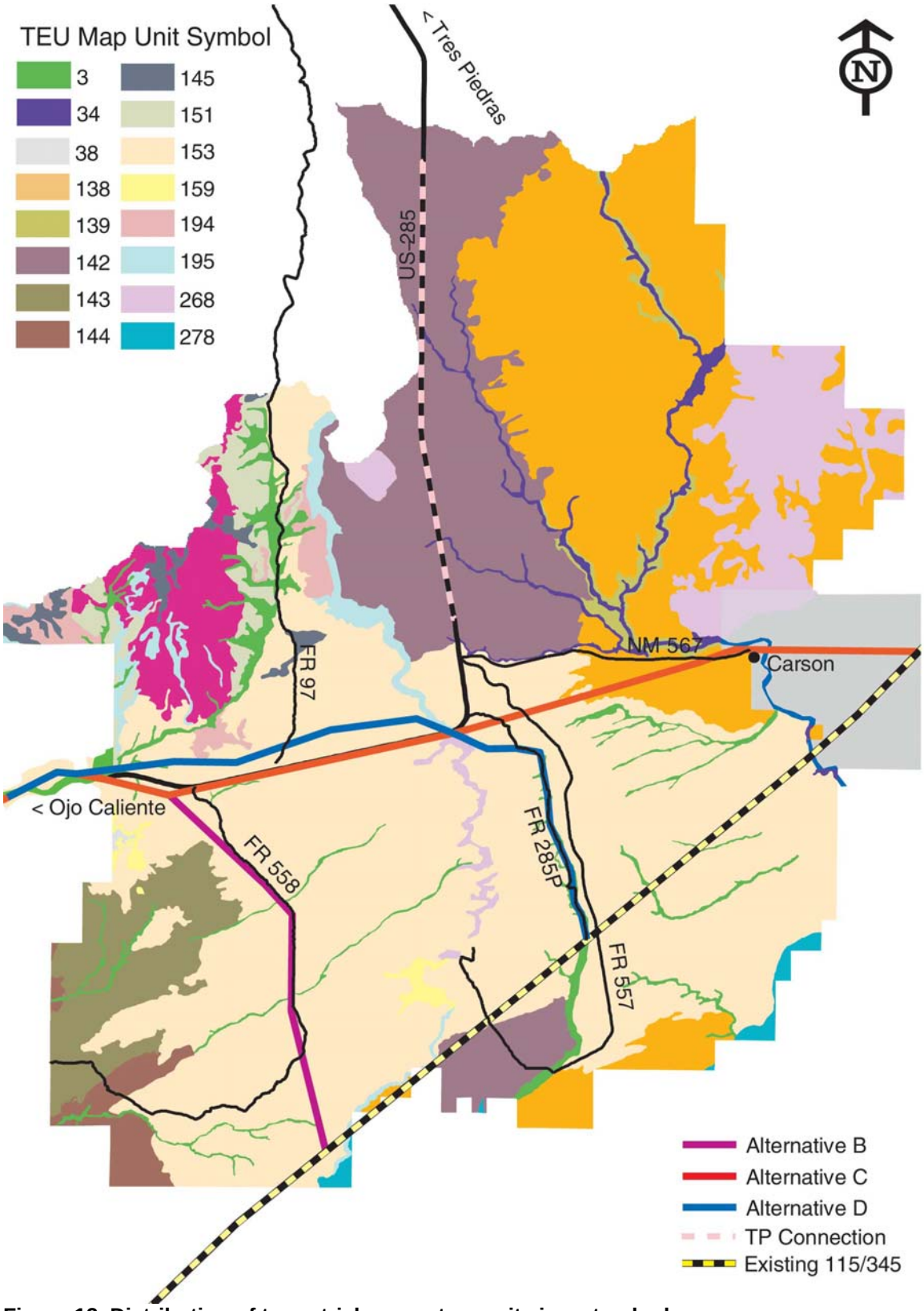

Figure 12. Distribution of terrestrial ecosystem units in watersheds.

Over the last 75 years, various activities requiring the use of motorized vehicles have historically occurred in the area. Almost 47 miles of paved highway (U.S. 285 and NM 567) run through the study area and a considerable network of 620 miles of unpaved roads also exist. The Carson National Forest Land and Resource Management Plan (hereafter, the forest plan) designates areas on the Forest where use of vehicles off of designated roads is restricted. National Forest System lands within the study area are open to off-road vehicle travel. Public access to and around any of the alternative utility corridors is basically unlimited. Motorized travel is restricted on BLM lands to existing roads and trails.

Current uses include open road and off-road use for firewood cutting and recreation. All terrain vehicle (ATV) activity is increasing and it is not uncommon to find closed roads in the area being reopened by ATV users. This reduces vegetation cover and can increase sediment yield from road surfaces.

The study area has been experiencing a drought for the past 5 years. Climatic conditions also play an important part in grazing management and watershed conditions. A species of *Ips* beetle outbreak in 2002 and 2003 has killed and continues to kill many of the piñon pine trees in the vicinity of the alternative power line locations. In the lower elevations nearer to Ojo Caliente the mortality on piñon is approaching 100 percent.

Livestock grazing takes place on two grazing allotments on the national forest (TCLP and Cerro Azul) and one on BLM (505 Ojo Caliente). The current cattle permits are valid and grazing is expected to continue for the next 10 years at the same or reduced levels.

The cumulative effects area includes the utility corridor that contains two power lines—a 345 kV and a 115 kV. In addition, a 25 kV line runs through Carson to Ojo Caliente. The presence of these lines provides a fairly accurate prediction of what the effects would be if one of the action alternatives or the option were implemented. The effects of these lines will be included in the cumulative effects analysis for Alternatives B-D and the Option.

Private lands within the study area are concentrated either outside of the national forest boundary or scattered close to Ojo Caliente. Several parcels of private land have distribution lines to the property. The properties near Ojo Caliente have a power line accessing the existing line and crossing U.S. 285. There is only one parcel south of U.S. 285 where there might be a foreseeable need to extend the current lines across National Forest System lands to access other private lands.

Environmental Consequences

The activities proposed in the action alternatives that would affect soils in the project area are those that cause ground disturbance and compaction (contouring, clearing, vehicle use, etc.) and/or the temporary or permanent removal of vegetation cover. These activities include: transport and installation of power poles; line pulling; periodic maintenance of the completed system; and construction and permanent installation of a substation.

By examining the existing electrical lines and their corridors in the area and on the same soil types, the impacts of a similar proposal are fairly obvious. In areas where access was restricted to construction and maintenance, the environmental effects are minor. Although an old access way may be visible, it has for the most part stabilized and revegetated. These types of impacts on soils and watershed are considered short term.

Where access ways to existing lines remain in use, the effects of a typical backcountry two-track road are apparent. Depending on the location and soil type, these effects are generally compaction and some erosion in the roadbed. The most noteworthy effects on soils would be where new access is required by an alternative and that access way becomes part of long-term use, or a permanent two-track road.

Access to pole locations, preparation of pole sites, line pulling and line maintenance would require the use of vehicles or equipment. It is essential, especially with soils with a severe erosion rating, that revegetation or other mitigation measures take place where soil disturbance occurs. Road or other vehicle access should be limited in order for disturbed areas to recover to natural ground cover. The following table shows what soil types would be affected by either the development of pole locations, or vehicle/equipment use along the entire length of the line or both.

Use of existing National Forest System and BLM roads and existing two-track roads for pole location, line stringing and maintenance would be encouraged under any of the action alternatives (MM SW3, SW5, SW6).

Table 9. Terrestrial ecosystem units affected by any action alternative

TEU	Ownership	Alternative				Option
		A	B	C	D	
3	FS	Not affected	Line access	Line access	Pole location Line access	Not affected
	BLM	Not affected	Pole location Line access	Pole location Line access	Pole location Line access	Not affected
138	FS/Private	Not affected	Not affected	Pole location Line access	Not affected	Pole location Line access
142	FS/Private/ State	Not affected	Not affected	Not affected	Not affected	Pole location Line access
153	FS/BLM/ Private	Not affected	Pole location Line access	Pole location Line access	Pole location Line access	Not affected
194	FS	Not affected	Not affected	Not affected	Mitigate if disturbed	Not affected
268	FS	Not affected	Not affected	Possible pole location	Possible pole location	Not affected

Table 10 displays how much of the line proposed in each alternative would cross through a particular Terrestrial Ecosystem Unit. This table is used to estimate how much ground disturbance would take place related to the development of pole locations and/or vehicle/equipment use. Adjacent BLM and private lands soil types have been evaluated and appropriate TES units assigned to allow for consistent evaluation.

Table 10. Miles of transmission/distribution line through each terrestrial ecosystem unit

TEU	Ownership	Alternative				Option
		A	B	C	D	
3	FS	Trace	0.2	Trace	4.4	0
	BLM	1.0	1.0	1.0	1.0	0
138	FS	2.8	0	2.8	0	0
	Private	2.7	0	2.7	0	0
142	FS	0	0	0	0	7.0
	Private/State	0	0	0	0	0.5
153	FS	6.3	7.5	6.3	11.5	0
	BLM	1.0	1.0	1.0	1.0	0
	Private	1.4	0	1.4	0	0
194	FS	0	0	0	0.1	0
268	FS	0.4	0	0.4	0.5	0
Total		**15.6**	**9.7**	**15.6**	**18.5***	**7.5**

** Temporary disturbance that would be caused by removing the poles of the existing 25 kV line is included in the total acres for Alternative D.*

The following table displays the approximate number of acres of disturbance relative to pole placement and removal, as well as accessing the line.

Table 11. Potential disturbance (acres) from the establishment of new two-track construction access and area cleared for pole placement for each terrestrial ecosystem unit

TEU	Alternative							Option	
	A	B		C		D			
	Existing	Pole	Access	Pole	Access	Pole	Access	Pole	Access
3	0	0.2	2.2	0.2	1.8	1.0	9.7	---	---
138	0	---	---	1.1	9.9	---	---	---	---
142	0	---	---	---	---	---	---	2.6	13.5
153	0	1.6	15.3	1.7	15.7	2.4	22.5	---	---
194	0	---	---	---	---	---	---	---	---
268	0	---	---	0.1	---	0.1	---	---	---

Each pole is approximately 24 inches in diameter at ground level. Removal of trees and vegetation at pole locations would be limited to the actual hole and room for maneuvering machinery assumed to be a 30-foot diameter circle (707 square feet or 0.016 acres). Acres cleared for poles are calculated by multiplying 0.016 acres x 12 poles (.192 ac/mi). Due to the effects of a treated pole in the ground, one can expect that a couple of feet diameter around the pole would remain permanently devoid of vegetation. The disturbed area beyond that is expected to regenerate vegetation with reseeding (MM SW10 and SW11).

It is estimated that a two-track route with an average width of 15 feet would be established or reestablished the entire length of the line for construction and maintenance. The area of disturbance is calculated with the assumption that an area 15 feet wide within the line corridor would be affected by vehicle or equipment use or 1.8 acres per mile. In determining where the two-track route should be located, trees would be avoided to the extent possible. The actual location of the line and poles in the utility corridor would keep the power line cables above tree height. For the most part, access to the utility corridor can be made from an existing road. Transport of poles or other equipment can then be made along the two-track utility corridor. However, there may be instances where it may be necessary to create additional access from an existing road to the two-track. This type of access will be kept to an absolute minimum (MM SW6).

Development of the proposed substation on BLM lands is also common to all action alternatives. The substation would require vegetation removal, leveling and hardened surfacing (graveling) of approximately 1.5 acres. The site characteristics are generally consistent to those found on TEU 153, but on the sandy range of conditions. The existing conditions of the nearest drainage include a situation of relatively frequent vehicle access and some heavy equipment use. The drainage for approximately 250 yards above NM 111 has been channelized with earthen berms of unconsolidated channel bottom materials. The southern berm lies between the proposed substation area and the drainage.

Alternative A – No Action

This alternative maintains the current condition. The 25 kV line would continue to exist in its present location. There would be no construction of a 115 kV power line and no additional disturbance in the utility corridor above current disturbance. The existing 25 kV line is within several terrestrial ecosystem units that action alternatives would encounter. An evaluation of these soils and how they have responded to the installation, presence and maintenance of the existing line can support the analysis of effects for the alternatives that impact similar soil types.

The existing line goes through TEU 138, where the community of Carson is located. In the previous section, TEU 138 is described as having sparse ground cover and a low revegetation potential due to high alkalinity. However in the late 1960s, portions of TEU 138 were plowed and successfully reseeded with crested wheatgrass. In addition, the old road that runs underneath the line is quite stable having grown in with grasses and forbs and some sagebrush.

The existing line traverses over 7 miles, across National Forest System lands, a small portion of private land and onto BLM lands north of Ojo Caliente. Five and a half miles west of Carson, the existing line encounters TEU 153, the most common soil type within the study area. The existing line generally traverses this soil unit near NM 587 and then along U.S. 285. For the most part, TEU 153 in this area is characterized as more of a sandy loam, with good potential for revegetation unless extremely sandy. Near the microwave tower, a maintenance route is still used and the road is clear of vegetation. As expected, road compaction from vehicle travel is evident, but there are no signs of excessive erosion. Other portions to the west of the rim are largely obscured by vegetation.

Where U.S. 285 makes a 90-degree bend and drops off the rim, the road and existing line cross TEU 268. Two old borrow pits sit in the middle of this narrow TEU and are almost directly under the existing line. This soil type exhibits little effect from the existing line.

On BLM lands, there are 2.2 miles of existing roads that are in relatively close association with the existing 25 kV line that would continue to be used for inspection and maintenance. Approximately one-half mile is in drainage bottoms similar to TEU 3, and the remainder in TEU 153. The total disturbance area associated with the existing line, including existing roads and underline construction is estimated at 6.7 acres.

Alternative B – Black Mesa-Cerro Azul Tap

This alternative would tap into the existing 115 kV line 1.5 miles northeast of Black Mesa in TEU 153. In this particular area, there are inclusions of TEU 153 that are much sandier than up along U.S. 285. Several existing roads can be used to access the existing 115 kV line and the Alternative B route. Some of these roads currently exhibit head cutting and would need to be stabilized before heavy equipment can be driven on them. About 2 miles from the tap site, very sandy conditions may also make it difficult to drive along the utility corridor. Where vegetation is sparse, wind erosion has created small dune-like mounds. In this area, it is estimated that pole installation and the establishment of a corridor route would result in about 4 acres of ground disturbance. However, since the area is sparsely vegetated and sandy, impacts related to soil erosion, compaction and removal of organic matter would be minimal. The sandy nature of the soil would likely make revegetation of TEU 153 in this area difficult or spotty.

This alternative would continue through TEU 153 for another 6.5 miles, reaching U.S. 285 and traversing west along the highway onto BLM lands. Along this section, soil properties provide better conditions for plant growth, and sagebrush and piñon-juniper are very much in evidence. Forest Road 558 would be used to access the corridor off of U.S. 285. Its condition along this stretch appears to be more stable than to the south. A little over an acre (1.25 ac.) would be cleared for pole placement. A 6.5-mile two-track road under the line would disturb a maximum of 13 acres. The short-term effects of vegetation removal and compaction would be greater than the southern portion of TEU 153. With shallow slope conditions and good surrounding vegetation cover, the effects of sheet and rill erosion are not anticipated to be high. The existing distribution line along U.S. 285 demonstrates that TEU 153 can successfully revegetate, however, continuing drought conditions may dictate the rate of reestablishment.

As the line extends north and then west it would perpendicularly cross several very small portions of TEU 3. Because of their small size, impacts to these areas would be very limited. TEU 3 is characteristically stable on shallow slopes and has a high revegetation potential.

Alternative C – Existing Corridor

This alternative would construct a new 115 kV transmission line from Carson to Ojo Caliente within the existing distribution line corridor. Alternative C would tap into the existing 115 kV line in the vicinity of where it crosses NM 567 in Carson. Extrapolating the TES data onto private land, the line likely starts on TEU 138 and remains on this soil type for 5.5 miles. Since the existing line is in the same location, an evaluation of how this soil unit has responded to the installation and presence of the existing line and its maintenance can be used to determine the effects of this alternative.

Terrestrial ecosystem survey data describes TEU 138 as having sparse ground cover and low revegetation potential due to high levels of calcium carbonates in the soil. However, a number of locations within this unit have been plowed and revegetated with crested wheatgrass. The existing

25 kV line goes through this soil type near Carson, and the old road that runs underneath the line is barely visible from natural vegetation, indicating that revegetation is attainable. Short-term impacts of disturbing 1.1 acres of ground to install poles and almost 10 acres reestablishing a two-track road in the utility corridor is not considered to be substantial. This soil is on shallow slopes and has a slight sheet-rill erosion rating. Revegetation may not be as successful as it was in the past, particularly if current drought conditions continue. Since NM 567 is paved and the line would be fairly close to it, rain and snow runoff would help concentrate water near any disturbance, assisting in revegetation on that portion of the alternative.

Five and a half miles west of Carson, Alternative C would encounter the most common soil type within the study area—TEU 153—across National Forest System lands, a small portion of private land and onto BLM lands. Adjacent to NM 587 and then U.S. 285, the line would traverse over 8 miles, generally within this soil unit. As much as 1.7 acres would be cleared for pole placement and almost 16 acres to use or reestablish a two-track road within the existing corridor. For the portion of TEU 153 associated with this alternative, it can be characterized as a sandy loam, with good potential for revegetation. With the exception of a section of road near the microwave station that is routinely driven, most signs of past disturbance or maintenance in the utility corridor is stabilized by vegetation. Revegetation can be successful, although it may take longer to reestablish ground cover if current drought conditions continue.

Where U.S. 285 makes a 90-degree bend, the road and line would cross TEU 268. One of two old borrow pits is in the middle of the corridor. Again this soil type exhibits little effect from the existing line, and is not likely to exhibit much of an effect from this alternative due to its rocky and durable character.

As the line proceeds northwest along U.S. 285, it would encounter very small areas of TEU 3, including portions on BLM lands near Ojo Caliente. Clearing for pole placement would be no more than 0.2 acres. The reestablishment of a new two-track road through the existing corridor would impact up to 1.8 acres in this soil type. There is little evidence of past impacts to this soil type from the existing line.

Alternative D – 285 P Tap

This alternative would tap into the existing 115 kV line where it intersects with Forest Road 285P. This location is within TEU 3. In Alternatives B and C, the lines would perpendicularly cross small portions of this soil type. Alternative D would traverse north and then west in this soil type along the bottom of an elongated swale for approximately 4.5 miles, just south of U.S. 285 where the highway makes a 90-degree bend off Comanche Rim.

TEU 3 is generally found in long, relatively narrow, gently sloping valleys of sagebrush grasslands with scattered piñon-juniper. This soil type can be subject to damage by off-road vehicles and tends to drain moisture from adjacent areas. Its potential for sheet and rill erosion is slight to moderate. Potential for compaction is about average. This alternative would clear about 1 acre on TEU 3 for pole placement and disturb almost 10 acres for a two-track corridor under the line. Since Forest Road 285P provides easy access along this entire stretch, it would likely limit much actual disturbance. FR 285P would be the used to access this portion of the line for construction and maintenance.

This soil has a high revegetation potential, which means seeding and other activities to increase ground cover following disturbance should be successful. TEU 3 has relatively high ground cover compared to other soil types in the area. Forest Road 285P in this area shows little sign of erosion problems. There is a small head cut along this road, but it occurs just outside the corridor where it climbs up a short, but steeper pitch in the adjacent soil type. Since this portion of road would still be used as an access route, the head cut would be stabilized as part of this alternative. As the line continues west, it would also perpendicularly cross several very small portions of TEU 3.

Where the highway makes a 90-degree bend, this alternative would cross TEU 268. An old gravel borrow pit sits in the middle of the alternative corridor, but is no longer used. Again this soil type exhibits little effect from the existing line and is not likely to exhibit much of an effect from this alternative.

Alternative D would cross and run parallel to U.S. 285 for about 6.5 miles on TEU 153 at a distance of up to one-half mile from the highway. Along this section, soil properties provide better conditions for plant growth and sagebrush and piñon-juniper are very much in evidence. The alternative would cross several sites where old clearings were made to convert piñon-juniper to grasslands. A little over an acre (1.3 ac.) would be cleared for pole placement in TEU 153. A 6.5-mile two-track road under the line would disturb approximately 12 acres. With shallow slope conditions and good surrounding vegetative cover, the effects of sheet and rill erosion are not anticipated to be high. Revegetation would be successful, although it may take longer to reestablish ground cover if current drought conditions continue.

In addition to the construction of a new transmission line, this alternative would entail the removal of a 6-mile section of existing distribution line that runs through TEU 153 along the south side of U.S. 285. The amount of disturbance is similarly calculated to that of placing a new line with regard to access. A little over 1 acre would be disturbed for pole removal and a little less than 11 acres of two-track corridor would be created.

West End of Transmission Line and Substation for Alternatives B-D

For Alternatives B and C, the proposed line would be within the existing 25 kV corridor, as it exits the national forest and enters BLM lands about 2 miles from the proposed substation. As it leaves the national forest, Alternative D would take a slightly different course to the north. It would then join the existing corridor about one-half mile after entering BLM lands. The two different routes traverse the same soil types.

All three alternatives would follow the existing corridor for the last 1.5 miles of its length before terminating at the proposed substation. This portion of the line crosses a dry wash about three-quarters of a mile above the Rio Ojo Caliente. The substation would be located about one-half mile from the Rio Ojo Caliente. There is existing access to, or in close proximity to, that portion of the route on BLM land. Access to any pole locations on BLM land without existing roads would be cross country along the right-of-way and not bladed to reduce surface disturbance.

Ground disturbance associated with construction of the last 1.5 miles of transmission line coming into the substation for Alternatives B, C and D would be on TEU 3 and TEU 153. Since TEU 3 is found in the bottom of the dry wash, it is likely that pole sites would be located mostly on TEU 153, and the line would span the arroyo. Soil movement while construction is underway could flow into the dry wash and eventually enter the Rio Ojo Caliente during a significant rain event.

However, given the current disturbance activities within this portion of the arroyo, temporary construction activities would probably not result in any detectable change or delivery of sediment to the Rio Ojo Caliente. A National Pollution Discharge Elimination System permit for storm water pollution prevention is required for any project that exceeds 5 acres of surface disturbance, and must be approved by the State.

In all action alternatives, the proposed substation would be located at the terminus of the transmission line on BLM lands, just northwest of the intersection of U.S. 285 and NM 111 and north of where a bank of voltage regulators are currently located. The installation of a substation would entail clearing approximately 1.5 acres on soils similar to TEU 153 and constructing an access road to the site. The proposed site is relatively flat, and the potential for sheet and rill erosion is slight. However, since it is in close proximity to the Arroyo de los Comanches, the proposed site would be graveled. Once the project is completed, the flat gravel surface along with mitigation measures would prevent any movement of soil offsite (MM SW1 and SW2).

Some offsite soil movement could occur during construction should a significant rain event occur, but can be kept to a minimum with proper mitigation. The drainage for approximately 250 yards above NM 111 has been channelized with earthen berms of unconsolidated channel bottom materials. The southern berm lies between the proposed substation area and the drainage. It is likely that any sediment generated from the construction activity would be trapped and collected at that point above the berm and would not enter the drainage. A permanent access road from NM 111 to the substation would also be required. This access road would be a hardened surface approximately 175 yards long and 25 feet wide.

With any of the action alternatives, upgrading the existing line to the 115 kV would also require two pull locations resulting in temporary disturbance areas of approximately 100 feet across. Total disturbance on BLM land, including pole placement, existing road access, construction access along the right-of-way, guy wire locations, pull sites, substation access, and the substation would be approximately 8.7 acres.

Option – Tres Piedras Connection

The Tres Piedras Connection would tap into the existing 25 kV distribution line in the vicinity of the microwave station just north of the NM 567/U.S. 285 intersection. It would cross the highway to the west side and proceed north along U.S. 285, where it would cross back east of the highway to connect into the existing line that comes south from Tres Piedras along U.S. 285.

This route would total 7.5 miles and traverse entirely through TEU 142. The Option would disturb less than 0.1 acre for pole placement. Disturbance for access is not considered an additional impact as the right-of-way corridor is occasionally accessed using tractor mounted mowers. The soil has potential for sheet and rill erosion and compaction is moderate and responds well to seeding with drought tolerant species. The southern portion of the existing distribution line coming south from Tres Piedras runs through TEU 142. Its corridor shows no signs of erosion or problems with revegetation. It is expected that similar effects would occur with the construction of the Tres Piedras Connection. There is one site that has a basalt rock outcrop that might require one or two poles to be placed outside the right of way. If this should be the case, there would be less than an acre of total disturbance involved.

Cumulative Effects

Past, present and reasonable activities that contribute to the cumulative effects of soils are those with effects that overlap the effects of each alternative within the study area. The *Affected Environment* section described the past, present and reasonable foreseeable activities that, along with the effects of each of the alternatives, may cumulatively have an effect on soils and water. Past and present effects that overlap with the effects of Alternative B have already been discussed.

Past and Present Effects from:	Future Effects from:
Paved highways	Paved highways
Unpaved roads	Unpaved roads (continued FP management)
Off-road use	Off-road use (continued FP management)
Existing power lines	Power lines
Drought	Drought
Bark beetle (2002-2003)	Bark beetle (5-year forecast)
Livestock grazing	Livestock grazing (continued FP management)
Firewood gathering	Firewood gathering
Private lands	Private lands

In this analysis, the primary source of cumulative effects on soils is the presence and use of unsurfaced roads and off-road vehicle use. The effects of these activities reduce vegetation cover and increase erosion of topsoil. Travel management under the Carson Forest Plan allows for the continuation of the same road network and off-road administration. Motorized travel is restricted on BLM lands to existing roads and trails. Access to the proposed substation would require a permit from BLM.

Mortality of piñon trees from bark beetle in the study area is beyond epidemic proportions and may reach close to 100 percent throughout the lower elevations of the study area. For the first few years after death of infected trees, needle drop will increase and contribute to protecting the soil's surface with litter and adding organic matter to the soil. In 5 to 10 years, dead trees will fall, creating masses of organic matter on the ground. These areas would provide shade and moisture, improving conditions for the growth of grasses and forbs and increasing overall ground cover.

During this period, firewood gatherers are likely to make their way out to areas where piñon mortality is high. It is anticipated that the larger trunks of the dead trees, especially along existing roads, would be removed for firewood. However, enough plant growth and small diameter woody material would remain and overall soil conditions may improve. In addition, fewer piñon trees will reduce plant competition and release growth in the understory, which may also have some beneficial effects on soil properties.

Livestock grazing takes place on two grazing allotments on the national forest (TCLP and Cerro Azul) and one on BLM land (505 Ojo Caliente). The current cattle permits are valid and winter grazing is expected to continue for the next 10 years at the same or reduced levels. Overall soil conditions on the Forest Service allotments are satisfactory, with some unsatisfactory conditions where extremely sandy and unproductive soils occur. Annual adjustments are made to the livestock numbers and grazing season. Due to an ongoing drought and evidence of very little

forage production this summer (2003), the entry dates for pasture rotation are likely not going to be met.

Private lands within the study area are concentrated either outside of the national forest boundary or scattered close to Ojo Caliente. Several parcels of private land have distribution lines to the property. The properties near Ojo Caliente have a power line accessing the existing line and crossing U.S. 285. It is not foreseen that there will be a need to extend the current lines across national forest or BLM lands to access other private lands.

As described earlier in *Affected Environment*, the cumulative effects analysis area for soils and water is a combination of 6th code watersheds through which each alternative would traverse (Figure 11).**5/** With the exception of the Option, data for the alternatives is largely limited to what is known to occur on the national forest. Forest Service TES and roads data amounts to approximately 50 percent of the cumulative effects analysis areas for each action alternative. From a review of the area outside of national forest (mostly BLM) soils and road densities are fairly similar, therefore, this analysis assumes that the conditions for each alternative's cumulative effects area is also near the same. The Option only traverses through Watershed 1, which is 98 percent National Forest System lands.

Table 12. Cumulative effects of existing roads* by alternative

Alternative B Watersheds 5, 6, 7				
101,347 Acres				
FS Acres	**Acres Affected By Roads**	**Percent Affected By Roads**	**Acres Affected By Alt. B**	**Percent Affected By Roads & Alt. B**
50,067	320.91	0.64	19.26	0.68
Alternative C Watersheds 1, 2, 3, 4, 6, 7				
194,178 Acres				
FS Acres	**Acres Affected By Roads**	**Percent Affected By Roads**	**Acres Affected By Alt. B**	**Percent Affected By Roads & Alt. B**
100,118	109.81	1.10	30.50	1.13

Alternative D
Watersheds 4, 6, 7

194,178 Acres				
FS Acres	**Acres Affected By Roads**	**Percent Affected By Roads**	**Acres Affected By Alt. B**	**Percent Affected By Roads & Alt. B**
44,721	376.87	0.84	35.70	0.92

Option
Watershed 1

194,178 Acres				
FS Acres	**Acres Affected By Roads**	**Percent Affected By Roads**	**Acres Affected By Alt. B**	**Percent Affected By Roads & Alt. B**
33,094	477.10	1.44	1.0	--

* These acres include Federal and State roadway

Cumulative Effects of Alternative A

Since the No Action Alternative would not have activities that would affect soils, there would be no cumulative effects under this alternative.

Cumulative Effects of Alternative B

The cumulative effects study area for Alternative B occurs within Watersheds 5-7 for a total of 101,347 acres (49 percent is on national forest). Table 12 provides an estimate of the amount of surface disturbance created by existing roads within the analysis area, as well as what the added disturbance would be from Alternative B. Currently roads impact .64 percent of the analysis area. If Alternative B were implemented, it would add another .04 percent of disturbance to soils.

Over 194 acres of existing roads are located on TEU 153 within these three watersheds, but at least 25 percent of the analysis area is made up of this soil type, therefore, the impacts from existing roads are minimal and the added impact of Alternative B would be only 0.1 percent. It is not likely that Alterative B, along with existing roads and other past, present and reasonably foreseeable activities previously described would add any appreciable cumulative effect on soils within Watersheds 5-7.

Cumulative Effects of Alternative C

The cumulative effects study area for Alternative C includes Watersheds 1-4, 6 and 7 for a total of 194,178 acres (52 percent is on national forest). Table 12 provides an estimate of the amount of surface disturbance created by existing roads within the analysis area, as well as what the added disturbance would be from Alternative C. Currently roads impact 1.10 percent of the analysis area. If Alternative C were implemented, it would add another .03 percent of disturbance to soils.

Over 400 acres of existing roads are located on TEU 153, but at least 16 percent of the analysis area is made up of this soil type, therefore, the impacts from existing roads are minimal and the added impact of Alternative C would be 0.1 percent. Currently, TEU 138 and 142 are each impacted by over 200 acres of roads, however these roads affect only 1.1 and 1.8 percent of the soil types respectively. Alternative C would add 11 acres of surface disturbance to TEU 138, but this would have an imperceptible cumulative impact on soils.

Cumulative Effects of Alternative D

The cumulative effects study area for Alternative D includes Watersheds 4, 6 and 7 for a total of 91,419 acres (49 percent is on national forest). Table 12 provides an estimate of the amount of surface disturbance created by existing roads within the analysis area, as well as what the added disturbance would be from Alternative D. Currently roads impact 0.84 percent of the analysis area. If Alternative D were implemented, it would add another .10 percent of disturbance to soils.

Over 220 acres of existing roads are located on TEU 153, but at least 22 percent of the analysis area is made up of this soil type, therefore, the impacts from existing roads are minimal and the added impact of Alternative D would be 0.1 percent. Roads currently impact no soil type within the cumulative effects area by more than 2 percent. Additional disturbance from this alternative would be negligible.

Cumulative Effects of the Option

The cumulative effects study area for the Option is Watershed 1 for a total of 33,610 acres (98 percent is on national forest). Table 12 provides an estimate of the amount of surface disturbance created by existing roads within the analysis area, as well as what the added disturbance would be from the Option. Currently, roads impact 1.44 percent of the analysis area. If the Option were implemented, it would add another .05 percent of disturbance to soils. It should be noted that no additional two-track road is anticipated to result from the Option, as virtually all of the pole locations and necessary access will be within the highway right-of-way.

Over 240 acres of existing roads are located on TEU 142, but at least 38 percent of the analysis area is made up of this soil type, therefore, the impacts from existing roads are minimal and there would be no added impact from implementing the Option, since it would not affect this soil type.

The Option could be implemented under any of the action alternatives. If the impacts on soils were added to the cumulative impacts from Alternatives B, C or D, there would be less than 1 percent disturbance on soils with properties that are fairly stable and easy to revegetate.

Air

Affected Environment

Air quality across the area is good with respect to air pollutants and not within or near a Class I designated area. [3, 5] The existing air quality is a result of a relatively low population density and a lack of significant pollution sources in the area. Most areas within the United States are designated as Class II where standard pollution control standards apply. Certain areas are given special protection from air quality degradation through the use of more stringent requirements

and are designated Class I areas. These are generally national parks, monuments and wilderness areas.

Environmental Consequences

Air quality impacts resulting from construction related activities would include fugitive dust and exhaust emissions from construction equipment. Exhaust constituents resulting from use of gasoline and diesel powered construction equipment would consist primarily of carbon monoxide, nitrogen oxide, hydrocarbons and sulfur dioxide. It is expected that the proposed action or any of the action alternatives or the option would not generate measurable amounts of air pollutants over the background levels currently resulting from local traffic and other uses of motorized equipment. Additional amounts would be short term.

Fugitive dust would also result from construction activities. Methods to control this form of short-term pollution could include limiting vehicle speeds on dirt roads during construction and watering road surfaces as a dust abatement measure during exceptionally dry periods.

Cumulative Effects

The majority of occasions when a visual deterioration of air quality exists in this area occurs from high winds creating airborne dust or smoke from forest fires. Both are also related to climatic conditions of drought and wind. Excessively dry or windy conditions would exacerbate the potential for airborne particulates. These cyclic patterns are expected to continue indefinitely.

Noise

Affected Environment

Existing levels of noise in the vicinity of the analysis area are generally a function of human habitation and related activities. There are levels of background noise that naturally occur in the environment mostly associated with wind. There is also a difference in the character of noise such as wind rustling branches and birds singing as opposed to vehicle noise. In remote locations of the analysis area, background noise is likely more natural. Other portions of the area will have noise dominated by traffic or mechanical related sources. These are generally the areas adjacent to paved roads such NM 567 and U.S. 285 and areas adjacent to the communities of Carson and Ojo Caliente.

Environmental Consequences

Noise levels resulting from construction related activities would increase in any of the action alternatives. These would be short-term for the duration of construction and periods when active construction would be ongoing. Some noise may also be produced from the transmission line itself, referred to as corona, and may be occasionally detected. This is the partial electrical breakdown of the insulating properties of air around the conductors of a transmission line. This can result in an audible hissing or crackling sound. Generally this condition occurs with higher voltage systems when certain high humidity atmospheric conditions occur such as rain or fog.

Alternative A would not result in any additional noise. Alternatives B and D would generate more noise away from the human-caused noise sources. While Alternative C would produce more noise

adjacent to highways and communities. More people would likely hear construction noise in Alternative C, but it would be mostly in areas that produce similar types of background noise. The option to connect the 25 kV line to Tres Piedras would be immediately adjacent to the highway along U.S. 285. Although there would be additional noise generated from construction, it would be temporary and similar to other vehicle noise generated by cars and trucks.

Cumulative Effects

Given the number and density of roads across the entire analysis area, any location would occasionally have noise where the sounds are produced by various vehicles. This results from activities such as recreational outings, livestock management, and woodcutting. Back-country as well as highway noise and electrical transmission generated corona is expected to continue indefinitely.