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Los Alamos National Laboratory Floodplain Assessment for the Primary Circuit Extension from TA-36 to TA-68.

Los Alamos
NATIONAL LABORATORY
EST. 1943

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Los Alamos National Laboratory

Prepared for: U.S. Department of Energy
National Nuclear Security Administration
Los Alamos Field Office

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ACRONYMS

AOC	Area of Concern
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
kV	Kilovolt
LANL	Los Alamos National Laboratory
NNSA	National Nuclear Security Administration
PR-ID	Permits and Requirements Identification
TA	Technical Area

INTRODUCTION

The National Nuclear Security Administration (NNSA), a semi-autonomous agency within the U.S. Department of Energy (DOE), is proposing to take action at Los Alamos National Laboratory (LANL) Technical Areas (TA) 36 and 68 (Figure 1). The Primary Circuit Extension to TA-68 Project is proposing to construct approximately 1 mile of a 13.8 kilovolt (kV) electrical power distribution line from TA-36, southeast across the Fence Canyon and Water Canyon 100-yr floodplains to the TA-68 Water Canyon Test Site. The distribution line is a combination of single pole and 2-pole supports. The Water Canyon Test site supports mission critical programs that respond to current and emerging threats by providing the capabilities for the research, development, and equipment calibration for imaging techniques to detect materials of interest.

NNSA has prepared this floodplain assessment in accordance with 10 Code of Federal Regulations (CFR) Part 1022 *Compliance with Floodplain and Wetland Environmental Review Requirements*, which was promulgated to implement DOE requirements under Executive Order 11988 *Floodplain Management*. A floodplain is defined in 10 CFR 1022 as "the lowlands adjoining inland and coastal waters and relatively flat areas and flood prone areas of offshore islands," and a base floodplain as "the 100-year floodplain, that is, a floodplain with a 1.0 percent chance of flooding in any given year." This floodplain assessment evaluates potential impacts to floodplain values and functions from implementation of the proposed action, identifies alternatives to the Proposed Action, and allows for meaningful public comment.

DOE/NNSA has published this Floodplain Assessment for a 15 day for public review and comment period. Please provide comments on this Floodplain Assessment to Vicki Loucks at:

Email: vicki.loucks@nnsa.doe.gov

or

Mail: U.S. Department of Energy
Los Alamos Field Office
ATTN: Vicki Loucks
3747 West Jemez Road
Los Alamos, NM 87544

After the close of the public comment period and prior to issuing a floodplain statment of finding DOE/NNSA will reevaluate the practicability of alternatives to the proposed floodplain action, mitigating measures and take into account all substantive comments received during the public comment period. DOE/NNSA will endeavor to allow 15 days of public review prior to implementing the proposed action.

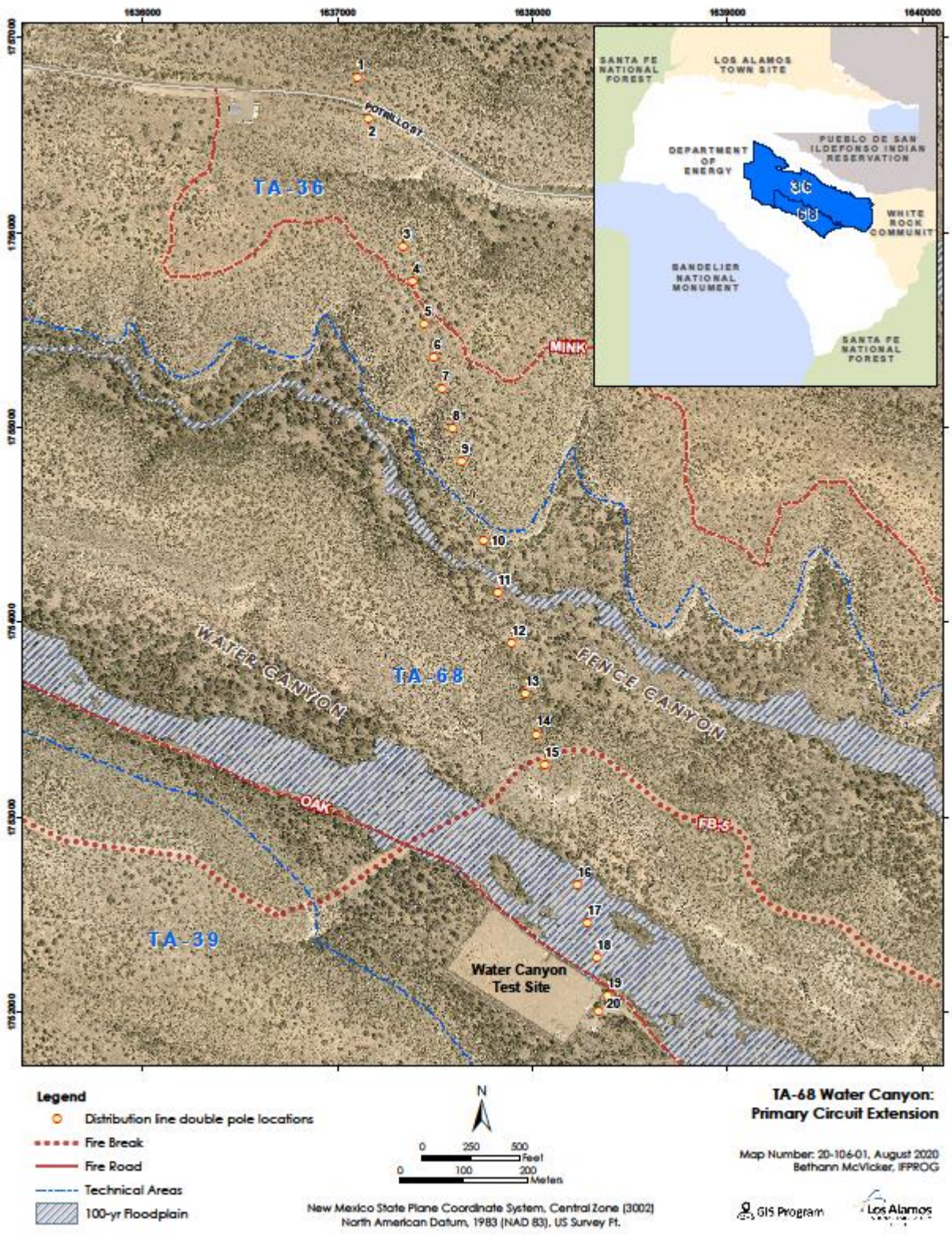

Figure 1. Location of the Fence Canyon and Water Canyon 100-yr floodplains and distribution line pole locations in Technical Areas 36 and 68.

BACKGROUND

The Fence Canyon and Water Canyon 100-yr floodplains run roughly northwest to southeast through the central portion of LANL (Figure 1). The proposed distribution line originates from a location just north of Potrillo Drive in TA-36 and runs south, southeast, crossing both floodplains, to its terminus at the Water Canyon Test Site within TA-68. The 1-mile length distribution line includes a 50-ft corridor width that will be cleared of all shrubs and trees.

Both Fence Canyon and Water Canyon are accessed via fire roads that enter off of NM4. There is no road to the distribution line crossing in Fence Canyon, therefore vehicles and equipment must travel cross country approximately 0.6 miles from the fire road to the crossing. The distribution line crossing in Water Canyon is easily accessible from the fire road. No roads will be constructed to the double pole locations, all locations are accessible by off road travel.

Areas of Concern[1] (AOC) C-00-015 and C-00-016 occupy the same footprints as their respective 100-yr floodplains. The 100-yr floodplain represents the extent to which post-Lab aged sediments (and contaminants) could have been deposited and therefore, is used to delineate the extent of the AOCs. The distribution line will cross both floodplains and their AOCs.

PROJECT DESCRIPTION

This project consists of constructing a 13.8 kV double-pole distribution line from Potrillo road in TA-36 approximately 1 mile to the Water Canyon Test Site in TA-68. A 50-ft wide corridor for the distribution line must be cleared and maintained clear of woody vegetation. Where accessible, a masticator will be used to clear vegetation. There is one, 2-pole location (#16) and two single pole locations (#17 and #18) located in the Water Canyon 100-yr floodplain (Figure 1). Equipment will have to cross both the Fence Canyon and Water Canyon 100-yr floodplains to access pole locations and to create the 50-ft corridors.

The individual poles on a 2 pole structure are approximately 12ft apart and 40ft high (Figure 2). Single pole structures are also approximately 40ft high. The holes for each pole will be 30in in diameter by 6 ½ft deep. The pole components are transported to location on a trailer behind the drilling rig, constructed on site and lifted into place with a boom. Disturbance associated with drilling and construction is about 10ft around the poles. Some poles will have anchors with guy wires, the anchor holes are 30in diameter by 7ft deep. The hole is drilled, an anchor placed in the hole then the hole is backfilled and tamped with anchor eye above ground.

Vehicles and equipment will use fire roads and fire breaks for access to the corridor to clear vegetation and install the pole structures. The fire road up Fence Canyon only goes to approximately 0.6 miles of the crossing (Figure 3). Equipment will have to travel off road up the canyon to access the pole locations and to clear the corridor. An access route will be identified

[1]An AOC is any area having a known or suspected release of hazardous waste or hazardous constituents that is not from a solid waste management unit and that the Secretary of NMED has determined may pose a current or potential threat to human health or the environment

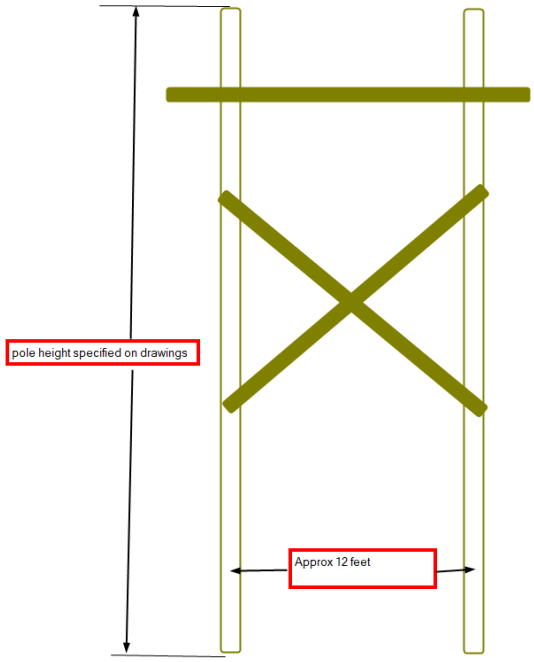

Figure 2. Diagram of typical 2-pole structure that will be used for the 13.8 kV distribution line. Poles will be approximately 12ft apart and 40ft high.

that stays south of the 100-yr floodplain. The Water Canyon crossing is accessible from the existing fire road.

A masticator will be used to clear the vegetation in the floodplain portions of the utility corridor. The masticator grinds the trees and shrubs into a mulch that is spread over the surface of the soil and helps to stabilize the soils. All equipment will be using rubber tires, not tracks, to reduce soil disturbance and compaction.

FLOODPLAIN IMPACTS

The proposed project would involve work and placement of one 2 pole, and two single pole electrical distribution poles within the Water Canyon 100-yr floodplain, clearing a 50-ft wide corridor through both Fence and Water Canyon 100-yr floodplains and driving equipment across both floodplains to access pole locations. The following floodplain impact assessment discusses the long- and short-term impacts (positive, negative, direct, and indirect) of the proposed project on the floodplain.

Short-term Impacts

LANL maintains a Permits and Requirements Identification (PR-ID) process for LANL subject matter experts to identify, evaluate and resolve project-specific issues such as presence of

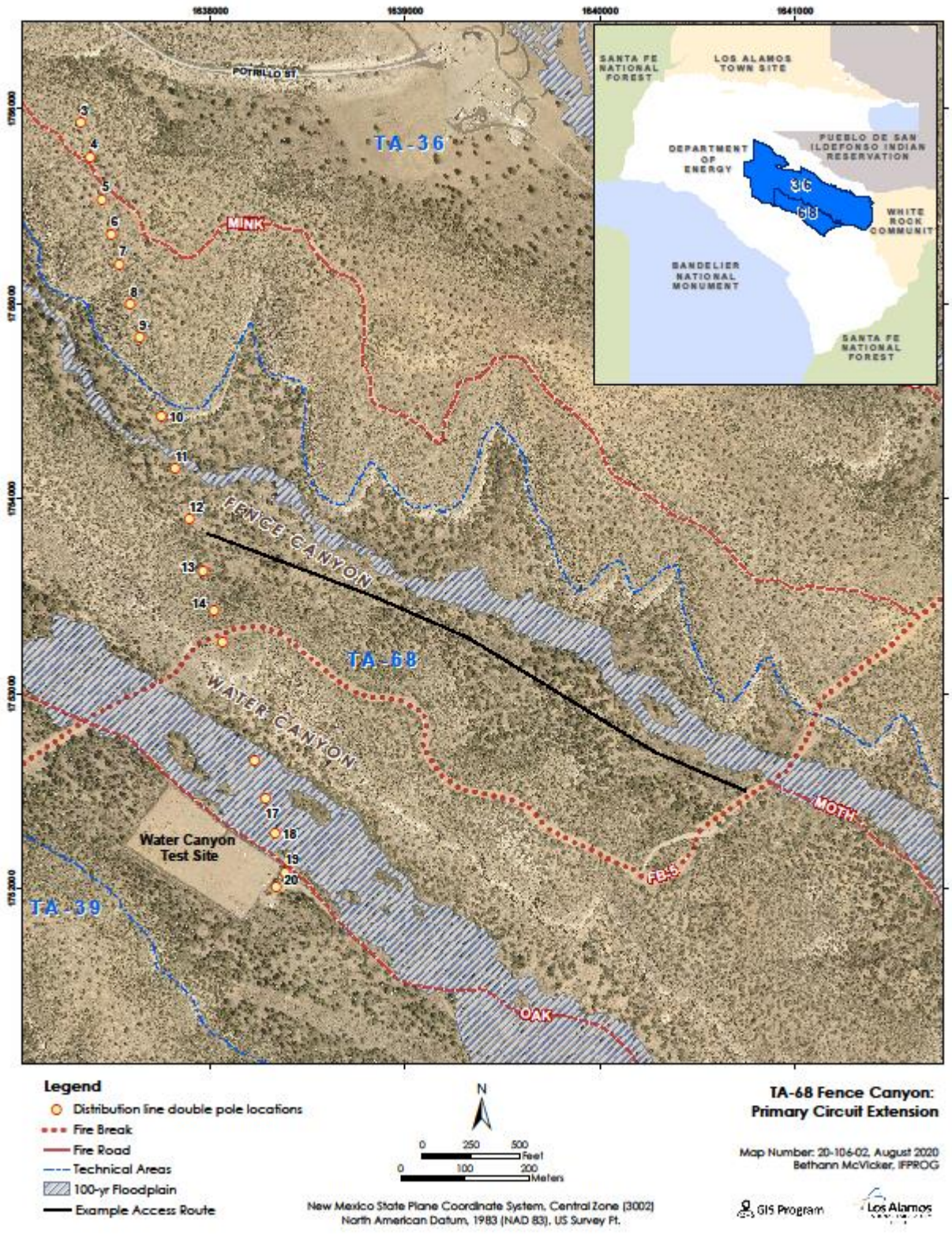

Figure 3. Example access route from fire road up Fence Canyon to distribution line corridor. Access route has not been identified but will be south of the 100-yr floodplain.

underground utilities, contaminated soils, spills and leaks, soil disturbance and stabilization, threatened and endangered species habitat, floodplains or wetlands, and regulatory agency authorizations such as US Army Corp of Engineers permit requirements and Clean Water Act permit requirements. The following requirements identified in the PR-ID process will help avoid or mitigate impacts to floodplain resources:

- This project will require NPDES Construction General Permit coverage. This permit requires controls to limit soil erosion, sediment loss, and spills and leaks during and after construction. Controls include temporary perimeter controls to reduce sediment transport during construction and final stabilization to control erosion after vegetation clearing and pole placement activities are completed. Vegetation stabilization will be completed in accordance with the LANL Seeding Specification 32-9219 (https://engstandards.lanl.gov/specs/32_9219R4.doc).
- The activities associated with this project will not add new impervious surfaces. Therefore, the Energy Independence and Security Act Section 438, which requires that stormwater runoff from new Federal construction or re-construction projects be released at pre-development levels, does not apply.
- There will be minimal soil-disturbing activities in the water course, therefore this project will not require 404 permit coverage or 401 certification.
- This project will involve disturbance of two AOCs. Mitigating activities will be identified and followed (see description below).

There are two AOCs included in the project area, each associated with a different floodplain, AOC C-00-015 (Fence Canyon AOC) and AOC C-00-016 (Water Canyon AOC). The AOCs occupy the same footprint as their respective floodplain. AOC contaminants of potential concern are summarized in Table 1.

Table 1. SWMUs and AOCs impacted by the project.

SWMU/AOC	Description	Contaminants of Potential Concern
AOC-C-00-015	Fence Canyon AOC	Radionuclides
AOC-C-00-016	Water Canyon AOC	Organic Chemicals, Radionuclides

Soil removed from the Water Canyon AOC as a result of pole placement (poles 16, 17, 18) will not be removed from the site, it will be stabilized in place along with any soils disturbed as a result of corridor thinning or equipment access. Vegetation stabilization will follow NPDES Construction General Permit requirements.

Other potential short-term direct and indirect floodplain impacts from the project will be avoided or minimized through implementation of the following best management practices:

- Hazardous materials, chemicals, fuels, and oils will not be stored within the floodplain.
- Heavy equipment will not be used within the floodplain if conditions are too wet to prevent damage to the soil structure.
- Equipment will be refueled at least 100ft from the Los Alamos Canyon bottom.

Potential direct effects to migratory birds and other biological resources would include short-term disturbance related to noise and human presence during construction. Adult migratory birds would give way to construction equipment to avoid being killed or injured. The Migratory Bird Treaty Act prohibits killing migratory birds, including nestlings and eggs in an active nest. Therefore, if vegetation removal is required, during the nesting season (May 15 through July 15), an onsite inspection for bird nests from LANL Biological Resource subject matter experts would be required. Construction activities will conform to requirements stipulated in the Migratory Bird Best Management Practices Source Document for Los Alamos National Laboratory (LANL 2020).

Long-term Impacts

Clearing and maintenance of the 50-ft wide utility corridor across both Fence Canyon and Water Canyon floodplains will result in long-term direct or indirect impacts to the floodplains, primarily through the loss of mature trees. However, disturbed areas will be revegetated with grasses and forbs to control soil erosion and to mitigate losses of wildlife habitat.

This assessment also considered the impacts of the proposed floodplain actions on the conservation of habitat for existing flora and fauna, cultural resources, aesthetic values, and public interest. Although the proposed action will not remove any protected habitat it will result in some habitat conversion due to tree and shrub removal in the 50-ft utility corridor. Cultural resource sites will be identified and avoided. The proposed action will not impact aesthetic values since all construction activities are internal to LANL and the area cannot be seen by the public. The floodplain within the proposed project is entirely located within LANL property and is uninhabited.

ALTERNATIVES

Two primary alternatives to construction and operation of the electrical power distribution line were considered and rejected from further consideration. The first was placement of a 100 kilowatt (kW) portable generator at the Water Canyon Test Site. A 100kWgenerator would require significant maintenance and operation challenges including:

- Storage of a substantial amount of fuel on-site.
- Long-term refueling and generator maintenance costs.
- Fuel transportation challenges during winter and inclement weather.
- Generator downtime for maintenance or repair.
- Future cost of generator replacement as the project is expected to exceed the generator service life.
- Significant time required to obtain an air quality permit for the permanent use of a portable generator.

The second alternative considered was the installation of a 100kW photovoltaic solar array panels and a 120V inverter. The solar array would require the clearing of 800 square meters of trees and brush plus removal of any vegetation, primarily trees, that would shade the solar array. The project could incur downtime during adverse climatic conditions (e.g., snow, overcast skies) and during nighttime operations which would require the addition of a battery bank to provide 24 hours a day power. The battery bank would require an additional building to provide for battery protection and safe storage. Regular maintenance of the solar array and battery bank would be required with the battery bank having a service life less than the project. Given that the cost of a solar array, batteries, inverter, and battery storage structure was estimated to be similar to the power line this alternative does not have an advantage compared to power line construction and operation.

To support the uninterrupted research, development, and equipment calibration for imaging techniques to detect materials of interest these alternatives would not meet the purpose and need for the project.

CONCLUSIONS

Although the proposed project will result in limited and minor direct and indirect impacts to the 100-yr floodplains, including limited long-term changes in vegetation structure, it will not result in adverse impacts to the floodplain values or functions. Temporary disturbance within the floodplain will cease following completion of construction activities. Best management practices will be implemented, including revegetation of disturbed areas. This proposed project will not significantly modify existing elevations and flow paths within the floodplain from pre-project conditions to post project conditions. No effects to lives and property associated with floodplain modifications are anticipated.

LITERATURE CITED

LANL 2020. Migratory bird best management practices source document for Los Alamos National Laboratory revised November 2020. Stanek, J.E., Thompson, B.E., Sanchez, A.A., Berryhill, J.T. and C.D. Hathcock, LA-UR-20-24292.

LANL 2018. LANL Master Specification, Rev. 4; Seeding (32-9219). LA-UR-20-20906.

Photos

Photo 1. Pole location 14 looking NW across Fence Canyon in direction of incoming distribution line.

Photo 2. Pole location 17 looking NW across Water Canyon in direction of incoming distribution line.