DOE/EA-2122

Draft Environmental Assessment for the Construction and Operation of a Second Fiber Optic Circuit Route to Los Alamos National Laboratory Los Alamos, New Mexico

National Nuclear Security Administration

December 2019

PREDECISIONAL DRAFT ENVIRONMENTAL ASSESSMENT OF CONSTRUCTION AND OPERATION FOR A SECOND FIBER OPTIC CIRCUIT ROUTE TO LOS ALAMOS NATIONAL LABORATORY

EXECUTIVE SUMMARY

The National Nuclear Security Administration (NNSA), which oversees Los Alamos National Laboratory (LANL) located in Los Alamos, New Mexico, has prepared this draft environmental assessment (EA) to analyze the potential environmental affects that could result from the NNSA proposal to construct and operate a fiber optic cable and routing that would provide redundant voice, data, and internet services. LANL's current high performance voice, data, and internet services are essential to support NNSA mission of maintaining the nation's nuclear deterrent and collaborative scientific research and are dependent upon a single fiber optic circuit and, as such, are vulnerable to outages or service interruptions. The proposed second fiber optic line would provide the same level of service to LANL and Los Alamos County. The entire project would require the installation of approximately 18 miles of new fiber optic cable and supporting infrastructure on lands owned and managed by the Bureau of Land Management (BLM); DOE; United States Forest Service (USFS); Santa Fe County; and Los Alamos County White Rock community.

The final NNSA EA and decision document are expected to be adopted by each of the Federal agencies, a process similar and agreed to in the *Memorandum of Understanding Implementing One Federal Decision Under Executive Order 13807* signed by the Secretaries of the Departments of Agriculture, Interior, and Energy among others that established cooperative relationships and agreement to the timely processing of environmental reviews and authorization decisions identified in Executive Order 13807.

The underground fiber optic line would originate and tie into existing fiber optic infrastructure at the Marty Sanchez Links de Santa Fe golf course. From the golf course, the route would parallel Caja del Rio Road to the intersection of Santa Fe County Road (CR) 62, where it would continue on CR 62 crossing BLM lands until meeting the boundary of the Santa Fe National Forest (SFNF). On SFNF lands the route would be primarily within the Santa Fe National Forest Road (FR) 24 roadbed. The underground portion of the fiber optic line would terminate at a vault adjacent to the Public Service Company of New Mexico (PNM) Reeves (RL) 115 kV electrical transmission line support structures. From the vault, the fiber optic line would transition to optical ground wire and connect to the top of the RL transmission line replacing the existing RL shield wire[1]. The fiber optic line would require the spanning of White Rock Canyon to LANL lands. The canyon crossing would require two in-line new steel monopole structures on each side of the canyon. Once on LANL lands, the line would remain aerial until reaching Technical Area (TA) -71 Southern Technical Area substation where the line would once again divert underground and parallel New Mexico State Road (NM) 4. The line continues in the corridor until reaching its termination at the existing underground fiber optic facilities at the intersection of Piedra Loop and Sherwood Boulevard in the community of White Rock.

The implementation of required conservation measures for the Proposed Action project are summarized below and would minimize or avoid short-term and long-term adverse impacts.

[1] Shield wires are wires installed on overhead transmission lines to protect them from lightning.

- A traffic safety plan would be implemented during construction to ensure public transportation safety and to minimize traffic disruption.
- Soil disturbance and vegetation removal would be avoided or minimized as practical. If vegetation has been cleared from a construction area, it would be distributed within the area to be reclaimed for the purposes of decreasing wind and rain erosion, increasing soil moisture, encouraging re-vegetation, and providing a catchment matrix for wind dispersed seeds.
- Site reclamation on construction-scarred areas would be required. Reclamation success would be evaluated by comparing project-affected sites with pre-construction conditions and/or adjacent areas in terms of final grading and removal of any introduced berms, re-contouring to approximate pre-construction contours, removal of plants listed on the New Mexico Noxious Weed List, and relief of compacted soils.
- Identification and mitigation of potential impacts to water resources would be addressed in the required Storm Water Pollution Prevention Plan (SWPPP). Sediment control best management practices would be outlined in the SWPP for stabilization during the monsoon season. The SWPPP would include both temporary and permanent erosion control BMP to be used.
- Construction operations would be controlled to minimize potential disturbance of wildlife. Control measures would include construction limited to daylight hours, construction vehicle traffic restricted to approved areas and roadways, and vehicle speed limited to 25 mph.
- The White Rock Canyon crossing structures (monopoles) would be designed with appropriate colors and forms to minimize the potential for collision of raptors.. The use of appropriate colors and non-specular structure materials on the monopoles would reduce the visual impact, reflection, and glare.
- The proposed project will avoid impacts to all identified cultural resources during construction and fiber optic installation activities by excluding areas where archaeological sites are present from ground disturbance including staging and laydown areas. If previously unknown subsurface cultural deposits are discovered, construction activities in the area would halt until the appropriate land management agency determines the appropriate treatment in consultation with the State Historic Preservation Officer.
- The Federal Aviation Administration (FAA) requires a Notice of Proposed Construction or Alteration to be filed for any construction or alteration that is more than 200 ft. at ground level at its site (14 CFR §77). The fiber optic cable would span White Rock Canyon at over 1,000 ft. above ground level. Therefore, a minimum of 45-days prior to construction PNM would submit Notice of Proposed Construction or Alteration to the FAA. The FAA would then issue a determination in writing stating whether the proposed construction would be a hazard to air navigation. Because the fiber optic cable would be erected adjacent to the RL canyon spanning structures and power lines replete with orange aircraft warning spheres, no new air navigation hazards from the proposed project would be introduced. Based on the FAA response the project would install additional aircraft warning equipment if required or recommended.

This Draft EA has been made available for a 30-day public review and comment period commencing with the publication of the Notice of Availability. All comments on the Draft EA provided within the 30-day comment period, will be considered by NNSA during preparation of the Final EA and NNSA decision document.

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ACRONYMS AND TERMS

Acronym	Terms
BLM	Bureau of Land Management
BMP	Best management practices
CFR	Code of Federal Regulations
CR	Santa Fe County Road
DOE	United States Department of Energy
EA	Environmental Assessment
EM	Office of Environmental Management
FAA	Federal Aviation Administration
ft.	feet
FONSI	Finding of No Significant Impact
FR	Forest Road
GIS	Geographic information system
GSFRP	Greater Santa Fe Recreation Partnership
in.	inch
kV	Kilovolt
LANL	Los Alamos National Laboratory
NEPA	National Environmental Policy Act of 1969
NM	New Mexico
NM-4	New Mexico State Road 4
NMDOT	New Mexico Department of Transportation
NNSA	National Nuclear Security Administration
NPDES	National Pollutant Discharge Elimination System
OPGW	Optical Ground Wire
PA	Programmatic Agreement
PNM	Public Service Company of New Mexico

Acronym	Terms
REDI	Northern New Mexico Regional Economic Development Initiative
RMP	BLM Taos Resource Management Plan
RL	Reeves Line: PNM's 115 kV Electric Transmission Line
SFNF	Santa Fe National Forest
SLDC	Santa Fe County *Sustainable Land Development Code*
SMS	Scenery Management System (USFS)
TSCP	Traffic Safety and Control Plan
STA	Southern Technical Area [substation]
SWPPP	Storm Water Pollution Prevention Plan
TA	Technical Area
U.S.	United States
U.S.C.	United States Code
USFS	United States Forest Service
VMS	Visual Management System (USFS)
VRM	Visual Resource Management (BLM)
Weed	Plants listed on the New Mexico Noxious Weed List

1.0 INTRODUCTION

The National Nuclear Security Administration's (NNSA), a semiautonomous agency of the Department of Energy (DOE), Los Alamos Field Office, which oversees Los Alamos National Laboratory (LANL) located in Los Alamos, New Mexico (Figure 1-1) has submitted a request to CenturyLink™[2] to provide for redundant voice, data, and internet services to the existing service. Subsequently, CenturyLink has proposed the construction and operation of a redundant fiber optic cable route. The entire project, the Proposed Action, would require the installation of approximately 17.9 miles of new fiber optic cable and supporting infrastructure on lands owned and managed by the Bureau of Land Management (BLM); DOE; United States Forest Service (USFS); Santa Fe County; Los Alamos County White Rock community; and within a New Mexico Department of Transportation (NMDOT) roadway right-of-way. Currently there is only a single fiber optic line that serves and transmits voice, data, and internet service to LANL and Los Alamos County this includes Los Alamos County emergency services. The proposed second fiber optic line would provide the same level of service to LANL and Los Alamos County residents and businesses. Redundancy service would diversify the existing telecommunications network by providing an alternate route for the network and enhance and protect critical customer traffic routing on the network. This service would improve system reliability in the event of outages or service interruptions from natural events, human vandalism, or construction mishap and important for disaster recovery. Installation of the new fiber optic cable by CenturyLink would require approximately 11.6 linear miles of underground installation supported by an estimated nine maintenance vaults and 6.3 linear miles of aerial collocation on the Public Service Company of New Mexico (PNM) Reeves (RL) 115 kV electrical transmission line support structures, replacing the existing aerial ground wire.

LANL is a contractor-operated multidisciplinary, multipurpose research institution located in north-central New Mexico approximately 60 miles north-northeast of Albuquerque and about 25 miles northwest of Santa Fe. LANL covers an area of about 36 square miles, predominately within Los Alamos County with some overlap into Santa Fe County.

There are two DOE LANL Field Offices, which are NNSA and the Office of Environmental Management (EM). The NNSA Los Alamos Field Office primary mission is its national security responsibilities, which include the design, qualification, certification, and assessment of nuclear weapons. In addition, LANL, as one of the largest science and technology institutes in the world, conducts multidisciplinary research in fields such as space exploration, renewable energy, medicine, nanotechnology, and supercomputing (LANL 2018). Under contract to NNSA, Triad National Security LLC, a management partnership comprising of Battelle Memorial Institute; the Regents of the University of California; and the Regents of Texas A&M University, manages and operates LANL.

EM's LANL mission is to complete the cleanup of legacy contamination and waste resulting from nuclear weapons development and government-sponsored nuclear research. EM has contracted with N3B-Los Alamos (N3B), a company created by Stoller Newport News Nuclear and BWXT Technical Services Group, to assist EM in fulfilling its' LANL mission.

[2] A commercial internet fiber optic service provider.

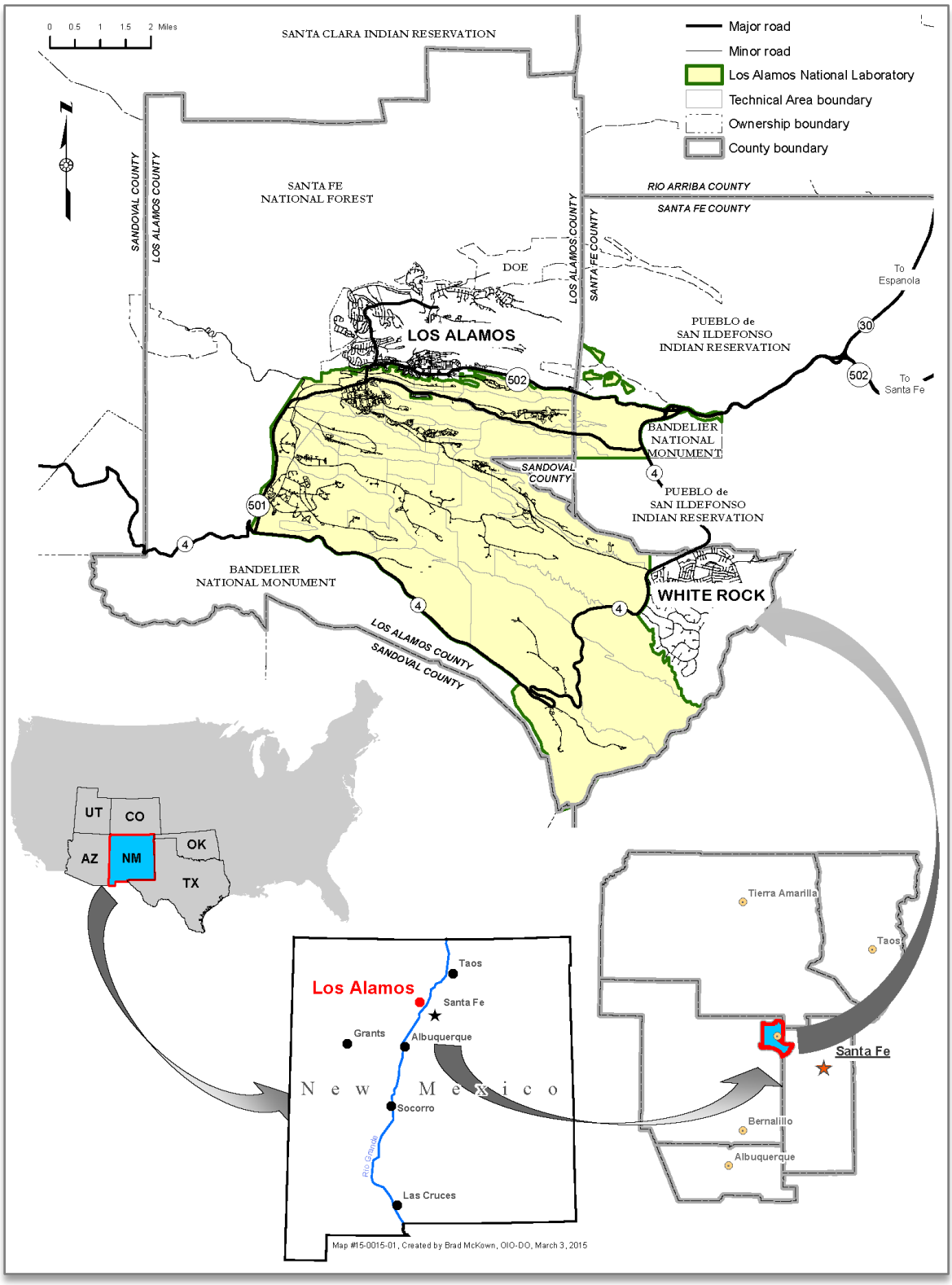

FIGURE 1-1. LOS ALAMOS NATIONAL LABORATORY LOCATION

1.1 Involved Agencies and Landowners

NNSA: NNSA, as the project proponent, is the lead agency[3] for compliance with the National Environmental Policy Act (NEPA) and has prepared this Draft EA that analyzes the proposed construction and operation of a redundant fiber optic circuit and its associated infrastructure. The project originates in Santa Fe County at the intersection of Caja del Rio Road and North Caja del Oro Grant Road adjacent to the Marty Sanchez Links de Santa Fe golf course and terminates at CenturyLink's existing underground fiber facilities in Los Alamos County's White Rock community. The existing underground fiber serves both LANL and Los Alamos County (Figure 1-2).

Two other Federal government agencies the U.S. Department of Interior, BLM, Taos Field Office and the U.S. Department of Agriculture, USFS, Santa Fe National Forest, Española Ranger District have jurisdiction and administrative control over lands involved in the Proposed Action. Both agencies have participated in the predecisional Draft EA preparation process. The USFS is a Cooperating Agency.[4] The final DOE/NNSA EA and decision document are expected to be adopted by each of the Federal agencies, a process similar and agreed to in the *Memorandum of Understanding Implementing One Federal Decision Under Executive Order 13807* signed by the Secretaries of the Departments of Agriculture, the Interior, and Energy, as well as among others that established cooperative relationships and agreement to the timely processing of environmental reviews and authorization decisions established in Executive Order 13807 *Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure*.

The Proposed Action requires (1) verification of compatible land use from the BLM; (2) amendment of PNM's existing DOE/NNSA easement, as the current agreement does not address the installation of communication facilities; (3) issuance of a new or the modification to existing special-use permits[5] by the USFS to CenturyLink and PNM, respectively; and (4) compliance with *Santa Fe County Sustainable Land Development Code* (SF 2016) and Santa Fe County Ordinance 2003-01 (SF 2003).

[3] The Federal agency that is proposing, implementing, or approving a project. The lead agency is responsible for the management of the NEPA process, including public involvement, and the preparation of documents.

[4] Upon request of the lead agency, a Federal agency which has jurisdiction by law or has special expertise with respect to any environmental issue.

[5] A permit issued under established laws and regulations to an individual, organization, or company for occupancy or use of National Forest land for some special purpose. In this case, the special-use permit would be for *Application for Transportation and Utility Systems and Facilities on Federal Lands*.

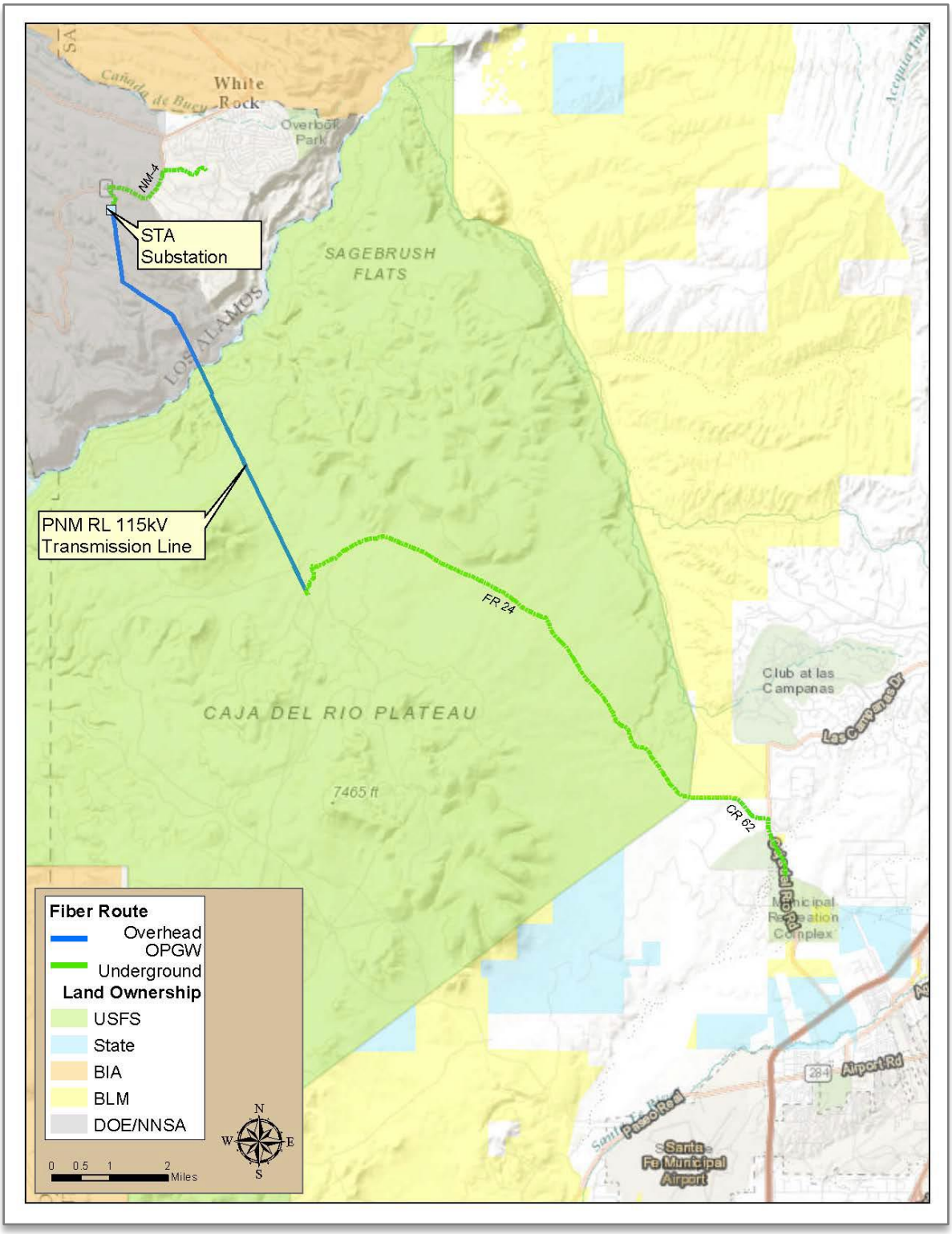

FIGURE 1-2. PROPOSED SITE ROUTE (CENTURYLINK AND PNM 2019)

BLM: BLM's Taos Field Office administers and is responsible for land use planning and the protective management of cultural and natural resources within a segment of the proposed project area located within the BLM West Santa Fe planning unit. The BLM Taos *Resource Management Plan* (RMP) (BLM 2012) provides a comprehensive framework for managing public lands and allocating resources using the principles of multiple use and sustained yield. All uses and activities within the Taos Field Office administered lands must conform to the RMP. One of the RMP goals is the establishment of an efficient system of utility corridors and communication sites to meet the energy and communication needs of the public with minimum negative impacts on visual, biological, cultural, and physical resources (BLM 2012). A BLM grant[6] of rights-of-way is required for any individual, business, or government entity to use BLM public lands for systems transmitting or receiving electronic signals and other means of communication, such as the Proposed Action. Issuance of a right-of-way would serve to direct and control the granted activity in a manner protective of natural resources associated with public lands and adjacent lands, whether private or administered by a government entity and prevent unnecessary or undue degradation to public land.

USFS: The USFS Santa Fe National Forest (SFNF) is administered through a Forest Supervisor's Office and five ranger districts. The proposed project would cross the SFNF Española Ranger District lands and, as such, would require that CenturyLink obtain a SFNF special use authorization[7] and PNM to modify their existing special-use permit[8].

The 1987 Santa Fe National *Forest Plan* (USFS 1987), as amended, sets forth broad programmatic management direction for the SFNF. The standards, guidelines, and management direction contained in the 1987 *Forest Plan* set parameters for project compliance (USFS 1987). Approval of any management activity must be, or be made consistent, with these parameters (36 CFR §219.15) and *Forest Plan* area-specific direction that applies to Management Areas G and L which are the management areas designated that would be effected. The Santa Fe National Forest Supervisor, based on the EA analysis and DOE decision document, will decide whether to issue a special-use permit and modify an existing special-use permit; deny the issuance and modification of special-use permits; or require the preparation of an environmental impact statement for the proposed project. Approximately 11 miles of new underground fiber optic line would be constructed on SFNF lands.

Santa Fe County: For lands under Santa Fe County jurisdiction, the installation of an underground communication cable(s) is a permitted use in all zoning districts. The Proposed Action has to meet the standards set forth in Section 7.12 of the *Sustainable Land Development Code* (SLDC) addressing the installation of underground utilities including communications cables and, per Section 4.8.2, prepare a site development plan and obtain a development permit authorizing the installation (SF 2016). In addition, Santa Fe County Ordinance 2003-01 requires that a permit be obtained. Permit conditions include the maintenance of traffic and pedestrian flow and restoration of the affected property to its condition immediately prior to construction (SF 2003). Some land holdings in the proposed project area were patented by the

[6] Grant means any authorization or instrument (e.g., easement, lease, license, or permit) BLM issues under Title V of the Federal Land Policy and Management Act, 43 United States Code (U.S.C.) 1761 et seq., and those authorizations and instruments BLM and its predecessors issued for like purposes before October 21, 1976, under then existing statutory authority. It does not include authorizations issued under the Mineral Leasing Act (30 U.S.C. 185).

[7] A written permit, term permit, lease, or easement that authorizes use or occupancy of National Forest System lands and specifies the terms and conditions under which the use or occupancy may occur.

[8] A special use authorization which provides permission, without conveying an interest in land, to occupy and use National Forest System land or facilities for specified purposes, and which is both revocable and terminable.

BLM in 1997 to Santa Fe County under the Federal *Recreation and Public Purposes Act* for open space, recreation, and solid waste management. These land holdings were designated as a Santa Fe County special holding, and its current use includes a golf course, electrical substation, and regional landfill. Santa Fe County would require verification of compatible use of the fiber optic cable and infrastructure by the BLM before installation. A total of 2.1 miles of new underground fiber optic line would be constructed in Santa Fe County.

Los Alamos County - White Rock: At the intersection of NM-4 and Piedra Loop, the underground installation would continue east in private easements along Piedra Loop until it intersects with Sherwood Boulevard. CenturyLink has existing underground fiber facilities at this intersection where the new fiber optic line would be spliced into the existing fiber facilities. A total of 0.7 miles of new underground fiber optic line would be constructed in Los Alamos County.

NMDOT: DOE granted NMDOT a non-exclusive perpetual easement that allows for the construction, reconstruction, maintenance, repair, replacement, removal, and use of NM-4. DOE did reserve its rights to construct within the easement as long as there is no transportation interference and that DOE notifies NMDOT of work within the easement. However, NMDOT has the right to require any utilities proposed for construction within the easement be relocated. There is approximately 1.1 miles of new underground fiber optic line proposed within the NMDOT NM-4 easement. DOE/NNSA has notified NMDOT of the proposed project and is awaiting their response. Should NMDOT require CenturyLink to move the line outside of the easement but parallel to NM-4; CenturyLink would do so. Subsequently, prior to project approval, DOE would evaluate the affects resulting from location change and implement mitigation measures that would avoid or minimize adverse effects to the environment.

1.2 CenturyLink and PNM Responsibilities

CenturyLink: CenturyLink is the global communications and information technology services company that would have ownership of and be responsible for the underground construction of the fiber optic cable. Post-construction, CenturyLink would be responsible for all equipment and cable on and for maintaining the transmission equipment and structures with the exception of the fiber optic cable strung on PNM's RL support structures for which PNM would be responsible.

PNM: PNM's Northern New Mexico transmission system delivers power to serve customers in northern communities, including Albuquerque, Santa Fe, and Las Vegas areas, as well as customers in Valencia County south of Albuquerque. PNM would be responsible for stringing CenturyLink's fiber optic cable on PNM's RL support structures. The RL is owned by PNM and is located in an existing utility corridor originating at PNM's Bernalillo-Algodones Substation and terminating at LANL. PNM's existing DOE/NNSA easement does not include communication facilities; therefore, a new or amended DOE/NNSA easement would be required. A portion of the project would require the erection of new structures for the fiber optic cable to span the Rio Grande at the White Rock Canyon, a distance of approximately 1.1 miles, as the existing structures would not support the additional weight of the fiber optic cable.

1.3 Scope of the Environmental Assessment

This Draft EA is a planning and decision-making tool that serves to inform the decision-makers and the public of the potential environmental consequences of the Proposed Action and No Action Alternative, to determine if NNSA will require preparation of an environmental impact statement or issue a Finding of No Significant Impact (FONSI) and proceed with the Proposed Action.

Two alternatives are analyzed in this Draft EA:

1. Proposed Action: Construction and operation of a redundant fiber optic line and associated infrastructure on lands owned and/or managed by the BLM; DOE; USFS; Santa Fe County; and Los Alamos County White Rock residents.

2. No Action Alternative: The No Action analysis provides a benchmark, enabling decision-makers to compare the magnitude of environmental effects of the action alternatives (CEQ 1981), in this case the Proposed Action. No Action means the Proposed Action would not take place.

Decommissioning of the proposed redundant fiber optic circuit is not addressed in this Draft EA as the effective operational lifecycle is approximately 25–30 years. It would be speculative to define or anticipate the decommission requirements within this timeframe. In the unlikely event, the facilities are no longer needed prior to the end of the expected lifecycle; CenturyLink would abandon facilities (e.g., vaults and fiber optic cable) in place if the environmental impacts of leaving the cable in place would be less than removing them.

This Draft EA has been prepared in accordance with the National Environmental Policy Act of 1969, as amended; Council on Environmental Quality Executive Office of the President *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 Code of Federal Regulations* [CFR] 1500-1508*)*; and DOE *National Environmental Policy Act Implementing Procedures* (10 CFR Part 1021).

1.4 Public Involvement

On March 20, 2019, in accordance with 10 CFR §1021.301 *Agency review and public participation,* DOE/NNSA provided a notification letter that NNSA was preparing a *Draft Environmental Assessment for the Construction and Operation of a Second Fiber Optic Circuit Route to Los Alamos National Laboratory*. The notification letter was sent to the recipients listed below:

- City of Española
- City of Santa Fe
- Los Alamos County
- New Mexico Environment Department
- Northern New Mexico Citizens Advisory Board
- Pueblo de Cochiti
- Pueblo de San Ildefonso
- Pueblo of Jemez
- Santa Clara Pueblo
- Santo Domingo Pueblo

One response was received and that was from the Director of Policy, New Mexico Environment Department (APPENDIX A).

This Draft EA has been made available for a 30-day review and comment period via distribution to the same recipients as the notification letter, to over 8,700 recipients on the LANL GovDelivery listserve, and to the DOE National Environmental Policy Act (NEPA) website: http://energy.gov/nepa/nepa-documents/environmental-assessments-ea.

Printed copies of the Draft EA may be requested from NNSA Los Alamos Field Office NEPA Compliance Officer at the address and email listed below.

Comments on the Draft EA may be provided to NNSA by U.S. mail or email at the following addresses:

Mail: NNSA Los Alamos Field Office
ATTN: NEPA Compliance Officer – Fiber Optic Draft EA Comments
3747 West Jemez Road
Los Alamos, NM 87544

Email: NA-LA_NCO@nnsa.doe.gov
Subject line: Fiber Optic Draft EA Comments

All comments on the Draft EA provided within the comment period, beginning on the date of the Public Notice of Availability, will be considered by NNSA during preparation of the Final EA.

2.0 PURPOSE AND NEED

LANL's current high performance voice, data, and internet service that is essential to support NNSA mission for maintaining the nation's nuclear deterrent and collaborative scientific research is contingent on the present single fiber optic circuit and, as such, is vulnerable to outages or service interruptions. Internet service protection is necessary. An interruption of service due to a failure of the existing single fiber optic circuit would harm LANL's high performance voice, data, and internet service, and consequently compromise NNSA mission for maintaining the nation's nuclear deterrent and collaborative scientific research. Therefore, to support access and maintain the reliability of LANL's communication and data capabilities, it is imperative to have a redundant, geographically separate, and equivalent capacity fiber optic system to provide these services.

3.0 DESCRIPTION OF THE PROPOSED ACTION

3.1 Proposed Action

Location

The underground fiber optic line would originate and tie into existing CenturyLink fiber optic infrastructure at an underground vault adjacent to the Marty Sanchez Links de Santa Fe golf course at the intersection of Caja del Rio Road and North Caja del Oro Grant Road. CenturyLink would install the new fiber optic cable underground primarily through boring, though trenching may be required in some areas depending upon the substrate. From the golf course, the route would parallel Caja del Rio Road to the intersection of Santa Fe County Road (CR) 62, an unpaved improved dirt and gravel roadbed, where it would continue on CR 62 crossing BLM lands until meeting the boundary of the SFNF. The installation in this section would occur approximately 10-15 feet (ft.) west of the Caja del Rio Road shoulder and for the most westerly 0.75 miles on CR 62, it would be located approximately 10 ft. southwest from the Santa Fe Landfill boundary fence. Approximately 2.1 miles of lands owned or managed by the BLM and Santa Fe County would be crossed.

On SFNF lands, the route would be primarily within the Santa Fe National Forest Road (FR) 24 roadbed, a hard packed dirt roadway with substantial ruts in some stretches, or in certain situations parallel to FR 24, approximately 10–20 ft. adjacent to and south of the FR 24 roadway. The route would proceed for approximately 7.3 miles until FR 24 approaches the RL, where the line would deviate west cross country from FR 24 to intersect with the RL; a distance of approximately 0.1 mile. The underground portion of the fiber optic line would terminate at a vault adjacent to the RL utility corridor. From the vault, the fiber optic line would transition to optical ground wire (OPGW) and connect to the top of the RL transmission line, replacing the existing RL shield wire[9] for a distance of approximately 3.6 miles. PNM would install the OPGW portion of the project.

PNM access to the OPGW portion of the project would utilize a two-track pathway directly under the RL easement mostly within the RL 115kV transmission line permit area and an adjacent pathway that would be used for PNM's access to the transmission line in order to avoid an arroyo that would require extensive roadwork and to stay within PNM's easement. No new access roads or modification to the original roadway design function or road realignments are required to complete the OPGW portion of the project. Most of the work would be within the existing SFNF authorized utility corridor. However, at the RL White Rock Canyon crossing (Table 3-1), in order to span the Rio Grande with the OPGW, installation of two in-line new steel monopole structures would be required on each side of the canyon. This is necessary, as the existing PNM RL structures cannot support the additional weight required to string approximately 1.1 miles of OPGW across White Rock Canyon. Two monopole structures would be erected on both USFS and DOE/NNSA lands, adjacent to the RL canyon spanning structures. The OPGW canyon spanning structures would be located outside of the existing transmission right-of-ways. Therefore, the easements would have to be expanded by 150 ft. in width and 1,000 ft. in length on each side of White Rock Canyon. Temporary staging areas of approximately 200 ft. by 200 ft. would be required for each of the four structures.

[9] Shield wires are wires installed on overhead transmission lines to protect them from lightning.

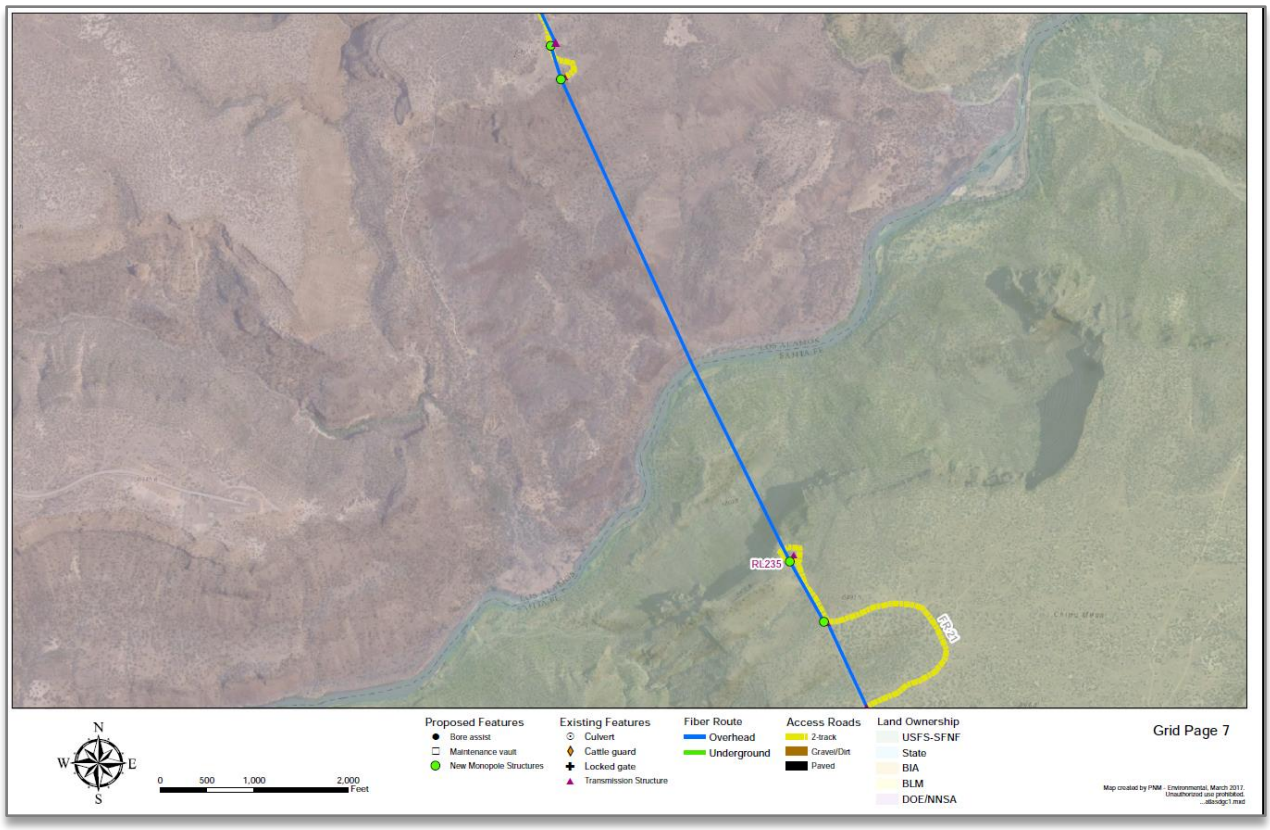

FIGURE 3-1. WHITE ROCK CANYON CROSSING; GREEN DOTS INDICATE PLACEMENT OF MONOPOLES (CENTURYLINK AND PNM 2019)

Once on the DOE/NNSA side in Technical Area (TA)-71 of White Rock Canyon, the line would remain aerial for approximately 2.7 miles until reaching the TA-70 Southern Technical Area (STA) substation. The area surrounding the STA substation is graded. CenturyLink would then bore/trench from the STA substation north to NM-4 for approximately 0.2 miles, then bore/trench along NM-4 for 1.1 miles to the community of White Rock. At the NM-4 and Piedra Loop intersection, the route would continue east in private easements for approximately 0.7 miles along Piedra Loop until its intersection with Sherwood Boulevard. CenturyLink has existing underground fiber facilities at the intersection of Piedra Loop and Sherwood Boulevard where the new fiber would be spliced into the existing fiber facilities (CenturyLink and PNM 2019).

Installation Requirements

Underground Installation: The underground fiber optic line would be installed within a high-density polyethylene (HDPE) 2 inch (in.) pipe placed within a 3 in. borehole. Inside the 2 in. pipe would be a 4-way microduct to allow for future expansion. Both HDPE and microduct would be spliced at approximately 700 ft. intervals. All buried fiber optic cables, at a minimum, would be at a depth of 48 in. Maintenance vaults would be placed at ground level. This project would primarily utilize a bore method of placement to limit the hazard of normal traffic and to minimize the amount of natural habitat disruption. However, trenching may be required in some areas due to the substrate, this would be determined real-time during construction. Boring, at no less than 48 in. depth, would require a bore assist pit roughly 2-3 ft. wide by 4-6 ft. long approximately every 700 ft. within or adjacent to the roadway corridors. The pits would serve as interduct placing and splicing locations. This distance could be adjusted or shortened, within reason, to

accommodate environmentally sensitive areas. In addition, bore depths can be adjusted to go under rock outcroppings, drainage crossings, and other obstacles. A backhoe, mini track, or similar construction equipment would be used to excavate the pits. From the pit the channel would be bored.

Concrete maintenance vaults would be required and placed about every 4,900 ft. outside the roadbeds. The maintenance vaults, which are 5 ft. in diameter, would require a 6 ft. square pit to allow for placement (Figure 3-2). The finished lid dimensions of the maintenance vaults at ground level would be approximately 30 in. round. An estimated nine maintenance vaults would be required. Locate balls[10] would be used to eliminate the need for above ground markers. All buried facilities would be at a minimum depth of 4 ft. and vaults and locate balls would be placed at ground level. Disturbed vegetated areas would be re-vegetated and returned to the governing land management agency specifications (CenturyLink and PNM 2019).

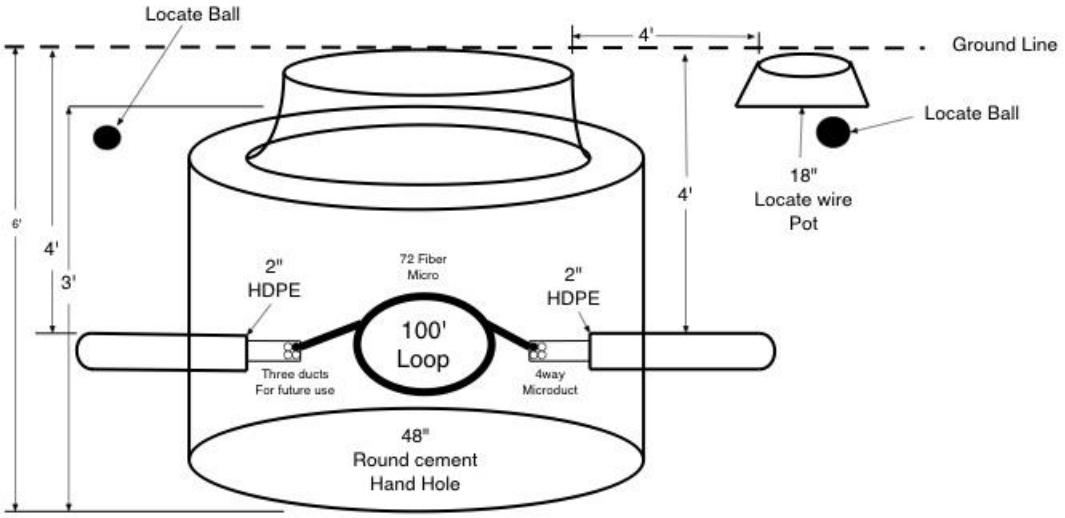

FIGURE 3-2. CROSS SECTION OF CONCRETE MAINTENANCE VAULT (CENTURYLINK AND PNM 2019)

OPGW Installation: The fiber optic line transition from underground to aerial at the top of the RL 115kV transmission line would be with a 72 fiber count OPGW. The OPGW combines the function of protective ground wire for the electrical power transmission line with the fiber optic communication capabilities, and it would be installed on the existing transmission support structures, typically without modification. The existing ground wires located above the RL conductors would be replaced by pulling ground wire while simultaneously stringing the OPGW. One pull site is required at each end of every cable section that is pulled. It is anticipated the six sections would be pulled, so 12 individual sites would be required. The size of each site would be approximately 50 ft. wide by 200 ft. long. OPGW stringing begins with the installation of travelers, large pulley assemblies, at each shield wire position on each structure. The shield wire is unclipped from the supports and transferred to the adjacent traveler. Traveler installation and shield wire transfer are expected to be performed from a helicopter flying structure-to-structure (Figure 3-3).

[10] Locate or marker balls are used for locating fiber cable. When excited by any standard marker locator, the marker ball produces a 5 ft. spherical radio frequency field, identifying the presence of fiber cable below.

FIGURE 3-3. HELICOPTER ASSISTED INSTALLATION SHIELD WIRE TRANSFER (CENTURYLINK AND PNM 2019)

Once the shield wire is fully unclipped, the far end would be connected to a pulling rope connected to a stationary tensioning trailer to mitigate cable slack. This pulling rope and tensioner maintains tension on the shield wire so that it does not dip or fall to the ground. The shield wire is then connected to the pulling trailer. The shield wire is then drawn toward the pulling trailer and coiled onto a large reel for recycle.

The pulling rope is then strung from the tensioning trailer at the far end to the pulling trailer at the near end and used to pull the high tension pulling cable from the pulling trailer to the tensioning trailer. Once the pulling cable is installed, it would be used to pull the new OPGW at high-tension from the tensioning trailer toward the pulling trailer. Once installed, the helicopter would return to each structure to transfer the OPGW from the travelers to the permanent attachment hardware. The travelers would then be removed from each structure (CenturyLink and PNM 2019).

Staging Areas

CenturyLink would require approximately three (3) staging areas along FR 24 to park equipment during the construction phase. The areas would need to be roughly 25 ft. by 50 ft. The staging locations are flexible and would be located at the least sensitive locations. Worker parking would be located at the staging areas (CenturyLink and PNM 2019). All staging areas would be approved by the governing land management agency prior to construction.

Logistical Support Equipment and Personnel

Construction activities, estimated construction equipment, and personnel requirements are shown in Table 3-1 and Table 3-2 below.

TABLE 3-1. CONSTRUCTION ACTIVITIES AND ESTIMATED CONSTRUCTION EQUIPMENT AND PERSONNEL REQUIRED FOR INSTALLATION OF UNDERGROUND FIBER OPTIC CABLE AND SUPPORT STRUCTURES

Activity	Equipment	Personnel
Survey/Staking	• ¾ Ton pickup trucks (2) • All-terrain vehicles (2)	2
Access improvements	• 1 Ton truck with trailer (1) • Backhoe (1) • ¾ Ton pickup (1) • 1 Ton pickup (1)	2
Boring	• Semi transport with trailer (1) Bore rig (1) • Water trucks (2) or trucks with water trailers (2) (would require multiple trips daily) for boring support • Truck with hydro-vacuum on trailer (1) • ¾ Ton pickup (1)	8
Bore pit and access vault excavations	• Truck with trailer (1) • Backhoe (1) • Truck with trailer - for vaults, conduits and other materials (1) • Truck with reel trailer for interduct (1)	4
Fiber placement	• Truck with trailer for fiber jetting machine (1) • Truck with fiber reel trailer (1) • Pickup truck (1)	6
Construction inspection	• ¾ Ton pickup truck (1)	1

(CenturyLink and PNM 2019)

TABLE 3-2. CONSTRUCTION ACTIVITIES AND ESTIMATED CONSTRUCTION EQUIPMENT AND LABOR REQUIREMENTS FOR AERIAL INSTALLATION OF FIBER OPTIC CARE AND WHITE ROCK CANYON CROSSING SUPPORT STRUCTURES

Activity	Equipment/(Quantity)	Personnel
Soil borings	• ¾ Ton pickup trucks (2) • Drill rig (1)	4
Survey	• ½ Ton pickup trucks (2) • All-Terrain vehicles (2)	2
Access improvements	• Semi with trailer (1) • Caterpillar D-6 (1) • 1 Ton pickup (1)	2
Foundations	• 1 Ton pickup trucks (4) • Drill rig (1) • Crane (1) • Concrete trucks (8)	7
Staging	• Private vehicles (8) • 1 Ton pickup truck (1) • Crane (1) • Rough terrain forklift (1)	2

Activity	Equipment/(Quantity)	Personnel
Structures	• 1 Ton pickup trucks (4) • Crane (1) • Bucket truck (1)	6
Wire pulling and clipping	• 1 Ton pickup trucks (4) • Pulling trailer (1) • Tensioning trailer (1) • Bucket truck (1) • Helicopter (1)	7
Construction inspection	• ¾ Ton pickup truck (1)	1
Environmental monitoring	• ¾ Ton pickup truck (1)	1

(CenturyLink and PNM 2019)

Construction Duration

CenturyLink estimates that underground construction would require around 16 – 18 weeks to complete. For the White Rock Canyon aerial crossing PNM would require approximately 6 to 8 week for completion.

Project Commitments

The Caja del Rio Plateau White Rock Canyon crossing lies within a USFS designated road less area (Management Area L). Compliant with USFS regulations (36 Code of Federal Regulations Part 294 Special Areas) that prohibits road construction and road reconstruction within inventoried road less areas; there would be no new access roads, changes in the roadways original design function, or road realignment within this area. All construction-scarred areas would be returned to original condition or better. Once the boring/trenching operations are complete and maintenance vaults placed, all sites would be restored and re-vegetated per the governing land management agency specifications. Maintenance vaults would have a final contouring and clean-up after the fiber installation and operations were done.

Prior to construction, an approved traffic control plan, by all land management agencies, would be in place. During roadway work, flagmen, traffic and pedestrian safety cones, and fence barricades would be utilized as appropriate. For safety purposes and if found necessary to leave an excavated area open without construction personnel present, covers, operation barricades, and/or fences would be utilized to prevent public access. All areas that would be open overnight or for longer periods of time would be closed, covered, or barricaded until construction operations commence.

During the first four months following placement, monthly inspections would be conducted to check for sunken trenches, pits, and vaults. Thereafter, CenturyLink would perform annual maintenance patrols along the underground placement corridor using existing roadways. Aside from any needed fiber locate requests for the underground facilities, regular maintenance of the underground fiber facilities is not normally required, except in the case of repair of damage due to digging activities or washouts. Maintenance requirements are expected to be infrequent and access to be limited to existing roadways. In addition, reasonable efforts would be made to limit periodic maintenance access to times when dry field conditions are present.

3.2 No Action Alternative

The No Action Alternative is not to construct a redundant fiber optic cable circuit. LANL's and Los Alamos County's ability to communicate with and connect to facilities and organizations around the world would remain vulnerable in the event of outages or service interruptions.

3.3 Alternatives Eliminated from Detailed Study

3.3.1 NNSA Alternatives Communication Services

NNSA considered alternative communication equipment including satellite, microwave, and air space lasers. These alternatives were determined as inadequate to provide the bandwidth, reliability, and security required by NNSA's LANL mission.

3.3.2 Alternative Routes

3.3.2.1 Eastern Route

Fiber optic line placement would need to traverse Pueblo Tribal Lands. Previous negotiations with various Pueblos have been unsuccessful. In addition, there are significant technical challenges routing fiber along and across the NM-4 eastern route, especially in light of future upcoming road and intersection improvements.

3.3.2.2 Northern New Mexico Regional Economic Development Initiative (REDI)

The REDI is a joint powers agreement among the counties of Los Alamos, Santa Fe, Rio Arriba, the City of Espanola, Ohkay Owingeh Pueblo, the Pueblo of Santa Clara, the Pueblo of Pojoaque, and the Pueblo of Tesuque for the collective management, design, construction, implementation, and operation of a broadband network. The agreement included the construction of a fiber optic line into Los Alamos County, but the fiber optic circuit crossed Pueblo land to the north and east of Los Alamos County. The difficulty of the terrain and inability to work out an agreement with the Pueblos has prevented this plan from proceeding in the foreseeable future.

3.3.2.3 Western Route

A fiber optic line circuit across the Jemez Mountains west of Los Alamos County was considered. The estimated cost of construction was very high due to the need to bore though rock along the corridor. This would have also required approval from the USFS, Bandelier National Monument, Valles Caldera National Preserve, and Jemez Pueblo. Therefore, these alternatives were not carried forward for detailed analysis, as they were not considered reasonable options to meet NNSA's purpose and need for action.

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section presents the potential direct, indirect, and cumulative effects of the Proposed Action Alternative and the No Action Alternative. Compliant with Council on Environmental Quality (CEQ) regulations and DOE's NEPA guidance, this Draft EA applies a sliding-scale approach to impacts analysis consistent with DOE's *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements* (DOE 2004). Specifically, more information is provided regarding the resources that have a greater potential to be impacted by the Proposed Action Alternative and the No Action Alternative, while less depth and breadth of analysis is applied to resource areas having clearly no or minor environmental impacts.

The Council on Environmental Quality NEPA regulations require an assessment of cumulative effects for federal actions. Cumulative actions are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such actions" (40 CFR 1508.7). The affected lands within the fiber optic circuit route have been modified from past activities, such as housing development, ranching [grazing], roadway construction, trail creation, and underground and overhead utility corridors.

LANL land modifications within TA-70 and TA-71 include utility corridors; TA-70 STA substation; and biking, horseback, and hiking trails. The buried section of the fiber optic line corridor along NM-4 and the White Rock community would be located in lands previously modified by roadway construction and housing developments. There are no identified reasonable foreseeable future actions within or closely adjacent to the fiber optic corridor area at TA-70, TA-71, and along NM-4. Currently, a housing development of around 161 family homes on approximately 48 acres of property is under construction on the north side of NM- 4, west of the Los Alamos County Visitor Center in White Rock.

The fiber optic corridor is adjacent to Caja del Rio Road on Santa Fe County lands and the *El Camino Real de Tierra Adentro National Historic Trail* both traversing on USFS and BLM lands and is adjacent to CR 62. The Caja del Rio Plateau USFS lands include a trailhead facility with a shade ramada, vault toilets, fire pits, informational kiosk, and a graveled parking area. The USFS and BLM have established long-term cattle grazing allotments within and adjacent to the project area. Cattle movement and distribution are controlled throughout the area by fencing and use of cattle guards. Present activities in the affected area include all-terrain vehicle use, biking, livestock grazing, hiking, horseback riding, outfitting and guided jeep tours, recreational vehicle driving and camping, and target shooting. Each of these activities use existing trails and roadway corridors. Reasonable foreseeable future actions within Caja del Rio Plateau are the development or improvement of roadway and trails recommended by the Greater Santa Fe Recreation Partnership (GSFRP) and DOE/NNSA identification and consideration of alternatives to upgrade LANL's electrical power capacity. The GSFRP is a regional collaboration among governmental and non-governmental partners chartered to develop cross-jurisdictional master trails and comprehensive outdoor recreation master plans for the greater Santa Fe area. Recommendations from the GSFRP could result in additional and/or improved trails and roadways, thereby, resulting in the potential of increased visitation and recreational use. Alternatives to upgrade LANL's electrical power capacity could include the reconductoring of existing power lines or construction of a new power line corridor within the Caja del Rio Plateau. Proposals from the GSFRP or DOE would be further evaluated when a formal project proposal and the specific details are available to conduct a NEPA analysis.

Few cumulative impacts are anticipated to result from the implementation of the Proposed Action as the proposed fiber optic route would be located within or adjacent to roadways; within existing utility corridors and easements; within the existing USFS roadbed; or aerial on the existing RL transmission line. Where there is a potential for cumulative effects they will be mentioned in the affected resource section.

4.1 Air Quality

Proposed Action

During the construction phase, emissions from heavy equipment (e.g., pickup trucks, water trucks, backhoe, reel trailers, bore rigs) would temporarily affect ambient air quality. Air emissions from construction vehicles and equipment would be minor and temporary resulting in negligible impacts to air quality. Ground disturbing activities such as clearing for vaults and trenching would temporarily generate fugitive dust. To minimize the effects of fugitive dust during construction, dust suppression via water trucks or other methods would be implemented.

Post-construction during the operational period, there would not be emission of air pollutants.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

There would be no air emissions, as the fiber optic cable circuit would not be constructed.

4.2 Geology and Soils

Proposed Action

The proposed fiber optic route parallels existing roadways and is primarily within FR 24 roadbed, or it is strung overhead on existing power poles. In a majority of the area, the soil surface is exposed dirt, gravel, and rocks interspersed with vegetation. During construction, soil erosion and sedimentation would be avoided or minimized through BMP and compliance with National Pollutant Discharge Elimination System (NPDES) permit requirements for erosion and sedimentation control would be followed. Site watering would serve to suppress wind blow dust. Post-construction, the construction-scarred areas would be re-vegetated where necessary and and re-contoured. The re-vegetated and re-contoured land would serve to reduce erosion and windblown dust. There would be no effect to the geologic structure of the affected areas.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

There would be no effect to geology and soils, as the fiber optic cable circuit would not be constructed.

4.3 Water Resources

Proposed Action

The proposed fiber optic circuit corridor is not in a 100-year floodplain or within a wetland. Surface water quality could be affected by the construction due to increased silt load resulting from runoff during and following wet (rain and snow) weather events. Soil disturbances associated with installation or construction activities can potentially result in adverse water

quality impacts. Vegetation removal can alter site runoff patterns. Operationally, fiber optic require no process water or cooling water.

As a proposed construction site greater than one acre along the entire cable route, the project would be required to and would file a *Notice of Intent* and follow the requirements of a *National Pollutant Discharge Elimination System Construction General Permit* and prepare a *Storm Water Pollution Prevention Plan* (SWPPP) specific to the proposed fiber optic circuit. BMP would be adopted for pre- and post-construction, preventing to the extent practicable, pollutants (primarily sediment, oil and grease, and construction materials) from entering storm water runoff. Likewise, a spill plan would also be required. The site-specific spill plan would address chemicals and any petroleum products used or stored on the work site and the actions to take in case of a spill. Post-construction stabilization measures such as re-contouring and re-vegetation would be implemented. There are no adverse impacts anticipated to surface water resources as a result of implementation of the Proposed Action.

The Proposed Action is not expected to have any adverse impacts on the ground water quality in the area of potential effect. Implementation of BMP during construction would prevent the introduction of potential pollutants migrating into the groundwater from a surface incident.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

There would be no effect to water resources, as the fiber optic cable circuit would not be constructed.

4.4 Plant and Animal Resources

Proposed Action

DOE/Los Alamos County

The fiber optic circuit route on DOE lands consists of primarily piñon-juniper woodlands along with herbaceous plants and grasses that have adapted to disturbed areas. There are no wetlands present. Animal and plant species are common and generally found throughout the region. Threatened and endangered species are identified, managed, and protected through implementation of LANL's *Threatened and Endangered Species Habitat Management Plan for Los Alamos National Laboratory* (LANL 2017). Suitable habitats for federally listed threatened and endangered species have been designated as areas of environmental interest (AEI). AEIs are geographical units at LANL that are managed for the protection of federally listed species and consist of core habitat areas and buffer areas. The purpose of the core habitat is to protect, in compliance with the Endangered Species Act, areas essential for the existence of the specific threatened or endangered species. The purpose of buffer areas is to protect core areas from undue disturbance and habitat degradation. The proposed LANL area for the fiber optic circuit is not within core or buffer habitat areas. The fiber optic line is primarily aerial and as such would have minimal impact on species and habitat from the canyon crossing to NM-4. From the STA substation the route is underground and parallels NM-4 to its terminus at the intersection of Piedra Loop and Sherwood Boulevard. Fiber optic line burial would occur in roadway shoulder maintained areas or in landscaped environments. Vegetation removal and disturbance would be minimal.

During construction activities, compliance with the *Migratory Bird Treaty Act* restricts vegetation removal during the peak bird breeding season, May 15 through July 31, unless LANL biological resources staff have conducted a nest check to ensure that there are no nesting birds present. If

active nests were found, the nest tree or shrub would be left in place until the nesting is complete.

Santa Fe County/BLM

From the CenturyLink infrastructure in an underground vault at the Marty Sanchez Links de Santa Fe golf course, the fiber optic route would run underground and parallel to Caja del Rio Road until reaching the intersection of CR 62 where it would continue underground on CR 62 crossing BLM lands until meeting the boundary of the SFNF. The installation in this section would occur approximately 10-15 ft. west of the Caja del Rio Road shoulder and on CR 62, it would be located approximately 10 ft. southwest from the Santa Fe Landfill boundary fence. Habitat along Caja del Rio Road is typical of disturbed and maintained (mowed) roadsides. Similarly, CR 62 is a maintained dirt route with disturbed road shoulders. Prior to surface disturbing activities during breeding season, surveys would be conducted in potential nesting habitat to identify any active nest. Undergrounding the fiber optic line would have minimal impact on species and habitat given the brief construction period, avoidance of impact to nesting birds, and that surface disturbed areas would be re-vegetated.

USFS

Three biological evaluation surveys were conducted on April 19, April 26, and May 3, 2019, along the proposed project route on USFS lands (See APPENDIX B) to identify the presences of proposed endangered, threatened, and regional forester's sensitive species; USFS management indicator species; and avian species. The project area was found to provide habitat for a variety of mammals, reptiles, and birds that are common in the juniper-savannah habitat.

Common mammal species in the area include Colorado chipmunk (*Neotamias quadrivittatus*), Gunnison's prairie dog (*Cynomys gunnisoni*), black-tailed jackrabbit (*Lepus californicus*), western spotted skunk (*Spilogale gracilis*), badger (*Taxidea* taxus), desert cottontail (*Sylvilagus audubonii*), mule deer (*Odocoileus hemionus*), Rocky Mountain elk (*Cervus elaphus*), gray fox (*Urocyon cinereoargenteus*), and coyote (*Canis latrans*). Common reptiles that may be found in the project area include New Mexican whiptail (*Aspidoscelis neomexicanus*), roundtail horned lizard (*Phrynosoma modestum*), collard lizard (*Crotaphytus collaris*), striped whipsnake (*Masticophis taeniatus*), western diamondback rattlesnake (*Crotalus atrox*), prairie rattlesnake (*Crotalus viridis*), and bullsnake (*Pituophis melanoleucus*) (DOT/USFS/BLM 2016). The project is not anticipated to adversely affect any mammalian or reptile species as the fiber optic cable would be laid primarily in the FR 24 roadbed or hung aerially, in staging and vault areas they would be expected to temporarily relocate to adjacent undeveloped areas during construction activities, and post-construction site restoration would substantial restore affected habitat.

A variety of migratory and resident bird species use the project area for nesting, wintering, foraging, and sheltering. Common bird species that can be found in the project area include the broad-tailed hummingbird (*Selasphorus* platycercus), chipping sparrow (*Spizella passerina*), common raven (*Corvus corax*), juniper titmouse (*Baeolophus ridgwayi*), lark sparrow (*Chondestes grammacus*), mourning dove (*Zenaida macroura*), pinyon jay (*Gymnorhinus cyanocephalus*), and spotted towhee (*Pipilo maculatus*). The White Rock Canyon cliffs provide suitable roosting and nesting habitat for several birds of prey including golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), and red-tailed hawk (*Buteo jamaicensis*). Guano (whitewash) was observed on the cliff walls indicating the presence of large birds using the area.

Avian point count surveys consisted of 22 survey points spaced approximately 0.5 mile apart (Figure 4-6). Project biologists observed and listened for five minutes, documenting all species,

including numbers of individuals. Although the surveys were tailored toward identifying avian species, any USFS species of concern or management indicator species were recorded (Triad 2019). Forty-four bird species and 622 individual birds were observed including the gray vireo (*Vireo vicinior*), which is listed as a threatened species by the State of New Mexico.

The primary impacts from the project would be disturbance of nesting and foraging habitat from construction activities and vegetation removal outside of the FR 24 roadbed. A majority of disturbance would occur from laydown yards, equipment staging, or vault construction.

Much of the work would occur in the FR 24 roadbed, minimizing vegetation removal and soil disturbance. To conserve habitat, the project would select laydown yards, equipment storage, and line installation to minimize soil disturbance and removal of vegetation. Previously disturbed areas would be used for staging. Vegetation removal would be done outside of the breeding season (April–July) to protect active nests. If vegetation removal occurs within the breeding season, a LANL biologist would survey vegetation for active nests before removal.

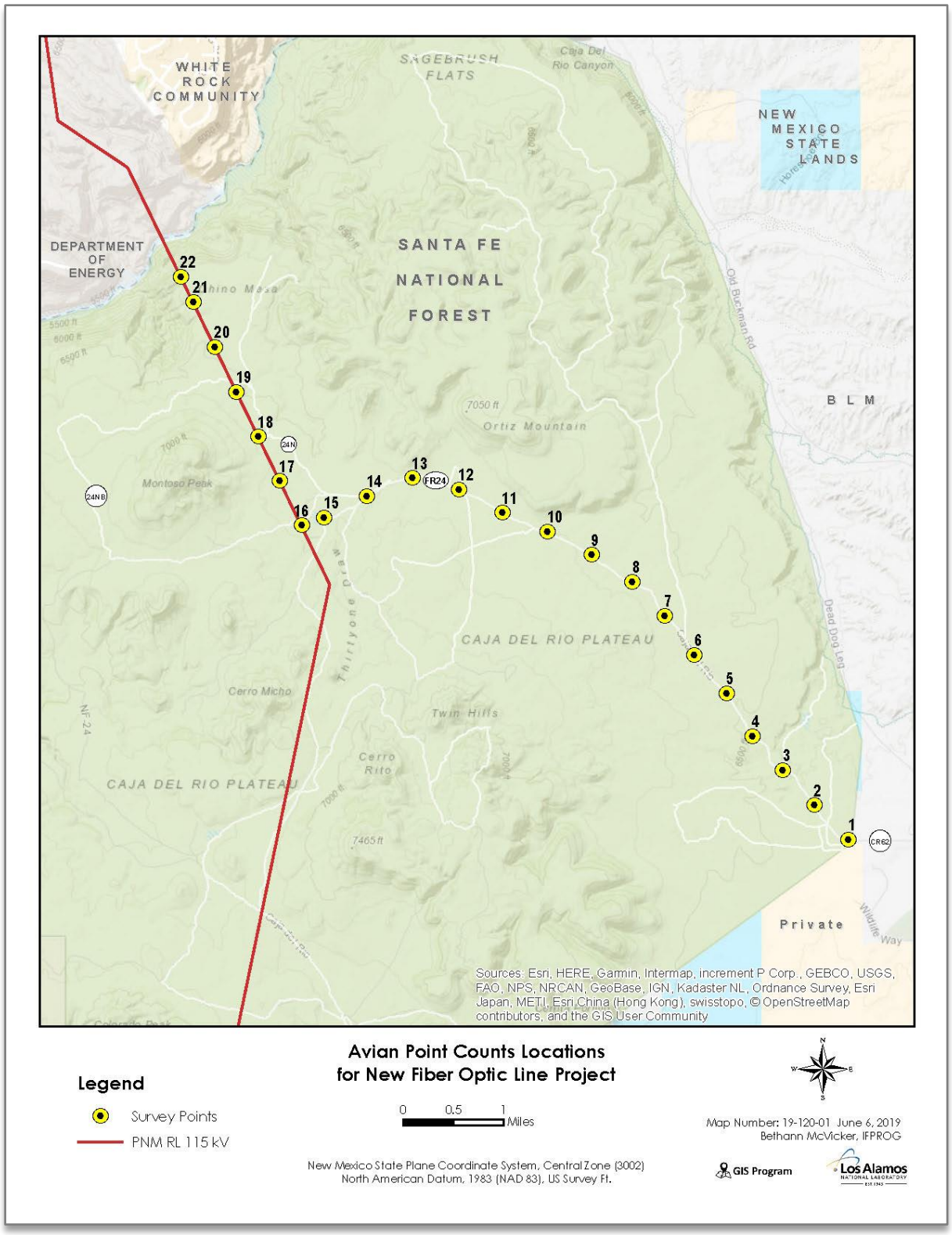

FIGURE 4-1. AVIAN POINT COUNT LOCATIONS (TRIAD 2019)

Vegetation surveys were conducted concurrently with the avian point counts along the proposed route. The vegetation surveys focused on species listed on the SFNF's small project biological evaluation form that had the potential to occur in this area. The proposed route is primarily comprised of bare soil with plants dispersed irregularly within the juniper-savanna vegetation community that is dominated by oneseed juniper (*Juniper monosperma*) and pinyon pine (*Pinus edulis*). Other species present were mainly early successional species that tend to do well in disturbed habitats. No sensitive species were identified (Triad 2019).

Vegetation impacts would be from direct removal during construction. Prior to construction and as a component of the breeding bird survey, should any sensitive species be identified, the plants would be flagged and worked around as best as practicable and/or, if feasible, individual plants would be transplanted outside the area of disturbance. Many of these early successional plants would naturally re-establish after the project is complete. To prevent the adverse consequeses from the potential introduction or spread of weed species the project will be required to implement the mitigation measures detailed in Chapter 5.

Provided the mitigation measures in Chapter 5, such as site restoration requirements, are followed, the project is not expected to adversely affect sensitive animal or plant species.

Cumulative Impacts: There could be a long-term change in vegetation in construction affected areas and an increase in weedy invaders even with the mitigation commitments specified in Chapter 5. This would add cumulatively to all the other disturbed sites in the area. In dry areas like the Caja del Rio, even historic sites show a change in vegetation decades later with weed species. .

No Action Alternative

There would be no change in existing site or power line corridor conditions. Thus, there would be no effect to plants and animals or their habitat.

4.5 Recreation

Proposed Action

DOE/Los Alamos County

TA-70 and TA-71 are utilized by a variety of recreationists that include hikers, mountain bikers, horseback riders, and others who enjoy the outdoors. Public use of motorized vehicles is not allowed. Installation and operation of the fiber optic aerial line utilizing existing power poles will not affect the recreational use of TA-70 or TA-71 land. Similarly, installation of the underground fiber optic line along NM-4 and the White Rock community will not affect recreational use, as it is directly adjacent to the roadways and not in recreational lands.

Santa Fe County and BLM Lands

Santa Fe County affected lands initiate from the Marty Sanchez Links de Santa Fe golf course and run parallel to Caja del Rio Road into the intersection of CR 62 then continue on CR 62 crossing BLM lands until meeting the boundary of the SFNF. The installation in this section would occur approximately 10-15 ft. west of the Caja del Rio Road shoulder and for the most westerly 0.75 miles on CR 62, it would be located approximately 10 ft. southwest from the Santa Fe Landfill boundary fence. The shoulder of CR 62 includes lands owned or managed by the Santa Fe County and BLM. Prior to starting construction activities that could affect normal traffic flow, CenturyLink would have a traffic safety and control plan (TSCP) specific to higher speed traffic along these roadways in place that upon implementation would safely direct and guide the traveling public, including pedestrians and bicyclists, through the work zones, as well as to

protect the construction workers. During installation of the underground fiber optic line traffic, primarily recreational traffic accessing USFS lands, may experience very minor traffic delays. Once installed there would be no effect to traffic along this route.

SFNF Land

The Caja del Rio Plateau has been a recreational area used mainly by the residents in Santa Fe County and surrounding communities but is experiencing an increase of visitors from other regions. The area provides for a variety of outdoor activities but has had a history of recreational abuse characterized by dumping, illicit alcohol and drug use, irresponsible shooting, and cross country travel by motorized vehicles (DOT/USFS/BLM 2016). The Santa Fe National *Forest Travel Management Implementation Plan*, limits motor vehicle use to designated roads only.

On SFNF lands, the route would be primarily within and down the middle of FR 24 roadbed, a hard packed dirt roadway with substantial ruts in some stretches and the most used road in the Caja de Rio plateau, or in certain situations parallel FR 24, approximately 10–20 ft. adjacent to and south of the FR 24 roadway. A small portion of the project would entail use of a two-track road mostly within the RL 115kV transmission line permit area with similar road conditions to FR 24. Both roadways are used by recreationists and ranchers especially FR 24. The TSCP will be specific to FR 24 roadway conditions and traffic considerations. During installation of the underground fiber optic line, traffic may experience minor traffic delays and/or very short site specific short detours around the immediate construction zone. However, every effort will be made to allow single lane traffic to avoid travel outside the existing roadway. No temporary roads or cross country will be permitted. Signage will be placed at appropriate locations along the roadways alerting traffic that construction will be encountered. In the traffic control areas, flagman will be present to direct the traffic as to the appropriate course of action. Post-construction there would be no effect to traffic along the two-track road mostly within the RL 115kV transmission line permit area and FR 24. A potential benefit from the project is that section FR 24 may be improved during the fiber optic line installation, due to grading and other actions necessary to protect the underground line.

At the RL White Rock Canyon crossing, installation of the two in-line steel monopole structures would be required. Temporary staging areas of approximately 200 ft. by 200 ft. would be required for each of the two structures. Those areas would posted to exclude recreationists during the construction period.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

There would be no impacts from the Proposed Action, as the redundant fiber optic circuit would not be constructed. The potential benefit of FR 24 additional road maintenance would not occur.

4.6 Scenic Resources

Proposed Action

A continuing responsibility of the Federal Government in compliance with NEPA is to assure for an aesthetically and culturally pleasing surroundings for the American people (NEPA 1969). In general, scenery is the aggregate of visual and auditory (noise) natural and manmade features that give a particular landscape its character and aesthetic quality that is an integrated part of ecosystem management.

DOE/Los Alamos County

DOE scenic resources NEPA guidance directs for the identification of lands with “scenic, or aesthetic importance;” and discusses the potential direct, indirect, and cumulative effects of the Proposed Action and alternatives on scenic or areas of aesthetic importance (DOE 1997).Furthermore, this guidance directs consideration of mitigation design alternatives that would mitigate for aesthetic intrusion (DOE 2004).

Of the 6.3 mile project corridor associated with the OPGW ground wire replacement on PNM’s transmission line, approximately 2.7 miles would be located on DOE lands. The proposed fiber optic crossing over White Rock Canyon is approximately 1.1 mile in length and bisects both USFS and DOE/NNSA lands. Noticeable visual features of the lands adjacent to the OPGW portion of the project within DOE/NNSA property include recreation areas and developed recreational trails for hiking and horseback riding, linear energy infrastructure, the STA substation, utility patrol roads, and communication facilities. Several trails in the vicinity provide access to the Rio Grande along the south edge of White Rock Canyon. The STA substation area is graded and contains multiple transmission lines, which link to the STA substation. From the STA substation, the fiber optic line would run underground and parallel roadways to its termination point in the White Rock community.

The White Rock Canyon fiber optic line span would be visible from vantage points on or relatively near the canyon edge and from below, along the Rio Grande. During monopole erection and line stringing construction, activities would be noticeable but transitory. Post-construction, the fiber optic line crossing over White Rock Canyon would parallel and be approximately 60 ft. to the west of the existing electrical power transmission structures and lines. The separation distance is an engineering requirement to prevent potential impacts from galloping wire and differential wind displacement. Several measures would be taken to retain the landscape character, thereby minimizing visual impacts. The White Rock Canyon crossing monopole structures would, as much as practical, be designed, colored, and sited to blend in with the existing RL structures and TA-71 landscape. Non-specular structure materials on the monopoles would be used to reduce reflection and glare. Staging areas would be selected to minimize soil and vegetation impacts. In addition, ground surfaces and staging areas disturbed during construction would be restored to approximate the original grade and re-vegetated as necessary. Whenever possible, disturbance to existing vegetation, topsoil, and rock formations would be avoided or minimized at the monopole locations. The OPGW on DOE/NNSA land would replace the existing ground wire on PNM’s transmission line and would not be a visual change from current conditions. The underground fiber optic line corridor that would parallel roadways would be re-vegetated but may be evident for years. The concrete maintenance vaults would be placed at ground level and not obvious to drivers or a casual observer who are not in the immediate area.

Post-construction and after re-vegetation the fiber optic corridor along NM-4 and within the community of White Rock would not be noticeable.

BLM, Santa Fe County and USFS

Lands administered by the BLM and USFS are managed to achieve a specific level of visual or scenic quality. However, the two federal agencies use different systematic processes to analyze the potential visual effects of proposed projects and activities.

Post-construction and after re-vegetation the fiber optic corridor along Caja del Rio Road and CR 62 would not be noticeable.

BLM: On BLM land, visual resource management (VRM) is conducted in accordance with BLM Manual 8400 – *Visual Resource Management*. VRM classes are used as minimum management objectives for identified visual management units within BLM land. Each VRM

class describes differing degrees of modification allowable in basic landscape elements. VRM classifications are listed below.

- Class I: Preserve the existing character of the landscape. The level of change should be very low and must not attract attention.
- Class II: Retain the existing character of the landscape. The level of change should be low. Management activities may be seen, but should not attract the attention of the casual observer.
- Class III: Partially retain the existing character of the landscape. The level of change should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer.
- Class IV: Allow management activities requiring major modifications to the existing character of the landscape. The level of change may be high. Management activities may dominate the view. However, every attempt would be made to minimize the impact and aim to repeat the basic elements in the landscape.

In Addition, all permitted actions on BLM lands are evaluated to minimize impacts on the night sky.

The area along CR 62 is managed by the BLM as VRM Class III (DOT/USFS/BLM 2016). The BLM affected land section is dominated visually by CR 62, the landfill, and two-track roads. The installation of an underground fiber optic cable and associated maintenance vaults would not alter the visual environment of the area once the vegetation has been re-established. Post-construction the fiber optic route would not be noticeable by users of the *El Camino Real de Tierra Adentro National Historic Trail.* There are no lighting requirements associated with the Proposed Action.

USFS: The USFS Santa Fe *Forest Plan* references the VMS that has since been replaced by the Scenery Management System (SMS) (USFS 1987). This analysis uses the SMS and corresponding terms for the impacts analysis. The SMS builds upon the VMS incorporating additional factors when evaluating potential scenery effects and does not exclude any VMS factors (USFS/BLM 2006). The SMS categories and management objectives are listed below.

- Very High: Landscape character "is" intact with only minute if any deviations. The existing landscape character and sense of place is expressed at the highest possible level (USFS 1995).
- High: Landscapes where the valued landscape character "appears" intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident (USFS 1995).
- Moderate: Landscapes where the valued landscape character "appears slightly altered." Noticeable deviations must remain visually subordinate to the landscape character being viewed (USFS 1995).
- Low: Landscape character "appears moderately altered." Deviations begin to dominate the valued landscape character being viewed, but they borrow valued attributes, such as size, shape, edge effect and pattern of natural openings, vegetative type changes, or architectural styles outside the landscape being viewed.

They should not only appear as valued character outside the landscape being viewed but compatible or complimentary to the character within (USFS 1995).

- Very Low: Valued landscape character "appears heavily altered." Deviations may strongly dominate the valued landscape character. They may not borrow from valued attributes, such as size, shape, edge effect and pattern of natural openings, vegetative type changes, or architectural styles within or outside the landscape being viewed. However, deviations must be shaped and blended with the natural terrain (landforms) so that elements such as unnatural edges, roads, landings, and structures do not dominate the composition (USFS 1995).

- Unacceptably Low: The valued landscape character being viewed appears extremely altered. Deviations are extremely dominant and borrow little if any form, line, color, texture, pattern, or scale from the landscape character. Landscapes at this level of integrity need rehabilitation. This level should only be used to inventory existing integrity. It must not be used as a management objective (USFS 1995).

On USFS lands, the underground fiber optic line would be installed entirely within Management Area G with a management emphasis on wildlife, range, and firewood collection and installation of the OPGW on the PNM transmission line would be within Management Areas G and L which has a management emphasis semi-primitive, non-motorized recreation. Management Area G meets the SMS management categories of “Low” to “Moderate.” Contiguous with Management Area G is the White Rock Canyon Management Area L, which is the site of the proposed White Rock Canyon OPGW crossing and a designated road less area (See Section 3.1 Project Commitments on page 10). This area is managed under the SMS category of “high.” It should be noted that both management areas in the Santa Fe National Forest, Southwestern Region’s June 2019 Santa Fe National Forest Draft Land Management Plan, Draft Environmental Impact Statement are identified as potential wilderness areas. The Forest Service regional office is of the opinion that the placement of the pole in a corner of the designated road less area would not be an impact.

The USFS project area is primarily on an undeveloped mesa top that is a two-needle pinyon (*Pinus edulis*)-juniper (*Juniperus monosperma*) savannah and woodland crisscrossed by two-track and single-track roadways and trails. The proposed route is comprised primarily of bare soil with plants dispersed irregularly. The species present were mostly early successional species that tend to do well in disturbed habitats. The most prominent activities are cattle grazing, recreational vehicle camping, off-highway vehicle use, mountain biking, hiking, and target shooting. Most of the fiber optic cable installation would occur along the existing roads and PNM’s RL transmission line, with minimal additional disturbance to undeveloped areas. On SFNF lands, the route would parallel FR 24, approximately 10–15 ft. adjacent to the dirt roadway, for approximately 7.4 miles until FR 24 intersects with the RL 115kV transmission line. Given that, the fiber optic cable route would be underground with maintenance vaults at ground level and adjacent to FR 24, after re-vegetation, there would be little noticeable change to the scenic environment. The underground portion of the fiber optic line would terminate at a vault and then connect to the top of the RL transmission line replacing an existing ground wire with OPGW for a distance of approximately 3.6 miles. The OPGW would be installed on existing transmission support structures typically without modification and therefore, little to no change in the scenic environment.

Similar to the RL, the White Rock Canyon fiber optic line span would be visible from vantage points on or relatively near the White Rock Canyon edge, high points within the local Caja del Rio Plateau project area and from below, along the Rio Grande. To the extent practical, the

monopole structures would be designed and colored to match the line, color, texture, and pattern of the existing Caja del Rio Plateau landscape and RL structures. Non-specular structure materials on the monopoles would be used to reduce reflection and glare. Staging areas would be selected to minimize soil and vegetation impacts. The ground surfaces and staging areas disturbed during construction would be restored to approximate the original appearance and grade and re-vegetated as necessary. Whenever possible, and as practical, impacts to vegetation would be avoid or minimized, topsoil stockpiled for later site restoration, and impacts to rock formations minimized and restored as close to original post-construction appearance. Scenery restoration is expected to take years.

Line Maintenance: For all affected land, maintenance activities would not affect the characteristic landscape. Such maintenance activities would include travel along access routes adjacent to the underground fiber optic line and under PNM lines for inspection and, if necessary, repair.

Cumulative Impacts: Approximately nine new concrete maintenance vaults and four new monopoles are additive to the utility corridors and structures which are already present. Additional the change, perhaps long-term, in vegetation characteristics is additive with other activities that have affected the landscape, such as, ranching and motorized vehicle use. Therefore, a visitor's sense of isolation and appreciation of the natural landscape may be affected. Impacts analyses of future projects in the area may have to incorporate additional mitigations, which would not have been necessary in the past, to offset further effects to the scenic environment.

No Action Alternative

There would be no impacts from the Proposed Action, as the redundant fiber optic circuit would not be constructed.

4.7 Noise

Proposed Action

The predominant noise source in the project areas consists of intermittent traffic noise associated with highway traffic and within the BLM and USFS lands intermittent recreational and off-road vehicles noise and target practice shooting. Construction activities, primarily from construction equipment operation, would contribute a short-duration increase to ambient noise level adjacent to the fiber optic corridor. Construction activities would be of relatively short-duration and would occur during daylight hours.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

There would be no impacts from the Proposed Action, as the redundant fiber optic cable would not be constructed.

4.8 Land Tenure and Use

Proposed Action

DOE/Los Alamos County

DOE: The OPGW line would cross White Rock Canyon from USFS lands onto LANL lands at TA-71. Two new steel monopole structures and anchors would be required. These structures

would be erected directly adjacent to the RL transmission line structures. The OPGW would transition from the new monopoles to the RL transmission line poles for the remaining route to the TA-70 STA substation. From the STA substation, the fiber optic line would go underground following existing roadways, right-of-ways, and private easements to its terminus at Piedra Loop in the community of White Rock. PNM's existing DOE/NNSA easement would require modification as it does not allow for the installation of communication facilities. Therefore, a new DOE/NNSA easement would have to be obtained for the project. The new easement would substantially overlap with PNM's transmission line easement on LANL lands. The notable exception would be the additional easement needed for the construction of the White Rock Canyon monopoles and anchors on LANL lands. The remaining routing is compatible and compliant with the land use and requirement for those areas.

Los Alamos County: The underground fiber optic line would be constructed along NM-4 within the DOE/NNSA granted easement to NMDOT. DOE/NNSA would notify NMDOT of the proposed project.

At the NM-4 and Piedra Loop intersection, the underground installation would continue east in private easements along Piedra Loop until it intersects with Sherwood Blvd.

BLM/Santa Fe County

All uses and activities within the Taos Field Office administered lands must conform to the RMP. The Proposed Action would meet the RMP goal to establish an efficient system of utility corridors and communication sites to meet the energy and communication needs of the public with minimum negative impacts on visual, biological, cultural, and physical resources (BLM 2012). A BLM grant of right-of-way would be required for CenturyLink to use BLM public lands for the underground fiber optic line installation. The issuance of a rights-of-way would serve to direct and control the granted activity in a manner protective of natural resources, and prevent unnecessary or undue degradation to the public land. Concurrent with a BLM grant of right-of-way, Santa Fe County would require a Development Permit/Site Development Plan per the County's Sustainable Land Development Code (SF 2016). The installation of an underground communication cable(s) is a permitted use in all Santa Fe County zoning districts.

USFS

The USFS is authorized to grant right-of-way for communication and electrical transmission lines under 36 CFR Part 251, Subpart B. These regulations set forth the necessary procedures, processes, and requirements related to the use and occupancy of national forest lands by any individuals or entities. All permits, contracts, and other instruments for the use and occupancy of these National Forest System lands must be consistent with the *Forest Plan* (USFS 1987) [36 CFR 219.10 (e)].

The *Forest Plan* directs the minimization of the number of electronic sites and utility corridors by allowing only those that are most appropriately located on forest lands and utilizing existing corridors whenever possible from a need and resource management standpoint (USFS 1987). Existing land uses in the project area include transportation and utility corridors and easements. A key decision variable in selecting the proposed route was crossing the SFNF in an existing corridor, which is consistent with *Forest Plan* direction. The forest-wide goals, standards, and guidelines from the *Forest Plan* that apply to this project are primarily those regarding protection of cultural resources, wildlife habitat, and water and soil resources. The project has been designed to conform to the area-specific *Forest Plan* direction that applies to Management Areas G and L. Emphasis in this Management Area G is on key wildlife habitat protection, habitat improvement, and forage and firewood production. Contiguous with Management Area G, and where the underground portion of the fiber optic line would go aerial, is Management

Area L. Management of Area L focuses on maintaining semi-primitive non-motorized recreation opportunities and providing the user with a moderate to high probability of experiencing isolation from the sights and sounds of humans (USFS 1987).

The underground portion of the project effecting USFS lands would be constructed within an existing transportation corridor (FR 24). The fiber optic line does not constitute a new utility and is, therefore, consistent with the *Forest Plan*. However, a special use authorization would be required.

The majority of all OPGW work would occur in areas already permitted for the RL 115kV transmission line utilizing utility corridors or easements in Management Area G and L. The route would not affect current land uses. A special use authorization would be required for the installation of two monopoles and support structures, which would be erected outside of the transmission line corridor boundaries. In addition, an amendment to the PNM's SFNF master permit would be required.

Authorizations for special uses may be issued to qualified applicants when the proposed use (1) fulfills a demonstrated special need without unduly infringing on use by the general public; (2) is in accordance with an approved implementation plan and would not cause adverse impacts on the National Forest and its resources; (3) serves a function that cannot be provided by private enterprise off National Forest lands, and/or (4) is compatible with Management Area objectives (USFS 1987). The Proposed Action would meet these conditions to qualify for a special use permit and amended special-use permit.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

There would be no effect to current land tenure and use.

4.9 Cultural Resources

Proposed Action

In compliance with Section 110 of the National Historic Preservation Act of 1966, as amended, (NHPA) LANL archaeologists conducted a literature survey at the New Mexico State Historic Preservation Division Archaeological Records Management Section and at the SFNF Headquarter office in Santa Fe, New Mexico for known cultural resources along the proposed fiber optic line corridor. Additionally, a systematic pedestrian survey was conducted along the proposed route from May 2019 through October 2019. The cultural resources findings are as follows:

DOE/NNSA

There are nine historic properties identified along the fiber optic corridor through DOE/NNSA land at LANL (Table 4-1). These archaeological sites are associated with cultural periods that range from the Archaic Period (5,500 years ago) to the Ancestral Pueblo Periods (200 AD to 1600 AD). These include (from east to west), LA 29796, LA 29797, LA 82593, LA 21625, LA 139570, LA 82591, LA 139541, LA 6787 and LA 82602. The proposed project will avoid impacts to all identified cultural resources during construction and installation activities by excluding areas where archaeological sites are present from ground disturbance including staging and laydown areas. These archaeological sites fall under the requirements and stipulations of LANL's Programmatic Agreement (PA) among DOE/NNSA Los Alamos Field Office, New Mexico State Historic Preservation Office and the Advisory Council on Historic Preservation (DOE 2017). In accordance with the PA, the project work scope is reviewed by subject matter

experts who define areas of potential effects, historic properties, and provide comments to project managers that stipulate requirements for NHPA compliance. Work is allowed to proceed without a 30-day review by the State Historic Preservation Officer (SHPO) if there will be no effect by avoidance to any archaeological sites.

For the nine archaeological sites located on DOE/NNSA land, archaeologists would flag the boundaries of these places with white twine and pink flagging, and monitor when activities are in the vicinity of these sites. These areas will be avoided by project personnel, vehicles, and any project-related activities.

TABLE 4-1. HISTORIC PROPERTIES SURVEYED IN THE FIBER OPTIC LINE PROJECT AREA, PAJARITO PLATEAU (DOE/NNSA) AND CAJA DEL RIO PLATEAU (USFS)

Laboratory of Anthropology Site Record No.	Cultural Period	Eligibility Status	NM-SHPO Concurrence Year
LA 21517 (USFS)	5,500 BC – AD 1600	Eligible (Criteria D)	2001
LA 44836 (USFS)	5,500 BC – AD 1600	Eligible (Criteria D)	2002
LA 44837 (USFS)	Unknown	Not Eligible	2002
LA 69641 (USFS)	10,000 BC – AD 200	Eligible (Criteria D)	1998
LA 121595 (USFS)	5,500 BC – AD 200	Eligible (Criteria D)	2002
LA 175649 (USFS)	5,500 BC – AD 1600	Undetermined Potentially Eligible (Criteria D)	2013
LA 175650 (USFS)	5,500 BC – AD 1600	Undetermined Potentially Eligible (Criteria D)	2013
AR-03-10-06-01983 (USFS)	5,500 BC – AD 200	Eligible (Criteria D)	Expected in 2020
LA 6787 (DOE/NNSA)	AD 1150 – AD 1325	Eligible (Criteria D)	1991
LA 21625 (DOE/NNSA)	AD 1150 – AD 1325	Eligible (Criteria D)	1999
LA 29796 (DOE/NNSA)	AD 200 – AD 1600	Eligible (Criteria D)	1999
LA 29797 (DOE/NNSA)	AD 1150 – AD 1325	Eligible (Criteria D)	1991
LA 82591 (DOE/NNSA)	AD 1150 – AD 1325	Eligible (Criteria D)	1991
LA 82593 (DOE/NNSA)	AD 1150 – AD 1325	Eligible (Criteria D)	1999
LA 82602 (DOE/NNSA)	5,500 BC – AD 1325	Eligible (Criteria D)	2007
LA 139541 (DOE/NNSA)	5,500 BC – AD 200	Eligible (Criteria D)	Expected in 2020
LA 139570 (DOE/NNSA)	5,500 BC – AD 200	Eligible (Criteria D)	Expected in 2020

BLM/Santa Fe County

The section of BLM property where the proposed fiber optic line corridor is located contains no cultural resources.

The section of Santa Fe County property where the proposed fiber optic line corridor is located contains no cultural resources*.*

USFS

There are eight cultural resources (archaeological sites) located within the proposed fiber optic line route situated on SFNF lands (Table 3-3). These archaeological sites are associated with cultural periods that range from the Paleoindian Period (10,000 years ago) to the Historic Period (1800 AD to 1920 AD). Seven of the archaeological sites are eligible, or potentially eligible, for listing on the National Register of Historic Places (Register); one of the archaeological sites is not eligible for Register listing. Of the seven eligible resources, three archaeological sites are bisected by the existing FR 24 along the proposed fiber optic route; two of the eligible archaeological sites are adjacent to FR 24; and, two of the eligible archaeological sites are bisected by the PNM 115kV overhead transmission RL line access road.

The proposed project will avoid impacts to all identified cultural resources during construction and installation activities by excluding areas where archaeological sites are present from ground disturbance and staging and laydown areas. The three sites within the FR 24 do not contain intact features or artifacts due to the excavation, use, and roadbed erosion. All work in these site areas will be strictly limited to the current road width so as not to disturb the area adjacent to the road cut for the underground portion of the fiber optic line. The two sites located beneath the overhead transmission line will ensure no adverse effects as only rubber tire vehicles, limited to the existing roadbed, will be used so as not to cause further erosion of the access road. The construction activities would not diminish the integrity of the seven eligible sites. Therefore, there would be no adverse effect on the cultural resource properties and the Register eligibility of the cultural resource sites would not change. The proposed project will follow implementation guidelines of the *U.S. Department of Agriculture Forest Service Region 3 Programmatic Agreement* (2003) for compliance with the National Historic Preservation Act of 1966, as amended. Since the project would avoid cultural resources, no adverse effects to the historic properties are anticipated. At the request of District Archaeologists of the SFNF, an archaeological monitor would oversee excavation during installation of the fiber optic line when activities are near and adjacent to archaeological sites. There would be no effects to cultural resources during operations because maintenance activities would take place within the areas already disturbed by construction activities. Work on USFS lands follows the National Historic Preservation Act Section 106 process that requires a 30-day review by the SHPO prior to commencement. The project would not commence until the SHPO concurs with the determination that all archaeological sites would be avoided by project activities.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

There would be no effect upon cultural resources.

4.10 Socioeconomic Resources

Proposed Action

There would be limited benefits to the local economy as construction would have only small effects due to the short duration of construction. Construction workers would come primarily from Santa Fe County region and would commute to the job site daily. Thus, any local economic gains related to construction would be minor. Similarly, operations and maintenance personnel would come from the existing contractor workforce. The Proposed Action would not alter population and demographic characteristics or have any disproportionate impacts upon housing and employment markets.

The primary economic benefit would be protection from internet service interruption due to a failure in the single fiber optic circuit. Service disruption in LANL's high performance voice, data, and internet service would compromise NNSA's mission of maintaining the Nation's nuclear deterrent and collaborative scientific research potentially, resulting in compromised work and project schedules and subsequent higher costs due to idled personnel and delayed research. The Los Alamos Community would benefit in a similar manner, which is the protection from a single point failure of the fiber optic cable resulting in interruption of internet service.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

LANL's communication and data capabilities would continue to be vulnerable to outages or service interruptions.

4.11 Environmental Justice

Proposed Action

There are no identified cumulative effects to any population. Therefore, there are no disproportionately high and adverse cumulative effects on human health or environmental effects on minority populations and low-income populations due to construction, operation, and maintenance of the fiber optic circuit.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

There are no identified disproportionately high and adverse cumulative effects on human health or environmental effects on minority populations and low-income populations from the No Action Alternative.

4.12 Public and Worker Safety

Proposed Action

Construction, operation, and maintenance of fiber optic lines and facilities do not pose a threat to public health or safety risk. Construction and operation hazards are well understood and present no unique risks to the public or worker personnel. All construction and operation employees and contractors would be required to adhere to the appropriate health and safety plans, emergency response plans, and be trained to operate under a health and safety program that meets industry and Occupational Safety and Health Administration standards and

regulations. CenturyLink's TSCP would be in place which would safely direct and guide the traveling public through the work zones, as well as protect the construction workers.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

There would be no changes to public health and worker safety conditions, as the fiber optic circuit would not be constructed.

4.13 Infrastructure

Proposed Action

Existing infrastructure (e.g., roadways and power poles) are sufficient to support the Proposed Action; however, four monopoles would require installation at the White Rock Canyon crossing.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

Without a redundant fiber optic circuit, LANL's communication and data capabilities would remain vulnerable to outages or service interruptions.

4.14 Waste Management

Proposed Action

The Proposed Action would result in the production of vegetation debris (green waste) from clearing areas for the fiber optic vaults, constructing OPGW support structures, and generating solid waste material from construction activities. Green waste generated from the site clearing activities would be left on site and used to control wind and water soil erosion and to establish conditions for post-construction site re-vegetation.

Once the fiber optic circuit is functional, maintenance requirements would generate minimal solid waste. The equipment associated with fiber optic circuits generally do not generate hazardous waste.

Regardless, there is sufficient landfill capacity and hazardous waste treatment storage and disposal facilities that would accept construction and operationally generated solid and hazardous waste.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

There would be no generation of solid or hazardous waste, as the fiber optic circuit would not be constructed.

4.15 Transportation

Proposed Action

Construction, operation, and maintenance of the fiber optic circuit would not change the existing levels-of-service on the surrounding road network nor limit recreation access. The materials required for construction would not require the use of oversized trucks and would not require roadway closures. A TSCP would be implemented during construction to ensure transportation

safety and minimize traffic disruption. The basic objective of the TSCP is to permit the contractor to work within the public right-of-way efficiently and effectively while maintaining a safe uniform flow of traffic within the construction work zone. The public traveling through the work zone in vehicles, bicycles, or as pedestrians would be given equal consideration. The work zone would consist of an advanced warning signs alerting motorists of upcoming changes in driving conditions, and a flagman would be present, as necessary. During construction operations, traffic may experience minor delays or short detours around the work zone on unpaved roadways. There would be no roadway closures.

Federal Aviation Administration (FAA) Considerations: The FAA requires a *Notice of Proposed Construction or Alteration* (Form 7460) to be filed for any construction or alteration that is more than 200 ft. at ground level at its site (14 CFR §77). The proposed monopoles and support structures would be approximately 35 ft. in height from ground level. However, the OPGW would span White Rock Canyon at over 1,000 ft. above ground level. Therefore, a minimum of 45-days prior to construction PNM would submit Form 7460 to the FAA. The FAA would then issue a determination in writing stating whether the proposed construction would be a hazard to air navigation, and FAA would advise all known interested persons. Because the fiber optic cable would be erected adjacent to the RL canyon spanning structures and power lines replete with orange aircraft warning spheres, no new air navigation hazards from the proposed project would be introduced. Based on the FAA response the project would install additional aircraft warning equipment if required or recommended.

Cumulative Impacts: No cumulative impacts have been identified.

No Action Alternative

There would be no changes to current traffic conditions, as the fiber optic circuit would not be constructed.

4.16 Unavoidable Adverse Impacts

Proposed Action

Neither the Proposed Action nor No Action Alternative would result in the exceedance of a regulatory limit or standard, the capacity of a specific resource, or the infrastructure and utilities capability to provide services.

4.17 Relationship Between Short-Term Use of Resources and Long-Term Productivity

Neither the Proposed Action nor No Action Alternative would result in substantial change in land use or condition. Therefore, there would be no impact from the short-term use (Proposed Action) versus long-term productivity.

4.18 Irreversible and Irretrievable Resource Commitments

Construction of the fiber optic circuit would commit natural and man-made materials and human and fiscal resources. The Proposed Action would require a commitment of irretrievable resources in the form of fiber optic equipment, power line poles, fiber optic cable, and other associated infrastructure.

5.0 MITIGATION MEASURES

5.1 Transportation

A traffic safety plan would be developed, approved by the governing land management agency, and implemented during construction to ensure public transportation safety and minimize traffic disruption.

5.2 Erosion and Sedimentation Control

Soil disturbance and removal of vegetation would be avoided or minimized outside of the construction corridor by having work boundaries clearly marked. Site blading and grading would be minimized and generally performed for erosion control and land reclamation activities. To further minimize surface impacts, all construction vehicle traffic would be restricted to approved areas, roadways, and right-of-ways unless approved by the agency with land management jurisdiction. In addition:

- Any active construction areas would be graded in such a manner that berms would be limited to those areas only where needed for erosion control and drainage.
- To the maximum extent possible, vegetation removal and trimming would be limited for safe construction, fire control purposes, and electrical safety requirements.
- If soil has to be excavated or graded in areas of temporary disturbance, topsoil would be stockpiled in a long and low configuration and redistributed prior to reclamation to the extent practical.

Restoration to pre-construction topographical conditions in surface disturbed areas would commence after fiber optic installation and approval of the restoration plan by the governing land management agency.

5.3 Site Restoration

The purpose of site restoration is to restore the areas disturbed by the proposed project to a natural appearance such that the construction-scarred areas will be difficult to detect upon site restoration and successful re-vegetation. All temporary construction areas, material storage yards, and staging sites would be restored to their original use after construction and cleanup. Reclamation activities would be conducted on construction disturbed areas. Site restoration tasks would be implemented after final construction activities have been completed and include the following requirements.

- Disturbed areas would be restored as closely as practical to the original pre-construction topographic contours, unless otherwise agreed to by the governing land management agency. All practical means would be made to restore the land to its approximate original contours, natural drainage patterns, and vegetation (i.e. use of native plants and seeds mix) within the right-of-way, as required by the governing land management agency.
- The effectiveness of erosion control measures would be evaluated by noting particular site conditions, including soil movement and downslope sedimentation, surface plant litter movement, flow pattern development, rills and gullies, wind scour depressions, and plant root system exposure. If the conditions listed are present, it

would be assumed that project-related erosion is occurring, and options for remedial measures would be evaluated and implemented as needed. Post-construction erosion control measures would be required and considered successful when no project related erosion are observed for a one-year period following construction.

- Identification and mitigation of potential impacts to water resources would be included in the SWPPP as required by the EPA Construction General Permit. In the SWPPP, all disturbed and undisturbed areas of vegetative and soils would be identified. In addition, sediment control BMP would be outlined for stabilization during the monsoon season. A schedule for implementation of these erosion and sedimentation control measures would be included in the SWPPP. The SWPPP would include both temporary and permanent erosion control BMP to be used.

- Subsurface soils, if excavated, would be used as initial fill for disturbed sites. Following this, salvaged topsoil would be spread on the disturbed area and raked with a narrow toothed spike or similar equipment to create imprinting or micro-catchment depressions for water retention and seed collection. Seed capture and propagation would be encouraged by mechanical pitting and imprinting. If determined to be beneficial, certified weed free mulch would be applied.

- If vegetation has been cleared from a construction area, it would be distributed within the area to be reclaimed for the purposes of decreasing wind and rain erosion, increasing soil moisture, encouraging re-vegetation, and providing a catchment matrix for wind dispersed seeds.

- The existing seed bank in the first several inches of soil would be used to the extent possible to re-vegetate a disturbed site augmented by supplemental seeding where necessary. Seeding specification would comply with the requirements of the governing land management agency. Fertilizer would only be used if required and approved by the governing land management agency. Where necessary (e.g., unstable soils, steep slopes), erosion control measures, including contouring, would be used to prevent erosion and sedimentation until vegetation becomes established. Reclamation success would be evaluated by comparing project-affected sites with pre-construction conditions and/or adjacent areas in terms of final grading and removal of any introduced berms, re-contouring to approximate pre-construction contours, removal of plants listed on the New Mexico Noxious Weed List, and relief of compacted soils.

- The prevention of the introduction of plants listed on the New Mexico Noxious Weed List (weeds) will be addressed throughout construction. All heavy equipment utilized during construction would be washed prior to arrival. This will help minimize weed seed introduction from a different region. Equipment will have accumulations of dirt removed before leaving the work sites to prevent the transportation of weeds and weed seeds elsewhere. Monitoring of weed populations and success criteria, as defined by the land governing agency, for construction disturbed areas would be conducted annually until the weed abatement success criteria have been met. Photographs would be taken of treated populations prior to treatment and following treatment. Monitoring would be conducted during the growing season, generally between late March and mid-May. Weed surveys would be conducted in areas previously disturbed during construction on foot and/or by vehicle within the construction areas. Species names and locations of weed infestations would be

mapped and transferred to an updateable geographic information system (GIS) database.

5.4 Special Considerations

Construction operations would be conducted to minimize potential disturbance to wildlife. Measures would include construction limited to daylight hours, construction vehicle traffic restricted to approved areas and roadways, and vehicle speed limited to 25 mph.

The White Rock Canyon crossing structures would be designed to minimize the potential for collision of raptors and with appropriate colors and forms. The use of appropriate colors and non-specular structure materials on the monopoles would be used to reduce the visual impact and reflection and glare. In addition, ground surfaces and staging areas disturbed during construction would be restored to approximate original grade and re-vegetated as necessary. Whenever practical, vegetation clearing would be avoided, rock formations retained, and topsoil stockpiled for spreading after construction completion.

5.5 Cultural Resources

An archaeological monitor would be required to monitor excavation during installation or stringing of the fiber optic line. If previously unknown subsurface cultural deposits are discovered, construction activities in the area would halt, and the USFS would determine appropriate treatment in consultation with the SHPO.

5.6 Housekeeping

Construction sites and access roads would be kept in an orderly condition throughout the construction period by using approved enclosed refuse containers. Refuse and trash would be removed from the sites and disposed of in an approved manner. Project personnel would not deposit or leave any food or waste in the project area. At the conclusion of construction, where affected by project construction, CenturyLink and PNM would remove all construction materials from the project site and associated staging areas and dispose of or recycle at an off site location, as appropriate. No construction debris would remain in the right-of-way following completion of construction.

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USFS 1995 United States Department of Agriculture, Forest Service. Agriculture Handbook Number 701. Landscape aesthetics, A handbook for Scenery Management. December 1995.

USFS/BLM 2006 Santa Fe National Forest and Taos Field Office of the BLM in Santa Fe County, New Mexico. Final Environmental Impact Statement for the Buckman Water Diversion Project. September 2006.

APPENDIX A: Correspondence from New Mexico Environmental Department

NEW MEXICO
ENVIRONMENT DEPARTMENT

Harold Runnels Building
1190 Saint Francis Drive, PO Box 5469
Santa Fe, NM 87502-5469
Telephone (505) 827-2855
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Michelle Lujan Grisham
Governor

Howie C. Morales
Lt. Governor

James C. Kenney
Cabinet Secretary

Jennifer J. Pruett
Deputy Secretary

April 9, 2019

NNSA Los Alamos Field Office
ATTN: NEPA Compliance Officer
3747 West Jemez Rd
Los Alamos, NM 87544
By email: NA-NL_NCO@nnsa.doe.gov

Dear Mr. Goodrum,

The New Mexico Environment Department (NMED) has reviewed the scoping letter for the proposed DOE NNSA LANL 2nd Fiber Optic Circuit Route project and offers the following comments:

NMED Air Quality Bureau Comments

This project is located in Los Alamos County, which is in attainment of all National Ambient Air Quality Standards. The project is located Los Alamos National Laboratory, which is very near the Bandelier National Monument, where Regional Haze anthropogenic impairment from this project is of some concern.

Activities identified in this proposal will create temporary increases in pollutant emissions due to combustion-related construction equipment usage, as well as earth excavation and movement.

Haze is caused by particulate matter, such as dust, and aerosols. The activities in this project will produce dust and aerosols which contribute to haze.

To ensure air quality standards are met, applicable local or county regulations requiring noise or dust control must be followed for the duration of this project. If none are in effect, dust control measures should be considered to minimize the release of particulates due to vehicular traffic, construction equipment and ground disturbances - especially during high wind events. Areas disturbed by construction activities resulting in significant ground disturbance within and adjacent to the project should be reclaimed to avoid long-term problems with soil erosion and fugitive dust.

All asphalt, concrete, quarrying, crushing and screening facilities contracted in conjunction with the proposed project must have current and proper air quality permits. For more information on air quality permitting and modeling requirements, please refer to 20.2.72 NMAC.

Activities identified in this proposal will temporarily increase local emissions and may impact air quality in the area. Negative impacts associated with construction activities will be minimized if regulations and guidelines identified here are followed. The project as proposed is not expected to affect air quality on a long-term basis.

NMED Surface Water Quality Bureau Comments

Clean Water Act, Section 402 NPDES Industrial Storm Water Construction General Permit (CGP)

The U.S. Environmental Protection Agency (USEPA) may require a National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) coverage for storm water discharges from construction activities (such as clearing, grading, excavating, and stockpiling) that disturb (or re-disturb) one or more acres. Prior to discharging storm water, construction operators may need to obtain coverage under an NPDES permit.

Among other things, this permit requires that a Storm Water Pollution Prevention Plan (SWPPP) be prepared for the project, including support and staging areas, and that appropriate Best Management Practices (BMPs) be installed and maintained both during and after construction to prevent, to the extent practicable, pollutants (primarily sediment, oil & grease and construction materials from construction sites) in storm water runoff from entering waters of the U.S. This permit also requires that permanent stabilization measures (re-vegetation, paving, etc.), and permanent storm water management measures (storm water detention/retention structures, velocity dissipation devices, etc.) be implemented post construction to minimize, in the long term, pollutants in storm water runoff from entering these waters.

Part 9 of the 2017 CGP includes permit conditions applicable to specific states, Indian country lands, or territories. In the State of New Mexico, except on tribal land, permittees must ensure that there is no increase in sediment yield and flow velocity from the construction site (both during and after construction) compared to pre-construction, undisturbed conditions (see Subpart 9.4.1 of the 2017 CGP).
USEPA requires that all "operators" (see Appendix A of the 2017 CGP) obtain NPDES permit coverage by submitting a Notice of Intent (NOI) for construction projects. Generally, this means that at least two parties will require permit coverage. The owner/developer of this construction project who has operational control over project specifications, the general contractor who has day-to-day operational control of those activities at the site, which are necessary to ensure compliance with the SWPPP and other permit conditions, and possibly other "operators" will require appropriate NPDES permit coverage for this project.
The CGP, NOI, deadlines for submitting an NOI, Fact Sheet, and Federal Register notice is available at:
https://www.epa.gov/npdes/stormwater-discharges-construction-activities

Clean Water Act, Section 404 USACE/Section 401 Certification

Information is provided below if the project (or associated construction support areas, if any) during construction requires discharge of dredged/fill material into Waters of the U.S., including wetlands. Section 404 of the Clean Water Act requires approval from the U.S. Army Corp of Engineers (USACE) prior to discharging dredged or fill material into waters of the United States (U.S.).

Any person, firm, or agency (including Federal, state, tribal and local governmental agencies) planning to work in waters of the United States should first contact the USACE regarding the need to obtain a permit from the Regulatory Division. Failure to receive and implement proper permit coverage would be a violation of the Clean Water Act.
More information on the §404 permitting process, including applicability of Nationwide Permits, mitigation requirements, requirements for certification for any discharges on state, private or tribal land, can be obtained from the USACE at:
http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits.aspx
For additional information, including permitting procedures and jurisdictional water determination, contact the USACE, Albuquerque District, 4101 Jefferson Plaza NE, Albuquerque, New Mexico 87109-343, 505-342-3262.

Thank you for providing NMED with the opportunity to review and comment on this proposed project.

Sincerely,

Michaelene Kyrala
Director of Policy
New Mexico Environment Department
Office: 505.827.2892
E-mail: michaelene.kyrala@state.nm.us

APPENDIX B: SFNF's Small Project Biological Evaluation Form and Point Count Survey Data

	BE. No	

SANTA FE NATIONAL FOREST

Small Project Biological Evaluation Form

Project Name:	Fiber Optic Line Installation for Improved Communication at the Los Alamos National Laboratory	**District** : **Espanola District**		**Date:**	Date of report

Project Type:	**Construction**	X	**Nonstructural**	X	**Reconstruction/Maintenance**		

Location	Caja Del Rio, Santa Fe National Forest

Location (Legal - Attach map) See report

Project Actions:

To install a fiber optic line from existing CenturyLink infrastructure in Santa Fe to Los Alamos National Laboratory. The project will include the installation of approximately 15.8 miles of new fiber optic line. Two installation methods will be employed: (1) underground installation and (2) collocation of the fiber line on PNM's RL transmission line. The area of interest for this evaluation starts at the beginning of Forest Service Road (FR) 24 near the Santa Fe County Landfill. The underground portion of this project will be trenched alongside FR 24 to bury the line. Once FR 24 intersects PNM's RL electrical transmission line, the fiber optic line will move to above ground and will be attached to the transmission line pole structures. This process will continue until reaching the aerial crossing of White Rock Canyon.

Vegetation/Habitat Type:

The project area is on a mesa top dominated by two-needle pinyon (*Pinus edulis*)-juniper (*Juniperus monosperma*) savannah and woodlands.

I. Prior Biological Evaluation						**No**	**Yes**
1. Prior Project BE (Name):		Date:		No:		X	

II. Species and/or Habitat				**No**	**Yes**
1. Survey Completed (Date)	April, May, and June 2019	By:	LANL Biologists		X
2. Previous Species Observation (Heritage Database)				X	

3. Federally Listed Species Present	X	
4. Habitat For Federally Listed Species Present	X	
5. Sensitive Species Present		X
6. Habitat For Sensitive Species Present		X
III. Analysis of Effects	**No**	**Yes**
1. Significant Habitat Alteration	X	
2. Effects Outside Project Area	X	
3. Cumulative Effects on Listed Species or Habitat	X	
4. Cumulative Effects on Sensitive Species or Habitat	X	
IV. Determination of Effects	**No**	**Yes**
1. May Affect Threatened, Endangered, or Proposed Species	X	
2. May Affect Individual Sensitive Species	X	
3. May Affect Sensitive Species' Population Viability	X	
V. Consultation Requirements	**No**	**Yes**
1. Formal Consultation Required	X	
2. Additional Informal Consultation Required	X	

Based on the findings above and the size and effect of the proposed project, a detailed biological evaluation and further consultation are not required.

Prepared and Approved By :	On file	Date:	

Information Sources

Species Present	Status	Species Affected	Pop. Viability Affected

PROPOSED, ENDANGERED, THREATENED AND REGIONAL FORESTERS (R3) SENSITIVE SPECIES LIST (PETS)				
Common Name	**Scientific Name**	**Status**	**Determination**	**Rationale For Omission**
Amphibians				
Jemez mountains salamander	*Plethodon neomexicanus*	**E**	N/A	Species range is outside of the project area.
Northern leopard frog	*Lithobates pipiens*	RFSS	N/A	Suitable habitat is outside of the project area.
Birds				
Mexican spotted owl	*Strix occidentalis lucida*	**T**	N/A	Suitable habitat is outside of the project area.
Northern goshawk	*Accipiter gentilis*	RFSS	N/A	Suitable habitat is outside of the project area.
Boreal owl	*Aegolius funereus*	RFSS	N/A	Species range is outside of the project area.

Burrowing owl (western)	*Athene cunicularia hypugaea*	RFSS	N/A	Suitable habitat is outside of the project area. No prairie dog towns were found during surveys.
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	**T**	N/A	Suitable habitat is outside of the project area.
American peregrine falcon	*Falco peregrinus anatum*	RFSS	MIIH	The project disturbance will be primarily along an existing road and will not impact nesting or foraging habitat along cliffs.
Bald eagle	*Haliaeetus leucocephalus*	RFSS	N/A	Suitable habitat is outside of the project area.
Gray Vireo	*Vireo vicinior*	RFSS	MIIH	The project disturbance will be primarily along an existing road, and impacts to nesting or foraging habitat from vegetation removal will be very limited. Noise from construction activities could disturb this species depending on the time of year the work takes place.
Invertebrates				
Lilljeborg Peaclam	*Pisidium lilljeborgi*	RFSS	N/A	Suitable habitat is outside of the project area.
Ruidoso Snaggletooth	*Gastrocopta ruidosensis*	RFSS	N/A	Suitable habitat is outside of the project area.
Mammals				
New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	**E**	N/A	Suitable habitat is outside of the project area.
Pale Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	RFSS	N/A	Suitable habitat is outside of the project area.
Gunnison's prairie dog (prairie)	*Cynomys gunnisoni*	RFSS	N/A	Suitable habitat is outside of the project area.
Gunnison's prairie dog (montane)	*Cynomys gunnisoni pop.*	RFSS	N/A	Suitable habitat is outside of the project area.
Spotted bat	*Euderma maculatum*	RFSS	N/A	Suitable habitat is outside of the project area.
Canada lynx	*Lynx canadensis*	RFSS	N/A	Suitable habitat is outside of the project area.

American marten	*Martes americana origenes*	RFSS	N/A	Suitable habitat is outside of the project area.
Goat peak pika	*Ochotona princeps nigrescens*	RFSS	N/A	Suitable habitat is outside of the project area.
American pika	*Ochotona princeps saxatilis*	RFSS	N/A	Suitable habitat is outside of the project area.
Western water shrew	*Sorex navigator*	RFSS	N/A	Suitable habitat is outside of the project area.
Cinereus (masked) shrew	*Sorex cinereus*	RFSS	N/A	Suitable habitat is outside of the project area.
Preble's shrew	*Sorex preblei*	RFSS	N/A	Suitable habitat is outside of the project area.
Fish				
Rio Grande sucker	*Catostomus plebeius*	RFSS	N/A	Suitable habitat is outside of the project area.
Rio Grande chub	*Gila pandora*	RFSS	N/A	Suitable habitat is outside of the project area.
Rio Grande cutthroat trout	*Oncorhynchus clarki virginalis*	RFSS	N/A	Suitable habitat is outside of the project area.
Plants				
Holy Ghost Ipomopsis	*Ipomopsis sancti-spiritus*	**E**	N/A	Suitable habitat is outside of the project area.
Tufted sand verbena	*Abronia bigelovii*	RFSS	NI	This species was not found during surveys.
Greene milkweed	*Asclepias uncialis ssp. uncialis*	RFSS	N/A	Suitable habitat is outside of the project area.
Chaco milkvetch	*Astragalus micromerius*	RFSS	NI	The project disturbance will be primarily along an existing forest road and will not result in extensive disturbance of undeveloped land. This species is not known to occur near anthropogenic disturbance.
Pecos mariposa lily	*Calochortus gunnisonii var. perpulcher*	RFSS	N/A	Suitable habitat is outside of the project area.
Yellow lady's-slipper	*Cypripedium parviflorum pubescens calceolus var.*	RFSS	N/A	Suitable habitat is outside of the project area.

Robust larkspur	*Delphinium robustum*	RFSS	N/A	Suitable habitat is outside of the project area.
Heil's alpine whitlowgrass	*Draba heilii*	RFSS	N/A	Suitable habitat is outside of the project area.
Pecos fleabane	*Erigeron subglaber*	RFSS	N/A	Suitable habitat is outside of the project area.
Wood lily	*Lilium philadelphicum*	RFSS	N/A	Suitable habitat is outside of the project area.
Chama blazing star	*Mentzelia conspicua*	RFSS	N/A	Suitable habitat is outside of the project area.
Springer's blazing star	*Mentzelia springeri*	RFSS	N/A	Suitable habitat is outside of the project area.
Arizona Willow	*Salix arizonica*	RFSS	N/A	Suitable habitat is outside of the project area.

E Listed as endangered under the endangered species act (1973 as amended)

T Listed as threatened under the endangered species act (1973 as amended)

RFSS Forest Sensitive Species, as identified by the Regional Forester for Region 3.

C Candidate Species, identified for conservation or protection need but has not been listed

P Proposed for federal listing under the endangered species act (1973 as amended)

N/A Not Applicable

NI No impact is expected to Forest Sensitive Species

MIIH May Impact Individual Forest Sensitive Species and action does not contribute towards loss of population viability or trend species towards federal listing

NH No habitat for species occurs within the analysis area therefore, no impacts to species or their habitat are expected because the species does not occur

NE No effect

MANAGEMENT INDICATOR SPECIES ANALYSIS FORM	
Project Name: Fiber Optic Line Installation for Improved Communication at LANL	Requested by: LANL

Project Type:	**Construction**	**Reconstruction/Maintenance**	**Other:**
	X		
	Non-structural	**Reclamation**	
	X		

Location: Caja del Rio, Santa Fe National Forest

Legal desc. (Attach map): Maps are in document

To install a fiber optic line from existing CenturyLink infrastructure in Santa Fe to Los Alamos National Laboratory. The project will include the installation of approximately 15.8 miles of new fiber optic line. Two installation methods will be employed: (1) underground installation and (2) collocation of the fiber line on PNM's RL transmission line. The area of interest for this evaluation starts at the beginning of Forest Service Road (FR) 24 near the Santa Fe County Landfill. The underground portion of this project will be trenched alongside FR 24 to bury the line. Once FR 24 intersects PNM's RL electrical transmission line, the fiber optic line will move to above ground and will be attached to the transmission line pole structures. This process will continue until reaching the aerial crossing of White Rock Canyon.

Will the project action(s) alter species habitat or Forest wide (FW) populations of MIS?		**Yes**		**X**	**No**	***On file***

Vegetation Type/Species Occurring in the Project Area	**Is the Forest wide population being impacted?**		**Is the Indicated Habitat being altered?**		**Rationale for Omission**
	YES	**NO**	**YES**	**NO**	
Mature – Old Growth Forest					
Mexican Spotted Owl		X		X	Suitable habitat is outside of the project area.
Alpine Meadow Habitat					
Rocky Mountain Bighorn Sheep		X		X	Suitable habitat is outside of the project area.

Mid-elevation grasslands, meadows and forested areas < 9,000 ft.					
Rocky Mountain Elk		X		X	The project disturbance will not impact important habitat components for the species.
Mature Ponderosa Pine Forest					
Merriam's Turkey		X		X	Suitable habitat is outside of the project area.
Mid and low elevation grasslands, woodlands and ponderosa pine habitats					
Mourning Dove		X	X		The project disturbance will be primarily along an existing road and will have minimal impact to nesting or foraging habitat.
Mature forest and woodland habitats					
Hairy Woodpecker		X		X	The project disturbance will be primarily along an existing road and will have minimal impact to nesting or foraging habitat.
Pinyon- Juniper habitat					
Pinyon Jay		X	X		The project disturbance will be primarily along an existing road and will have minimal impact to nesting or foraging habitat.
Riparian, stream and water quality					
Rio Grande Cutthroat Trout		X		X	Suitable habitat is outside of the project area.

Trends, (FW) and Total Forest/ Project Acres, and Determination Table

Vegetation Type/Species	**MIS Population Trend (FW)**	**Habitat Trend (HT)**	**Total Forest Acres (TFA)**	**Project Area Acres (PAA)**	**% PAA of TFA***	**Determination**
Mature – Old Growth Forest			**630,191**			**NE**
Mexican Spotted Owl	**S**	**D**				**NE**
Alpine Meadow Habitat			**7,810**			**NE**

Rocky Mountain Bighorn Sheep	**S**	**S**				**NE**
Mid-elevation grasslands, meadows and forested areas < 9,000 ft.			**1,287,640**			**NE**
Rocky Mountain Elk	**I**	**S**				**NE**
Mature Ponderosa Pine Forest			**603,235**			**NE**
Merriam's Turkey	**S**	**S**				**NE**
Mid and low elevation grasslands, woodlands and ponderosa pine habitats			**581,419**			**NE**
Mourning Dove	**S**	**I**				**NE**
Mature forest and woodland habitats			**80,174**			**NE**
Hairy Woodpecker	**S**	**I**				**NE**
Pinyon- Juniper habitat			**232,204**			**NE**
Pinyon Jay	**S**	**D**				**NE**
Riparian, stream and water quality			**128.7 miles**			**NE**
Rio Grande Cutthroat Trout	**S**	**D**				**NE**

KEYS

MIS population trend column key:

I Increasing trend for MIS population Forest wide

U Unknown trend for MIS population Forest wide

S Stable trend for MIS population Forest wide

D Decreasing trend for MIS population Forest wide

Habitat trend column key:

S - Static trend for KHC Forest wide

U - Upward trend for KHC Forest wide

D – Downward trend for KHC Forest wide

S – Stable trend for KHC Forest wide

NC- No change for KHC Forest wide

Determination column key:

NE No effect to the FW trends – i.e., any impacts will not alter the existing trends, regardless of the impacts in relation to the trends.

Acreage Calculation:

WC Will Contribute to the current FW trends – i.e., any impacts are in the direction of the current trend. **WA** Will Alter the current FW trends.	* Project Area Acres is calculated by (PAA / TFA = % of TFA)
References: MIS species and 2012 MIS assessment updated for the Santa Fe National Forest USDA Forest Service (USFS). 1987. Santa Fe National Forest Plan, as amended. Albuquerque, NM: USDA Forest Service. USDA Forest Service (USFS). 2012. Santa Fe National Forest Management Indicator Species Assessment. Santa Fe National Forest Supervisor's Office, Santa Fe, NM.	

Occurrence Records or Population Information Relative to the Project Area.
Site-specific occurrence records are not available for most of these species, but each species' occurrence in its respective habitat is assumed, as documented in the "Santa Fe National Forest Management Indicator Species Assessment. Santa Fe National Forest Supervisor's Office, Santa Fe, NM".

Determination of Impacts – Qualitative or Quantitative

Prepared By: ***On file*** Date:

MIGRATORY BIRD TREATY ACT ANALYSIS - Santa Fe National Forest	
Project Name:	**Fiber Optic Line Installation for Improved Communication at LANL**
Location:	**Caja Del Rio, Santa Fe National Forest**
Project Actions:	To install a fiber optic line from existing CenturyLink infrastructure in Santa Fe to Los Alamos National Laboratory. The project will include the installation of approximately 15.8 miles of new fiber optic line. Two installation methods will be employed: (1) underground installation and (2) collocation of the fiber line on PNM's RL transmission line. The area of interest for this evaluation starts at the beginning of Forest Service Road (FR) 24 near the Santa Fe County Landfill. The underground portion of this project will be trenched alongside FR 24 to bury the line. Once FR 24 intersects PNM's RL electrical transmission line, the fiber optic line will move to above ground and will be attached to the transmission line pole structures. This process will continue until reaching the aerial crossing of White Rock Canyon.
Background:	Direction for management and protection of migratory birds and their habitats within the continental United States exists in several forms. The Migratory Bird Treaty Act (MBTA) enacted in 1918 established Federal prohibition, unless permitted by regulations, for "taking" of migratory birds, nest or eggs. Executive Order (EO) 13186, signed January 10, 2001, directed Federal agencies to avoid or minimize adverse impacts (to the extent practical) on

	migratory bird resources when conducting agency actions (among many items within the "Federal Agency Responsibilities" section of the EO). Pursuant to the EO, agencies were to develop Memorandum of Understanding (MOU) to strengthen and promote migratory bird conservation and collaboration with the U.S. Fish and Wildlife Service. The original 2008 MOU was extended and signed in 2016. Bald and Golden Eagle Protection Act (1940 as amended) protects eagles from actions of anyone (or entity) which would "take" eagles to the point of causing nest failure or reduce productivity (unless you or your entity have obtained a permit issued by the Secretary of the Interior). There have not been specific USFS policies provided to direct migratory bird analyses into the NEPA process. However, the Southwestern Regional Office (R3 USFS) direction on migratory bird analysis is as follows (1) analyze effects to Species of Concern which are developed by the local (State) Partners In Flight Office with an emphasis on "high priority species", (2) analyze effects of project action on Important Bird Areas (IBA's), and (3) analyze effects of project actions to important overwintering areas on USFS lands.
Analytical Process:	Species of concern evaluated for the Santa Fe National Forest are based upon NM Avian Conservation Partners species of concern criteria. NM Avian Conservation Partners considers eight risk factors in identifying conservation priority species: Global Abundance, NM Breeding Abundance, Global Breeding Distribution, NM Breeding Distribution, Threats to Breeding in NM, Importance of NM to Breeding, Global Winter Distribution, and Threats on Wintering Grounds (New Mexico Partners in Flight, 2007). Bird Conservation Region 16 (Southern Rockies/ Colorado Plateau) entirely encompasses the Santa Fe National Forest. A list of species at the highest risk are classified as "highest priority" for conservation action (by BCR 16) and is the focus of this analysis. This list is then evaluated at the forest level and those species which do not occur in the forest will not be evaluated or mentioned herein. Habitat for the species is used to evaluate the effects of the agency action on particular migratory bird species. That is, migratory bird species of concern are analyzed if their habitat is within the action area. This evaluation addresses general effects to migratory birds and effects to Highest Priority species for main habitat types found in the project area.
Santa Fe National Forest Species of Concern **References:**	Corman, T. and C. Wise-Gervais, editors. 2005. Arizona Breeding Bird Atlas. University of New Mexico Press, Albuquerque. 636 pages. Ehrlich, P.R., D.S. Dobkin, D. Wheye. 1988. The birder's handbook: a field guide to the natural history of north American birds. Simon and Schuster, New York, New York. P. 785.

	New Mexico Partners in Flight. 2007. New Mexico Bird Conservation Plan Version 2.1. C. Rustay and S. Norris, compilers. Albuquerque, New Mexico.

SPECIES ACCOUNTS

Santa Fe National Forest migratory bird species of concern. We assume the following migratory bird species of concern may occur in the activity area because their habitats also are within the activity area.

Species	Nest Substrate[b]	Nest type[b]	Usual nest height range[b] (feet)	Nesting Period[c]
Mixed Conifer Forest: Douglas fir, white fir, ponderosa pine, often some aspen and Gambel's oak.				
Owl, Flammulated[a]	snag	cavity	no information	May to Jul
Owl, Mexican spotted[a]	conifer, cliff	cavity, platform, scrape	80	May to Sep
Warbler, Red-faced[a]	ground	cup	0	May to Jul
Ponderosa pine forest: primarily pure ponderosa pine forest				
Owl, Flammulated[a]	snag	cavity	no information	May to Jul
Owl, Mexican spotted[a]	conifer, cliff	cavity, platform, scrape	80	May to Sep
Warbler, Grace's[a]	conifer	cup	20 to 60	May to Aug
Warbler, red-faced[a]	ground	cup	0	May to Jul
Warbler, Virginia's[a]	ground	cup	0	Apr to Aug
Woodpecker, Lewis's[a]	deciduous tree, snag	cavity	5 to 100	May to Aug
Middle- Elevation Riparian: Deciduous woodlands <7,500 feet elevation. Cottonwood – willow associations.				
Flycatcher, southwestern willow	shrub, deciduous tree	cup	2 to 10	Jun to Aug
Vireo, Bell's[a]	shrub	cup	1 to 5	Mar to Sep

SPECIES ACCOUNTS

Santa Fe National Forest migratory bird species of concern. We assume the following migratory bird species of concern may occur in the activity area because their habitats also are within the activity area.

Species	Nest Substrate[b]	Nest type[b]	Usual nest height range[b] (feet)	Nesting Period[c]
Warbler, Lucy's	snag	cavity	3 to 11	Apr to Jul
Woodpecker, Lewis's[a]	deciduous tree, snag	cavity	5 to 100	May to Aug
Pinyon – Juniper woodland				
Jay, Pinyon	conifer	cup	3 to 26	Apr to Aug
Titmouse, Juniper	deciduous tree, snag	cavity	3 to 10	Apr to Jul
Thrasher, Bendire's	shrub	cup	2 to 4	Mar to Aug
Vireo, Gray[a]	shrub	cup	2 to 6	Apr to Aug
Montane Shrub: Chaparral and shrub habitat ranging from 5,500 to 8,000 feet elevation.				
Sparrow, Black-chinned	shrub	cup	1.5 to 3	Apr to Aug
Vireo, Gray[a]	shrub	cup	2 to 6	Apr to Aug
Warbler, Virginia's[a]	ground	cup	0	Apr to Aug

[a] Species occur in other habitat categories too

[b] Source: Ehrlich and others 1988

[c] Source: Corman and Wise-Gervais 1995

Important Bird Areas Present	The Caja del Rio IBA is located south of the project area.
Over-wintering areas Present	

Snags, dead and downed wood	

Prepared By: ***On file*** Date:

LANL Wildlife Biologist

Point Count Survey Data

Species	Species Code	Point Number																						Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
American Kestrel	AMKE	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	**2**
Ash-throated Flycatcher	ATFL	2	-	-	-	-	-	1	1	-	2	-	-	2	2	1	1	1	-	2	-	2	-	**17**
Audubon's Warbler	AUWA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	**1**
Black-chinned Hummingbird	BCHU	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	1	-	-	-	1	**4**
Bewick's Wren	BEWR	1	6	4	3	5	5	3	2	6	1	2	5	2	3	3	2	4	-	2	4	4	-	**67**
Blue-gray Gnatcatcher	BGGN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	**2**
Brown-headed Cowbird	BHCO	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Broad-tailed Hummingbird	BTAH	-	-	-	-	-	-	-	-	1	-	-	1	1	-	1	1	1	-	-	-	-	1	**7**
Black-throated Sparrow	BTSP	-	-	-	-	-	1	-	-	-	-	1	-	1	-	1	-	-	-	-	1	1	1	**7**
Bushtit	BUSH	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	**2**
Cassin's Kingbird	CAKI	-	1	2	-	1	-	-	-	-	-	-	-	-	-	1	12	-	-	1	-	-	-	**18**
Canyon Towhee	CANT	1	-	2	-	-	-	2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	**6**
Chipping Sparrow	CHSP	-	15	12	4	15	4	6	6	6	6	2	-	4	9	2	41	4	-	3	6	2	9	**156**
Common Raven	CORA	42	3	7	1	3	2	1	9	-	1	1	1	-	5	2	-	-	-	-	-	2	1	**81**
Dark-eyed Junco	DEJU	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Evening Grosbeak	EVGR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	**4**
Gray Flycatcher	GRFL	-	-	2	4	4	-	-	1	-	1	-	-	1	-	5	1	1	3	-	1	2	1	**27**
Gray Vireo	GRVI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	**4**
House Finch	HOFI	2	-	-	5	-	-	-	-	1	3	-	-	-	-	2	-	-	-	-	-	1	5	**19**
Horned Lark	HOLA	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Juniper Titmouse	JUTI	1	3	3	3	2	7	5	2	4	4	4	-	4	-	1	2	-	3	3	1	1	-	**53**
Lark Sparrow	LASP	-	-	1	-	-	-	-	1	-	-	-	2	-	2	3	-	1	-	-	-	-	-	**10**
Ladder-backed Woodpecker	LBWO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	**1**
Lesser Goldfinch	LEGO	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	**2**
Mourning Dove	MODO	-	5	-	2	-	-	1	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	**10**
Northern Harrier	NOHA	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**

Species	Species Code	Point Number																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	**Total**
Northern Mockingbird	NOMO	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	1	-	-	1	-	-	**4**
Northern Rough-winged Swallow	NRWS	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Pinyon Jay	PIJA	-	-	-	-	-	-	-	1	3	-	-	-	-	-	-	-	-	-	-	-	-	2	**6**
Plumbeous Vireo	PLVI	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Ruby-crowned Kinglet	RCKI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	**2**
Rock Wren	ROWR	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	1	**4**
Red-tailed Hawk	RTHA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	**1**
Say's Phoebe	SAPH	-	1	2	3	1	-	1	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	**10**
Savannah Sparrow	SAVS	-	-	-	-	-	-	-	-	-	-	-	-	-	5	1	-	-	-	-	-	-	-	**6**
Scott's Oriole	SCOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	**3**
Spotted Towhee	SPTO	-	-	-	-	-	-	1	-	1	4	-	1	1	-	-	-	2	2	1	1	1	-	**15**
Townsend's Solitaire	TOSO	-	2	3	2	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	**9**
Turkey Vulture	TUVU	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	1	**3**
Vesper Sparrow	VESP	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Violet-green Swallow	VGSW	-	-	-	-	-	-	-	1	-	1-	-	1	-	-	-	3	-	-	-	-	1	3	**9**
Western Bluebird	WEBL	1	1	-	-	-	-	1	-	-	-	1	-	-	-	-	4	6	-	1	-	-	-	**15**
Woodhouse's Scrub-Jay	WOSJ	-	-	-	-	-	1	-	-	-	2	1	1	1	-	-	-	-	-	4	-	-	-	**10**
White-throated Swift	WTSW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	**8**