



9205 NCAR TAP RECONSTRUCTION PROJECT

FINAL PLAN OF DEVELOPMENT

PUBLIC SERVICE COMPANY OF COLORADO

June 2019

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ACRONYMS AND ABBREVIATIONS

APLIC	Avian Power Line Interaction Committee
BA	Biological Assessment
BMP	Best Management Practice
CDPHE	Colorado Department of Public Health & Environment
CPW	Colorado Parks and Wildlife
CWA	Clean Water Act
dBA	“A-weighted” decibel scale
ESA	Endangered Species Act
kV	kilovolt
NCAR	National Center for Atmospheric Research
NEPA	National Environmental Policy Act of 1969
NERC	North American Electric Reliability Corporation
NESC	National Electric Safety Code
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NSF	National Science Foundation
OSMP	Open Space and Mountain Parks POD Plan of Development
PSCo	Public Service Company of Colorado
ROW	right-of-way
SHPO	State Historical Preservation Office
SWMP	Stormwater Management Plan
UCAR	University Corporation for Atmospheric Research
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

1.0 PROJECT OVERVIEW

1.1 Purpose and Need

Public Service Company of Colorado (PSCo), a Colorado Company doing business as Xcel Energy, is a U.S. investor owned electricity and natural gas company with regulated operations in eight Western Midwestern states. Xcel Energy provides a comprehensive portfolio of energy-related products and services to 3.4 million electric customers and 1.9 million natural gas customers through four wholly-owned utility subsidiaries.

PSCo is proposing the 9205 NCAR Tap Reconstruction Project (Project) in 2019. The Project is located within the City of Boulder, in Boulder County, Colorado, along the larger Eldorado – Boulder Hydro 115 kilovolt (kV) overhead electric transmission line (ELDO-BHYD Line).

The ELDO-BHYD Line is located southwest of the City of Boulder, between Boulder Canyon Drive on the north and Eldorado Springs Drive on the south, see **Figure 1**. The NCAR Tap Line is a double circuit overhead line that “taps”, or connects to, the ELDO-BHYD Line near the mouth of Bear Canyon and extends approximately one-mile easterly to PSCo’s NCAR Substation.

The NCAR Tap Line is approximately 1 mile long and located within a 75-foot-wide easement. The majority of the ROW is on property owned by the National Science Foundation (NSF) and managed by the National Center for Atmospheric Research (NCAR). The westerly portion of the Project is on property owned by the City and managed by its Open Space and Mountain Parks Department.

The purpose of this Project is to provide ongoing transmission system maintenance and improvements. The existing transmission line has been in use since the mid-1960s and the structures have been identified by PSCo as being in a structural condition that warrants their replacement and/or do not meet current federal code for ground clearance. Their replacement would ensure that PSCo maintains this section of transmission line to the safest and most structurally sound standards.

The need of this Project is to ensure PSCo meets its commitment to provide the safest and most reliable electric service to the greater community. Completion of the project would provide PSCo the ability to continue meeting the current and future electric demands of the local residential, business, and governmental interests, among others.

Completion of the Project is an important part of PSCo’s ongoing efforts to maintain a robust transmission line system to the Boulder area, including the National Center for Atmospheric Research. The new structures bring this section of transmission line up to current federal standards for ground clearance and structural integrity. Both PSCo and the City of Boulder have spent considerable time and money repairing and replacing their infrastructure in the area over the last three years. The City performed major work on NCAR-Bear Canyon and Mesa Trails to

repair damage caused by the 2013 floods. PSCo has replaced nearly four miles of its transmission line that connect to the Project and is currently replacing a large section of distribution line that exits the NCAR Substation and is located on federal lands. Once the Project is complete, the area can return to its open space serenity and the community can take comfort that its electric reliability continues to be maintained.

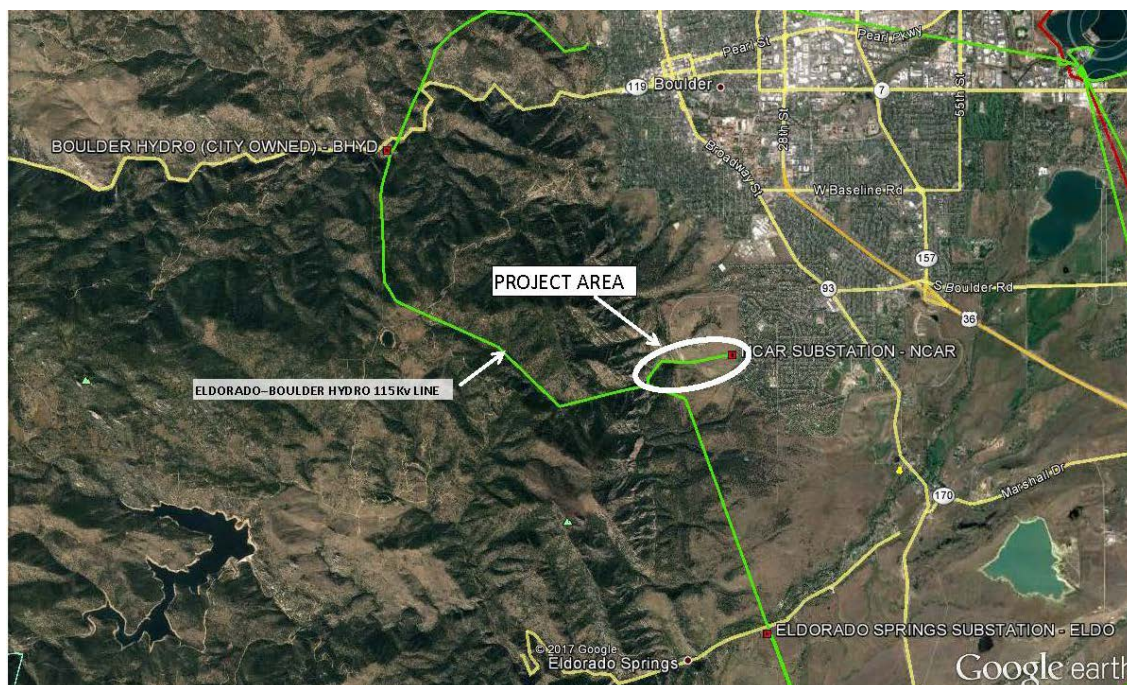


Figure 1. Project Location

1.2 Purpose of the Plan of Development

This Plan of Development (POD) is intended to provide an overview of the project with transmission line reconstruction specifications, descriptions of the procedures to be employed, purpose for those procedures, and locations of the project components.

This POD also addresses requirements and policies of the agencies with jurisdiction of resources impacted by this project including the U.S. Fish and Wildlife Service (USFWS), State Historic Preservation Officer (SHPO), and NSF. This document will assist in educating key personnel and contractors regarding the appropriate implementation of environmental compliance measures. A key objective of the POD is to place an emphasis on the avoidance of sensitive resources. In situations where sensitive resources may be impacted by the Project, the use of Best Management Practices (BMPs) will be implemented to minimize potential impacts.

The Draft POD was made available for public review from May 22, 2019 through June 7, 2019. A public notice announcing the availability of the Draft POD was provided to NCAR/UCAR staff and posted on NSF's website at: <https://www.nsf.gov/geo/ags/envcomp/index.jsp>. The notice was mailed to all landowners within 0.5 miles of the project area. Additionally, the City of Boulder posted the public notice in prominent locations along the Bear Canyon Trail and Trailhead. Please see **Appendix D** for a copy of the public notice, photo of notice display at the Trailhead, and, a table containing a summary of all comments received and responses to those comments. Updates and edits to this POD as a result of comments received are underlined throughout the document.

1.3 Communication Protocol

Effective communication between the agencies and stakeholders engaged in this project is a critical component to the success of the project. Project pre-construction activities will include the development of a communication protocol/plan between the Project Proponent (PSCo or contractor) and NSF and the City of Boulder, which will outline the appropriate method of reporting and updating project information between the participating parties.

An Organization Chart illustrating responsibilities and Key Contacts List for the project will be created and maintained by PSCo during the construction of the project. This contacts list will include the name, agency, office phone number, cell phone number, and email address of those individuals working on the project, and this list (and Organization Chart) will be updated, as required, on a periodic basis.

1.4 Emergency Contact Numbers

In the event of any emergencies or unforeseen events, PSCo will contact the following entities to make notifications, as appropriate:

Medical, Fire or Police Emergencies: 9-1-1

Incidents on NSF land: City of Boulder Police Department Non-Emergency: 303-441-3333

For non-emergency incidents, a contact list will be developed with the appropriate agency contacts with phone numbers and email addresses including: PSCo, City of Boulder Open Space and Mountain Parks Department, City of Boulder Police Department, National Science Foundation, National Center for Atmospheric Research, University Corporation for Atmospheric Research, and construction contractor.

2.0 PROJECT DESCRIPTION

The Project is located along the larger Eldorado – Boulder Hydro 115kV overhead electric transmission line (ELDO-BHYD Line) in Boulder County, Colorado.

The ELDO-BHYD Line is located southwest of the City of Boulder (City) between Boulder Canyon Drive on the north and Eldorado Springs Drive on the south, **see Figure 1**. The NCAR Tap Line is a double circuit overhead line that “taps”, or connects to, the ELDO-BHYD Line near the mouth of Bear Canyon and extends approximately one-mile easterly to PSCo’s NCAR Substation. The Project consists of reconstructing the entire NCAR Tap Line. This includes replacing all eleven (11) existing two-pole transmission structures with two new sets of single pole structures. Nearly all of the Project is located within the limits of the City of Boulder, with a small portion of the existing trail access located in Boulder County. The majority of the Project is on lands owned and managed by the United States of America and represented by the NSF. The westerly portion of the Project is on property owned by the City and managed by its Open Space and Mountain Parks Department, see the Site Map included as **Appendix A**.

2.1 Location

The Project is located in Section 12, Township 1 South, Range 71 West and Section 7, Township 1 South, Range 70 West in Boulder County. Pictures of the structures are included as **Appendix B**.

2.1 Project Summary

The Project involves replacing the existing 115,000 volt double circuit overhead line, consisting of two-pole structures, with two new 115,000 volt single circuit lines along the same alignment. The new poles would be located in the same general location as the existing structures. The new lines must meet current clearance standards required by the North American Electric Reliability Corporation (NERC), which is subject to oversight by the Federal Energy Regulatory Commission. To achieve these clearance standards, the new poles would have a vertical configuration (all conductors on one side), which require taller poles.

The new poles would be steel construction with a weathered steel exterior treatment. This provides the necessary rust prevention to assure long term structural integrity, while minimizing the visibility of the line in the mountainous setting. The new conductor would be non-specular to reduce reflection. The type, height, location and foundation types of each existing and new structure are shown on **Table 1**.

Table 1. Existing and New Structures

Structure ID Existing/New	Existing Structure Details	Replacement Structure Details	Replacement Structure Location (Facing Substation)	Foundation Type
2/1370 and 1391	Two 65-foot tall guyed single wood poles	85 and 75-foot tall guyed single steel poles	Back 9.5 feet/ Ahead 21 feet	Both Direct Embed
3/1371 and 1390	60-foot tall two- pole wood structure	67.25 and 65.25-foot tall single steel poles	Back 9 feet/ Back 9 feet	Both Direct Embed
4/1372 and 1389	Two 75-foot tall guyed single wood poles	85 and 95-foot tall guyed single steel poles	Back 9 feet/ Back 9 feet	Both Direct Embed
5/1373 and 1388	50-foot tall two- pole wood structure	98.25 and 98.25-foot tall single steel poles	Back 41.5 feet/ Back 11 feet	Both Direct Embed
6/1374 and 1387	50-foot tall two- pole wood structure	95.25 and 100.25-foot tall single steel poles	Back 137 feet/ Back 138 feet	Both Direct Embed
7/1375 and 1386	Two 75-foot tall guyed single wood poles	95.25 and 100.25-foot tall single steel poles	Ahead 13.5 feet/ Ahead 12 feet	Both Concrete
8/1376 and 1385	50-foot tall two- pole wood structure	75.25 and 80.25-foot tall single steel poles	Back 7 feet/ Back 7 feet	Both Direct Embed
9/1377 and 1384	55-foot tall two- pole wood structure	80.25 and 80.25-foot tall single steel poles	Back 42 feet/ Back 42 feet	Both Direct Embed
9A/1378 and 1383	Two 65-foot tall single steel poles	80.25 and 75.25-foot tall single steel poles	Back 14 feet/ Back 14 feet	Both Direct Embed
10/1379 and 1382	50-foot tall two- pole wood structure	70.25 and 70.25-foot tall single steel poles	Ahead 3 feet/ Ahead 3 feet	Both Direct Embed

Structure ID Existing/New	Existing Structure Details	Replacement Structure Details	Replacement Structure Location (Facing Substation)	Foundation Type
11/1380 and 1381	55-foot tall two- pole wood structure	80 and 80-foot tall single steel poles	Back 19 feet/ Back 19 feet	Both Concrete

Note: Existing structure IDs are the same for poles on the north and south circuits. New structure IDs will be unique for each pole.

3.0 ADDITIONAL PROJECT COMPONENTS

3.1 Easements

The NCAR Tap Line is located within a perpetual 75-foot wide easement, see **Appendix C**. This easement grants PSCo the right for:

“the construction, reconstruction, operation and maintenance of conductors and conduits for the transmission and distribution of electricity, whether said lines may now or may hereafter serve the property herein described or other property , together with the necessary poles, towers, cables, wires, guys, supports, and other fixtures and devices, used and useful in the operation of electric transmission and distribution lines...”

“Together with the right of ingress and egress over said premises and to remove objects or structures therefrom; and also to survey, construct, reconstruct, maintain, operate, control and use said lines and facilities...”

Condition 4 of the easement across NSF lands requires PSCo to “supervise the facilities to be constructed on the right-of-way granted hereby and cause them to be inspected at reasonable intervals, and shall immediately repair any defects found therein...”

All Project work conducted within the easement is consistent with the rights granted in the easements and required by the easement conditions.

PSCo is recommending that the easement be amended and restated to center it over the reconstructed line.

3.2 Down Guys and Anchors

Down guys and anchors are used to support certain structures, as shown in the picture of Structure 4 in **Appendix B**. Down guys are wires that extend from the top of the poles to anchors that are installed in the ground. Currently, four structures have down guys and anchors. The down guys and anchors for existing structure 7 extend outside of the easement. The replacement structures for Structure 7 will not require down guys and anchors, which will rectify the out of easement situation. However, the down guys for replacement structures for existing Structures 2 and 4 will extend outside of the easement. This is due to the taller poles required for ground clearance and the additional spacing needed between the north and south lines.

PSCo recommends addressing the inclusion of these anchors in an amended and restated easement.

3.3 Construction Access

Movement of personnel, material, equipment and poles would utilize a combination of existing trails, new temporary full access routes, limited access routes, and helicopters, **see Figure 2**. The NCAR-Bear Canyon Trail and portions of the Mesa and Bear Canyon Trails are constructed to accommodate vehicular traffic and have historically been used by PSCo for maintenance of the NCAR Tap and ELDO-BHYD lines.

The temporary full access (TFA) routes located within the easement would be graded 10 feet wide, where necessary, and used for all construction activities. Following construction of the Project, this section would be revegetated but not re-contoured to accommodate future line maintenance activities. The TFA routes not located within the easement have been routed to minimize the need for grading, thus the need to extend the access to existing Structure 10 extending north of the easement. Following construction, these routes outside of the easement would re-contoured and revegetated.

The limited access routes would be used by personnel for pedestrian access to certain structures. Helicopters would be used primarily for the placement of new poles at locations that cannot accommodate new temporary full access.

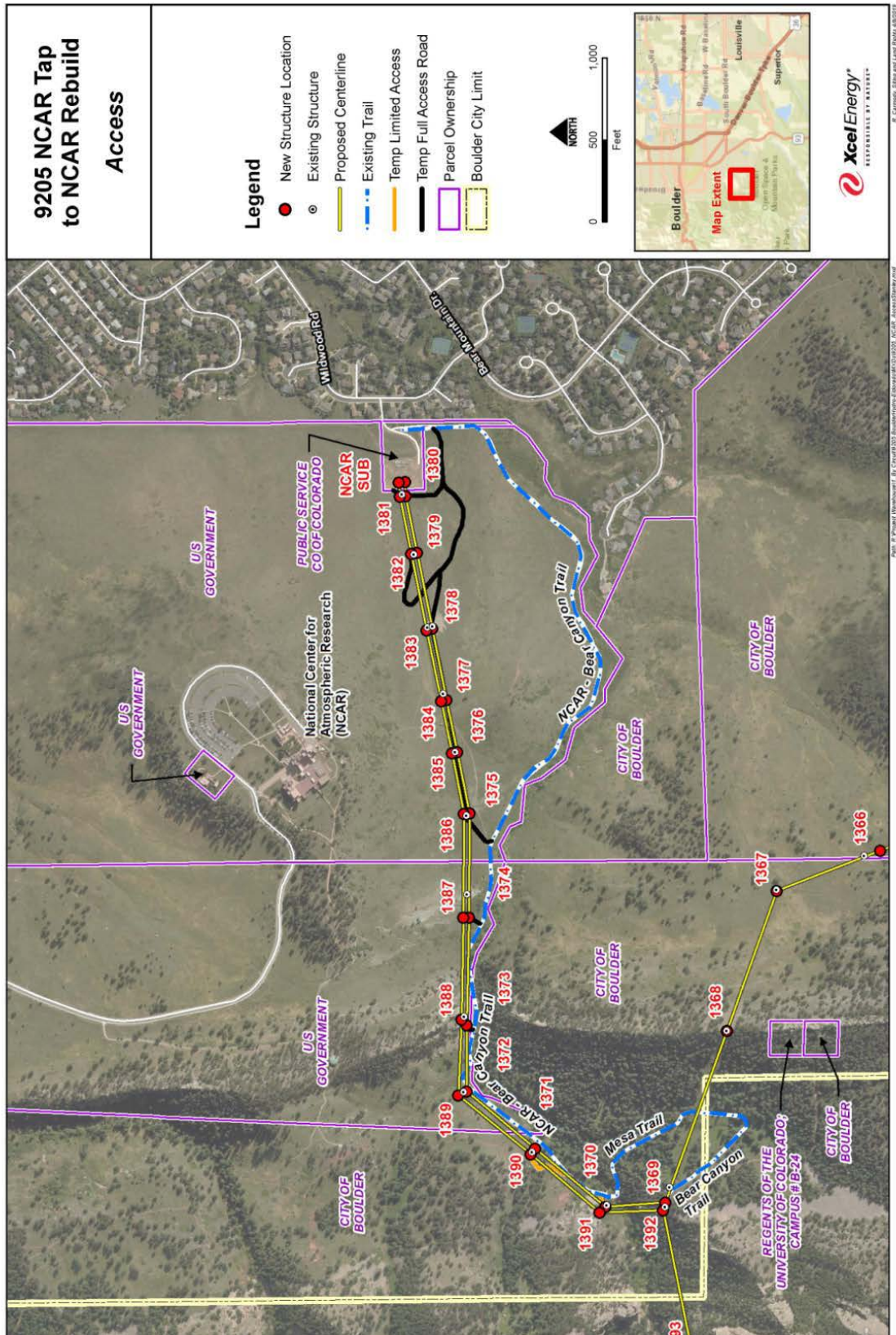


Figure 2. Construction Access

3.4 Temporary Construction Staging Areas

The Project would utilize up to five staging areas, **see Figure 3**. PSCo has analyzed impacts associated with each staging area but likely will not use all five areas. These staging areas would be used for the following purposes:

- Staging Area A (+/- 0.71 acres): This is located on PSCo property on the east side of the NCAR Substation. It would be used for parking for employees and contractors
- Staging Area B (+/- 2.58 acres): This area would be used for staging of material and equipment.
- Staging Area C (+/- 3.26 acres): This area would be an alternate site for storage and staging of material and equipment. Because this staging area is closest to residences, it would not be used by helicopters.
- Staging Area D (+/- 0.22 acres): This area would be used as an alternative area for storage, framing and helicopter picking of pole sections
- Staging Area E (+/- 0.68 acres): This area would be used for storage, framing and helicopter picking of pole sections. PSCo would also use this area for staging, framing and helicopter picking of pole sections and concrete truck staging and concrete bucket picking for PSCo's Line Capacity project located in Bear Canyon. The Line Capacity work began in 2018 and will take approximately four weeks to complete in 2019.
- Staging Area F (+/- 0.64 acres): This area would be used for staging, framing and helicopter picking of pole sections and for helicopter landing.

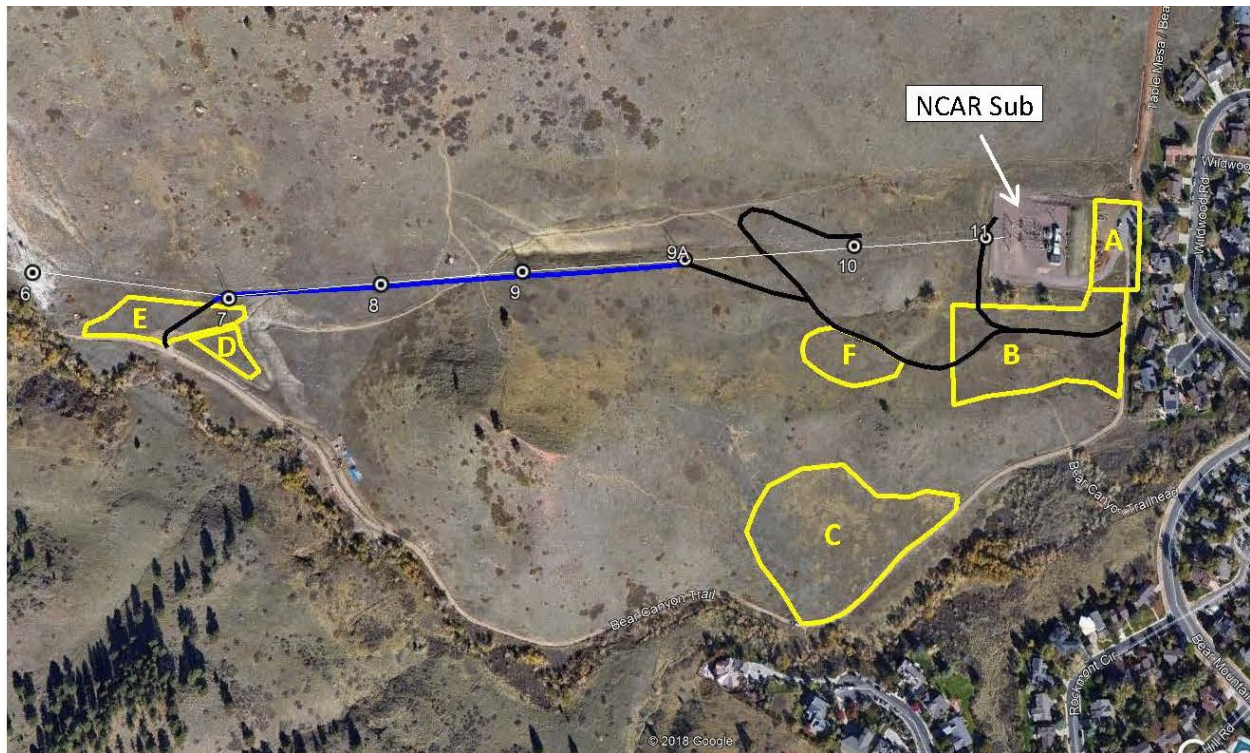


Figure 3. Construction Staging Areas

3.5 Construction Equipment

PSCo and its contractors anticipate using the following equipment during construction:

- Cranes (3)
- Digger truck and/or low drill
- Pickup trucks (several)
- Bucket trucks (2)
- Road tractor trailers (2)
- Puller
- Tensioner
- Wire trucks (2)
- Side-by-side all-terrain vehicles (2)
- Back hoe
- Tool trailer
- Caterpillar
- Man lift
- UH-1 Huey helicopter (or similar)
- UH-60 Blackhawk helicopter (or similar).

3.6 Helicopter Use

A helicopter would be utilized for limited purposes where vehicular access is not feasible. The helicopter use associated with the Project would be for work performed on the new westerly structures 1370-1374 and 1387-1391. A total of 120 trips are anticipated. Helicopter use would be limited to occur between 8am – 5:30pm. Helicopter usage would be avoided on Sundays to the maximum extent feasible. If a helicopter does need to be used on a Sunday due to some extenuating circumstance, all efforts would be made to not fly the helicopter earlier than noon on a Sunday.

The average trips per day would vary, depending on the type of construction being performed. At its maximum during excavation and conductor stringing and clipping activities, ten (10) flights per day or more may be needed. The helicopter flight time will vary based on numerous factors, with an estimated average flight time of 10 to 15 minutes per round-trip. There will also be long stretches when no helicopter use is needed.

In addition, PSCo would have approximately 160 helicopter trips to complete its Line Capacity Project located in Bear Canyon. This work consists of the placement of five new structures and transferring the existing conductor. All excavation work associated with this project was completed in 2018. The average helicopter use for the Line Capacity Project would be approximately eight (8) trips per day. This use would be consistent throughout the approximate four-week schedule.

3.6.1 Flight Path

All of the construction activities, the landing area and both pickpoints would be located within or in close proximity to the transmission line ROW. Because of this, once the helicopter arrives on site, the flight path would only need to generally follow the transmission line back and forth. This also includes refueling, which would likely occur at the Rocky Mountain Fire District heliport located on Eldorado Springs Drive about 2.5 miles south of the Project. The helicopter would follow the transmission line from the Project area to the tap location, then south along the ELDO-BHYD line to Eldorado Springs Drive and then easterly to the heliport. Any changes to this flight path would occur following consultation with the City and NCAR.

3.6.2 Trail Crossings

Each trail to be crossed by the helicopter with suspended loads would have two flaggers. The flaggers would temporarily block the trail use 500 feet in each direction while being crossed.

3.7 Construction Sequence

The NCAR Substation is energized by both circuits of the existing line. This provides redundancy in the event one of the circuits is taken out of service for any reason. To complete

the Project, at least one of the circuits must remain energized at all times to serve the substation. To accomplish this feat, the Project would be completed in three phases:

Phase 1 - The first phase involves installing the one of the new lines immediately north of the existing double circuit line. The new line would be offset from the existing northerly conductors by an average of approximately 13 feet. Prior to construction, all new structures would be staked in the field. The existing northerly circuit would then be de-energized to allow safe construction of the new north line. The following construction activities would then be performed in this general order:

- Excavate new transmission line pole holes
- Install the foundations/culverts for the new poles
- Set the base sections of the poles
- Repeat this process for all of the new poles for the north line (Structures 1381-1391)
- Once the bases are in place, the pole tops would be installed either by crane or helicopter.
- String and clip the new conductor onto the new poles. This requires some minor grading at structures 1375 through 1386 to accommodate a 50' x 50' level surface at each structure location for excavation equipment, cranes, and bucket trucks.
- Energize the new line.

Phase 2 – Once the new north line is reenergized, the southerly existing circuit would also be de-energized and then the following construction activities would be performed:

- Remove the existing conductor for both existing circuits.
- Access each old structure and cut the wood poles at ground level.
- Cut the wood poles into manageable sections
- Haul the poles to the staging area and eventually off the Project area.

Phase 3 – Once the existing structures are removed, the new southerly line would be installed in approximately the same alignment as the existing southerly pole line. The following construction activities would be performed:

- Excavate new transmission line pole holes
- Install the foundation for the new pole
- Set the initial section of pole
- Repeat this process for all of the new poles for the south line (Structures 1370-1380)
- Once the bases are in place, the pole tops would be installed either by crane or helicopter.
- String and clip the new conductor onto the new poles.
- Energize the new line.

3.8 Construction Schedule

Construction of Phase 1 would begin in early June 2019, if possible, and progress from east to west. This would allow the structures outside of known raptor nest buffers to begin prior to the end of the raptor nesting season that occurs around July 31st. Phase 1 would be completed by November 15, 2019. The disturbed areas would then be stabilized for the winter months.

Phases 2 and 3 would begin in early June 2020, if possible, and progress from east to west. This would allow the structures outside of known raptor nest buffers to begin prior to the end of the raptor nesting season that occurs around July 31st. The entire Project would be completed by November 15, 2020.

Work activities would typically be performed between 7:00 am and 7:00 pm, including many weekends.

PSCo will work with NCAR and the University Corporation for Atmospheric Research (UCAR), when possible, to schedule helicopter activities around outdoor events located at the NCAR facility.

3.9 Excavation

Direct embed pole holes would be hand dug or with the use of a vehicle mounted drill rig, depending on the access type. The hand digging option involves the use of a small track-mounted backhoe, compressor and culverts or other conventional methods as needed to excavate the pole hole. The culverts would be positioned vertically and the excavated material backfilled around the culvert. The culverts would be covered until time to install the new structures. The remaining spoils would be spread onsite, where approved by the NSF or removed off site.

For the poles that have concrete foundations, the holes for these foundations would be excavated by a vehicle mounted drill rig. Anchor bolt cages would then be placed in the hole and then filled with concrete. The remaining spoils would be spread onsite where approved by the NSF or removed off site.

3.10 Soil Borings

The majority of structures are bolted to poured concrete caisson foundations. The design of these foundations to date are based on very conservative geotechnical properties which leads to the largest foundation and construction impact. With site-specific information, obtained by performing two representative geotechnical borings and collecting samples at appropriate depths, these foundation structures may be reduced in size, primarily in depth of foundation. This reduces the foundation construction duration, excavation spoils export, and foundation material import. The proposal is to use a track-mounted rotary drill that utilizes water (no other additives) to lubricate the boring and facilitate sample collection. The water tank will be mounted on the drill rig. The boring diameter would be 8 inches or less depending on boring method - boring

through soil or rock. This geotechnical investigation should be expedited and performed immediately to update project foundation design and material procurement. One bore location is proposed near the pair of structures 1380 and 1381. The second bore is proposed near the pair of structures 1386 and 1375. Access for this work will not require grading and will have minimal surface access impact. In the event of saturated soils, the boring work will be postponed or the contractor will utilize mats to prevent rutting greater than 4 inches. The bore rig will be supported by a pickup. No safety escorts are anticipated for this work. Access to the 1386 and 1375 structure pair will require temporary closure of the Bear Canyon Trail for ingress and egress of the boring equipment. Access to the 1380 and 1381 structure pair will circle around the south side of the NCAR Substation. The work at each bore location is expected to be completed in one day.

4.0 ALTERNATIVES CONSIDERED

PSCo reviewed three alternatives to the Project as follows:

No Action Alternative: This alternative would leave the existing conditions in place. Not addressing the clearance conditions would leave the transmission line out of compliance with NERC Standards and vulnerable to emergency outages. This alternative would also not address the structural integrity of the structures and risk them being vulnerable to structural failure.

Overhead Line Relocation: This alternative would replace all or portions of the existing Project alignment with a new alignment from the NCAR Tap site to the NCAR Substation.

Moving the alignment for the westerly Project structures that are located in the canyon would be problematic. The ground to the north is a steep hill that would be difficult to access, while relocating to the south would put the line in the Bear Canyon Creek floodplain and/or require new creek channel crossings.

Relocation of the easterly Project structures would push the line over a prominent small hill and potentially in close proximity to the Bear Canyon Creek floodplain. Although a southerly realignment could benefit from being closer to the existing NCAR-Bear Canyon Trail, which is PSCo's historic access to its transmission lines, it would be a much longer line to traverse around the prominent small hill. This would require a substantial addition of angle structures that would be larger in diameter or require the use of down guys for support. Relocation to the north would place the alignment at the bottom of the slope below the NCAR facility. This would increase the length of the line and add new angle structures.

Trees located within the new alignment would be removed to provide the necessary clearance. Additionally, new easements would need to be secured.

Line Burial Alternative: This Project alternative would replace the existing overhead line with a new buried line. Burying the line would require the excavation of a large trench, placement of a concrete duct bank with several conduits that would disturb a corridor up to 100 feet wide. Pulling vaults would be required approximately every one half mile and large flat areas around each vault would be required for staging pulling equipment. Photos of a typical underground transmission line construction process are included in response to comments in Appendix D.

The cost of burying a line in ideal conditions would typically cost 10 times that of overhead construction. In the case of this Project, the cost would be substantially more. The steep mountainous terrain and rocky conditions would make this alternative particularly costly for this project, and may render this alternative technically infeasible.

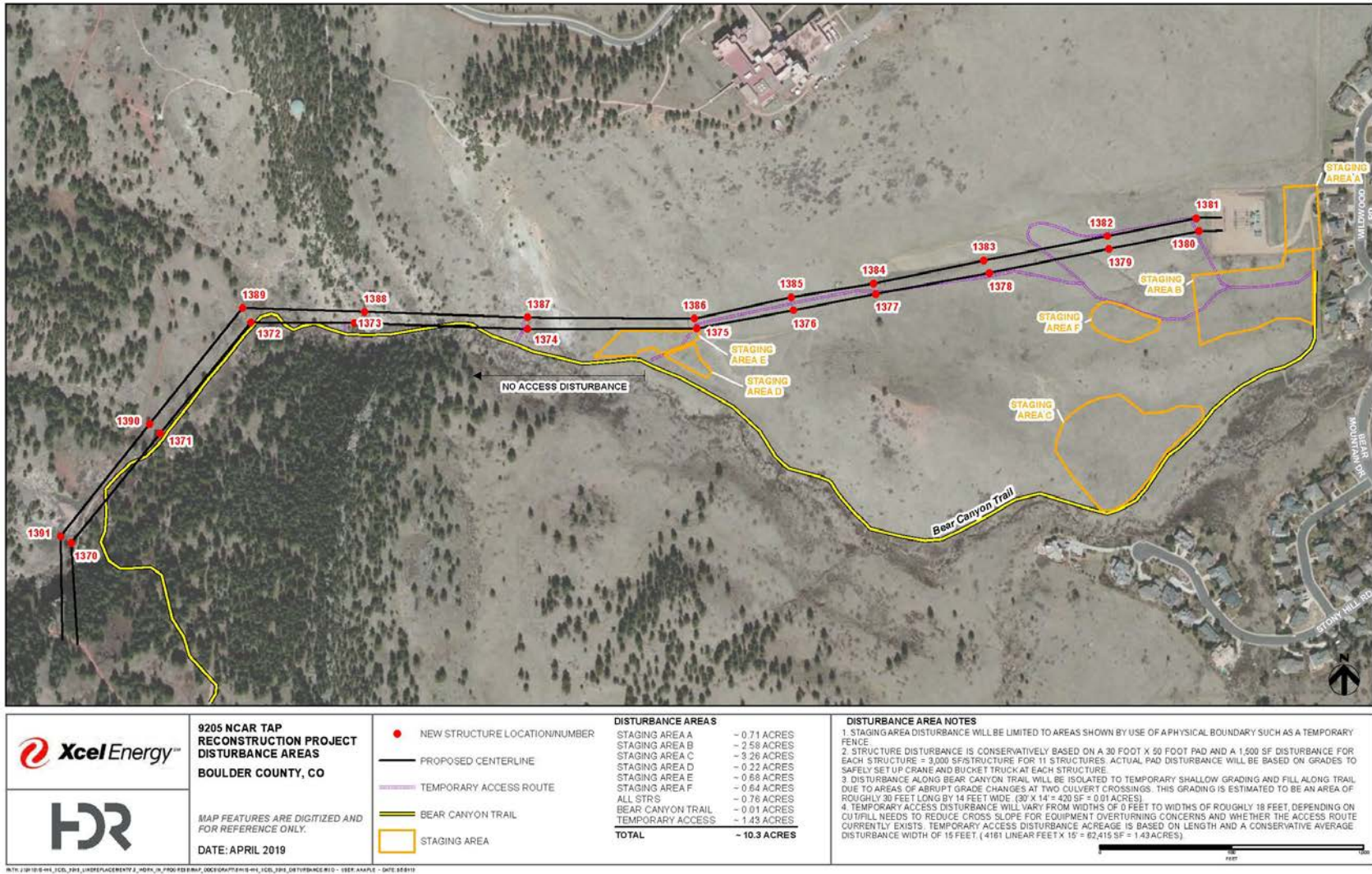


Figure 4. Construction Disturbance Areas

5.0 ENVIRONMENTAL CONSIDERATIONS

This section describes each relevant environmental resource, as well as the proposed mitigation measures are also included for each environmental issue, as appropriate, to reduce potential impacts.

5.1 Soils

The project could impact up to approximately 10.3 acres during construction. Impacts on soils during construction could result from soil compaction, disturbance, and erosion. After proposed project construction and reclamation activities are completed, negligible, direct, long-term soil loss would occur. Construction disturbance areas are indicated on **Figure 4**.

5.2 Water Resources

Construction for the proposed structure replacement will utilize existing grading improvements as much as practicable. Additional construction grading will have minimal localized stormwater drainage pattern impacts. Although drainage patterns will be impacted around the proposed pad and access cut/fill areas, the overall parcel drainage patterns and area drainage basins will not change. After construction, temporary grading impacts outside the power line easement will be restored to the pre-construction grades. Construction access and pad grading within the power line easement will remain. All graded areas will be covered with on-site topsoil at the end of construction and revegetated. The post-construction minor localized grading will have a negligible impact on the local basin drainage water quality and flow quantity since the vegetation will be restored, there are no large global grading changes, and there are no new conveyance swales nor detention areas.

In addition to site grading, the proposed project area will require multiple staging areas for material drop-off, storage, and helicopter use. Although these areas will experience construction surface disturbance due to construction activities, there will be no grading modifications. Upon completion of construction, the staging areas will have vegetation restored. Since there is no change in staging area grading post-construction, there will be no long-term impact to water quality or surface flow quantity.

Short-term water quality and flow quantity impacts may occur until construction is completed and the site is revegetated. Structural (e.g., silt fence, sediment control logs, rock checks, erosion control blankets) and nonstructural (e.g., preserving natural vegetation, preventative maintenance, training, inspections, and spill response procedures) construction stormwater Best Management Practices (BMPs) would be implemented to minimize erosion and sediment transport.

Construction stormwater permitting is managed by the Colorado Department of Public Health & Environment (CDPHE), which has established a Stormwater Construction Permit that requires the development and implementation of a project-specific Stormwater Management Plan

(SWMP) to reduce and prevent pollutants in storm water runoff from entering waterbodies for any activity disturbing at least 1 acre of land. The SWMP, through the use of structural and non-structural BMPs, would establish erosion and sedimentation controls, hazardous material management, and any necessary reclamation or monitoring events (CDPHE 2019). In addition, the City of Boulder will require a City Grading Permit, which is a local jurisdiction SWMP-type permit. Both permits allow and require regular inspection for BMP implementation, maintenance function in regards to minimizing erosion and sediment transport off-site, as well as revegetation before closing either permit.

A spill or leak of fuel or other construction-related products could indirectly impact water quality. Therefore, construction equipment would be maintained according to the manufacturer's specifications and fuels and other potentially hazardous materials would be contained and stored appropriately. Construction personnel would follow appropriate BMPs to protect against potential petroleum or hazardous material spills. Good housekeeping, maintenance of equipment, and containment of fuels and other potentially hazardous materials would be conducted to minimize the potential for a release of these fluids into groundwater. Therefore, no significant impacts on groundwater from spills or leaks would be expected.

5.3 Air Quality and Climate Change

The project is located within Boulder County, Colorado. The County has been designated by the USEPA as nonattainment for ozone (USEPA 2019). The eastern half of the project is within the area designated by the USEPA as maintenance for carbon monoxide. USEPA has developed *de minimis* levels, that is, the minimum threshold for which a conformity determination must be performed, for various criteria pollutants. For ozone, the *de minimis* level ranges from 10 to 50 tons per year. For carbon monoxide in maintenance areas, the *de minimis* level is 100 tons per year (USEPA 2017). The emissions from the project are anticipated to be well below those thresholds, and therefore no conformity determination, reporting, or permitting requirements are anticipated.

Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. Construction activities will also generate particulate emissions as fugitive dust from ground-disturbing activities; however, the emissions from the project are anticipated to be well below regulatory thresholds; therefore, no reporting or permitting requirements are anticipated.

To limit the emission of fugitive particulate matter, construction activities would incorporate BMPs such as control of vehicle access and flow routes, vehicle speed restrictions, covering of piles, and reestablishing ground cover. The small scale, temporary increase in greenhouse gas emissions associated with the proposed project would not have a measurable effect on climate and, therefore, would be anticipated to be negligible.

To reduce exhaust emissions from construction equipment, PSCO will minimize unnecessary construction vehicle idling time. The ability to limit construction vehicle idling time depends on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times that limit their availability for use following startup. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The Project would apply a “common-sense” approach to vehicle use, such that idling would be reduced as much as practicable.

In addition, PSCO will discuss with construction contractor the practicality of using natural gas- or electric-powered vehicles and equipment.

5.4 Biological Resources

5.4.1 Vegetation

Vegetation in the project area includes riparian, grassland meadow, and Douglas-fir (*Pseudotsuga menziesii*) forested habitat. The western end of the project area near the entrance to the canyon, the dominant tree species include Douglas fir and Rocky mountain juniper (*Juniperus scopulorum*) with a shrub cover consisting mainly of skunkbrush sumac (*Rhus trilobata*) and sumac (*Rhus* spp.). The eastern end of the project area consists of typical prairie species, such as western wheatgrass (*Pascopyrum smithii*), buffalograss (*Buchloe dactyloides*), blue grama (*Chondrosum gracile*), fringed sage (*Artemisia frigida*), prickly pear (*Opuntia macrorhiza*), broom snakeweed (*Gutierrezia sarothrea*), yucca (*Yucca glauca*), and curlycup gumweed (*Grindelia squarrosa*).

Bear Canyon Creek flows adjacent to the project area and is dominated by plains cottonwood (*Populus deltoides*), peachleaf willow (*Salix amygaloides*), sandbar willow (*Salix exigua*), reed canarygrass (*Phalaroides arundinacea*), wood’s rose (*Rosa woodsii*), golden currant (*Ribes aureum*), snowberry (*Symphoricarpos occidentalis*), American plum (*Prunus americana*), and chokecherry (*Prunus virginiana*).

Clearing of a minor amount of vegetation and compaction of soil as a result of installing new poles would result in approximately 0.01 acre of impacts to vegetation. Temporary construction impacts to vegetation would occur in proposed staging areas. Disturbed areas will be reseeded with a City of Boulder- and NSF-approved seed mix. Short-term, negligible impacts are expected during construction activities; however, no significant, long-term impacts on vegetation resources would be expected.

5.4.2 Wildlife

Terrestrial mammal species that may occur within the project area include mule deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), cottontail rabbit

(*Sylvilagus audubonii*), and striped skunk (*Mephitis mephitis*). Large carnivores, such as mountain lion (*Felis concolor*), and black bear (*Ursus americanus*), are also found in the Boulder foothills. There are several rodent species that are likely to occur in the project area, including fox squirrel (*Sciurus niger*), various mice and voles, woodrats (*Neotoma* spp.), and common porcupine (*Erethizon dorsatum*).

Colorado Parks and Wildlife (CPW) identifies the entire project area as black bear, mountain lion, and mule deer overall range (CPW 2018). The project area is also designated by CPW as mule deer concentration area, resident population area, and summer and severe winter range. Elk overall range is designated west and south of the project area along the Boulder foothills (CPW 2018).

Direct impacts to wildlife would include temporary disturbance to vegetation within the staging areas and adjacent to poles. Project construction activities could temporarily displace mammals from the active construction areas because of increased noise and human activity during construction. Helicopters used for the placement of poles could temporarily startle wildlife in the vicinity of the helicopter flight path. Short term and infrequent overflights such as for the five month construction period are not likely to result in long-term harmful effects.

If the proposed project resulted in an increase of non-native or noxious weeds in the project area, this could indirectly impact available browse for mule deer and elk in the project area and adjacent areas. However, PSCo will control noxious weeds, as described in section 6.0, by cleaning all heavy equipment and mobilizing equipment by power-washing before entering the project area. In addition, all disturbed areas will be revegetated using NSF- and City of Boulder-approved seed mix, and the seeded areas will be protected and cared for and watered when needed. Supplemental applications of seed, mulch, and fertilizer will be repaired or applied, and watered as many times as needed until seed mix is established.

5.4.3 Migratory Birds

The potential exists for breeding birds protected by the Migratory Bird Treaty Act (MBTA) to occur within the project area. In order to avoid impacts to potential nesting birds within the project area, all vegetation removal shall be conducted outside of the nesting season for migratory birds (April 1 to August 31). A survey of the project area for nesting migratory birds will be completed prior to any vegetation removal during the nesting season. If active nests are located, PSCo will work with the Open Space and Mountain Parks (OSMP) department to determine appropriate buffers around active nests. The survey and buffer requirements for migratory bird nests do not apply if the vegetation removal or work on structures is conducted outside of the April 1 to August 31 migratory bird nest season.

A variety of raptor species are known to occur and likely nest in the project area or adjacent Bear Creek Canyon. The most common species include American kestrel (*Falco sparverius*), great-horned owl (*Bubo virginianus*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsonii*), and turkey vulture (*Cathartes aura*).

OSMP institutes seasonal closures to protect cliff-nesting raptors in the Bear Creek Canyon and adjacent cliffs. Areas designated as raptor nesting habitat are closed to all activity from February 1 through August 15. No construction activities may occur within a 0.50-mile buffer around cliff nesting raptors until after August 15. To ensure that raptors would not be disturbed, PSCo will begin construction on the east end of the project area near the NCAR substation and plan to begin activities that overlap with the raptor nesting buffer after August 15 unless nests are determined by OSMP to be inactive or fledging has occurred. PSCo will coordinate with OSMP to determine nest status in July. If nests are determined to be inactive PSCo will discuss with OSMP the possibility of starting construction early in areas where there are no active nest buffers.

Clearing of a minor amount of vegetation around the poles would slightly reduce habitat availability for migratory birds in the project area. Construction activities could result in displacement of birds from habitat near active construction areas. Helicopter overflights may cause birds to flush from perches or nests but is not expected to result in long-term harmful effects. The helicopter overflights will occur in August when most migratory birds are done nesting.

The rebuilt transmission line would be constructed in accordance with recommendations and standards outlined in the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*. The new line would not pose an electrocution risk to birds.

The rebuilt transmission line would be marked as appropriate to prevent avian collision incidents, if recommended by CPW. By incorporating this protection measure and the proposed seasonal restrictions outlined in Colorado Parks and Wildlife's Raptor Buffer Guidelines, the potential impacts to both resident and migratory birds from the project would be minimized.

5.4.4 Special Status Species

Under Section 7 of the Endangered Species Act, a Biological Assessment (BA) has been prepared for the proposed project, for review by the USFWS to analyze the potential effects to protected species. Federally listed and proposed species considered in the BA include 12 species identified in the USFWS IPaC list of Endangered, Threatened, Candidate, and Proposed Species for the project area (USFWS 2019). Based on habitat requirements and discussions with City of Boulder biologists, the Preble's meadow jumping mouse (*Zapus hudsonius preblei*) is the only federally listed species with potential to occur in the project area. No designated critical habitat for any federally listed species is present within the action area. Impacts to the Preble's meadow jumping mouse are discussed in the BA.

The BA concluded that based on the avoidance of riparian habitat, the low potential for Preble's in the direct impact area around the poles and staging areas, and the adherence to best management practices, the project *may affect, but is not likely to adversely affect, the Preble's*

meadow jumping mouse. The proposed project will have no effect upon designated Preble's critical habitat. USFWS concurred with these determinations on June 7, 2019 (Appendix E).

5.5 Heritage Resources and Human Environment

5.5.1 Cultural Resources

PSCo retained HDR to conduct a Class III cultural resource survey for the Project. Much of the project area is covered by surveys conducted by City of Boulder OSMP in 2016. HDR requested a file search and literature review from the Colorado Office of Archaeology and Historic Preservation in November 2018 and January 2019. The file searches identified six previous surveys and 21 cultural resources within 0.25 mile of the Area of Potential Effects. The previous surveys were conducted between 1992 and 2016. Five of the 21 resources are within the Area of Potential Effects: 5BL3925.1, 5BL3924.2, 5BL13400, 5BL13401, and 5BL13402. The sites are Bear Canyon Road, Mesa Trail, an unnamed historical site, a historical fence line, and the Xcel NCAR substation and transmission line. HDR resurveyed and reevaluated all previously identified cultural resources within the Area of Potential Effects during the original and supplemental survey.

Two newly recorded linear segments were recorded and three previously recorded sites were reevaluated during the original and supplemental surveys. Site 5BL3924.5 is a newly recorded segment of the Mesa Trail that is officially eligible for inclusion in the National Register of Historic Places (NRHP) as a whole and the current segment is recommended as supporting the eligibility of the entire linear site. Site 5BL3925.1 is a previously recorded segment of the Bear Canyon Road that is officially eligible for inclusion in the NRHP and the segment is recommended as supporting the eligibility of the entire linear site. Site 5BL13400 is a small previously recorded historical site recommended eligible for inclusion in the NRHP under Criterion D. Site 5BL13401 is a previously recorded historical fence line that was recommended not eligible for inclusion in the NRHP. A segment of the site, 5BL13401.1, was recorded during the original survey and the entire site was recorded during the supplemental survey. Site 5BL13402 is the previously recorded PSCo/Xcel NCAR substation, transmission line and access road that was recommended not eligible for inclusion in the NRHP.

The project will directly impact site 5BL13402. Feature 3 (the transmission line) is slated for a complete rebuild as part of this project. The site is recommended not eligible for inclusion in the NRHP and no further work is recommended. Effects to 5BL3924.5 and 5BL13400 will consist of temporary audio and visual impacts during construction activities, so these potential historic properties will not be adversely affected. Site 5BL13400 is within the supplemental survey for the new staging areas. It is recommended that the site is avoided. Site 5BL13400 and segment 5BL13401.1 is recommended not eligible for inclusion in the NRHP and no further work is recommended. Site 5BL3925.1 will be used as an access road for the project, but is already used by maintenance and emergency vehicles and use during this project is not considered an adverse effect.

Following consultation with the Office of Archaeology and Historic Preservation regarding the site eligibility recommendations, a determination of “no historic properties adversely affected” was determined appropriate for the project pursuant to 36 CFR 800.5(b) of the National Historic Preservation Act, and no further work was recommended. The Office of Archaeology and Historic Preservation concurrence with these determinations was issued on May 29, 2019 (Appendix E).

5.5.2 Visual Resources

The visual impacts of the Project would be minimal. The new poles would be steel construction with a weathered steel exterior treatment. This provides the necessary rust prevention to assure long term structural integrity, while minimizing any increase of the line visibility not already experienced by the public and surrounding residents. The new conductor would be non-specular to reduce reflection. In general, the new poles would be taller than the existing poles, as shown in Table 2, but would be similar in appearance to the existing poles. The type, height, location and foundation types of each existing and new structures are shown on **Table 1. Appendix B** contains photos of the existing viewshed, taken from seven viewpoints, as shown on **Map B-1.**

5.5.3 Noise

Existing background noise levels in the project area range from 35 to 67 A-weighted decibels (dBA). Sensitive noise receptors along the proposed transmission line rebuild areas primarily include private single family residences.

The short-term increase in ambient noise levels from construction and rebuild of the proposed transmission lines would not cause significant adverse effects on the surrounding populations. The noise from construction equipment would be localized, short-term, and intermittent during machinery operations. Heavy construction equipment would be used periodically during construction; therefore noise levels from the equipment would fluctuate throughout the day.

Noise impacts associated with the Project will consist primarily of construction equipment and helicopter use. PSCo will work with the City of Boulder to provide the community notification of the Project, including the helicopter use and hours of operation. This notification will be in the form of Next Door, mailings and trail signs. All notifications would include PSCo contact information for questions or concerns.

PSCo anticipates using UH-1 Huey and UH-60 Blackhawk helicopters for construction; however, the model of helicopter may change depending on availability. Most trips would be made by the Huey, which produces less noise than the Blackhawk. The Blackhawk model would be used for trips carrying heavier loads. The noise associated with these helicopters will likely be noticeable to recreational users of nearby trails (see section 5.6.2 regarding trail closures for safety during helicopter crossings of trails) and to residents to the east and south of the Project area. More information on helicopter use is presented in section 3.5. See nearby residences on

Figure 5, which depicts a one-half mile radius around the transmission line easement and staging areas.

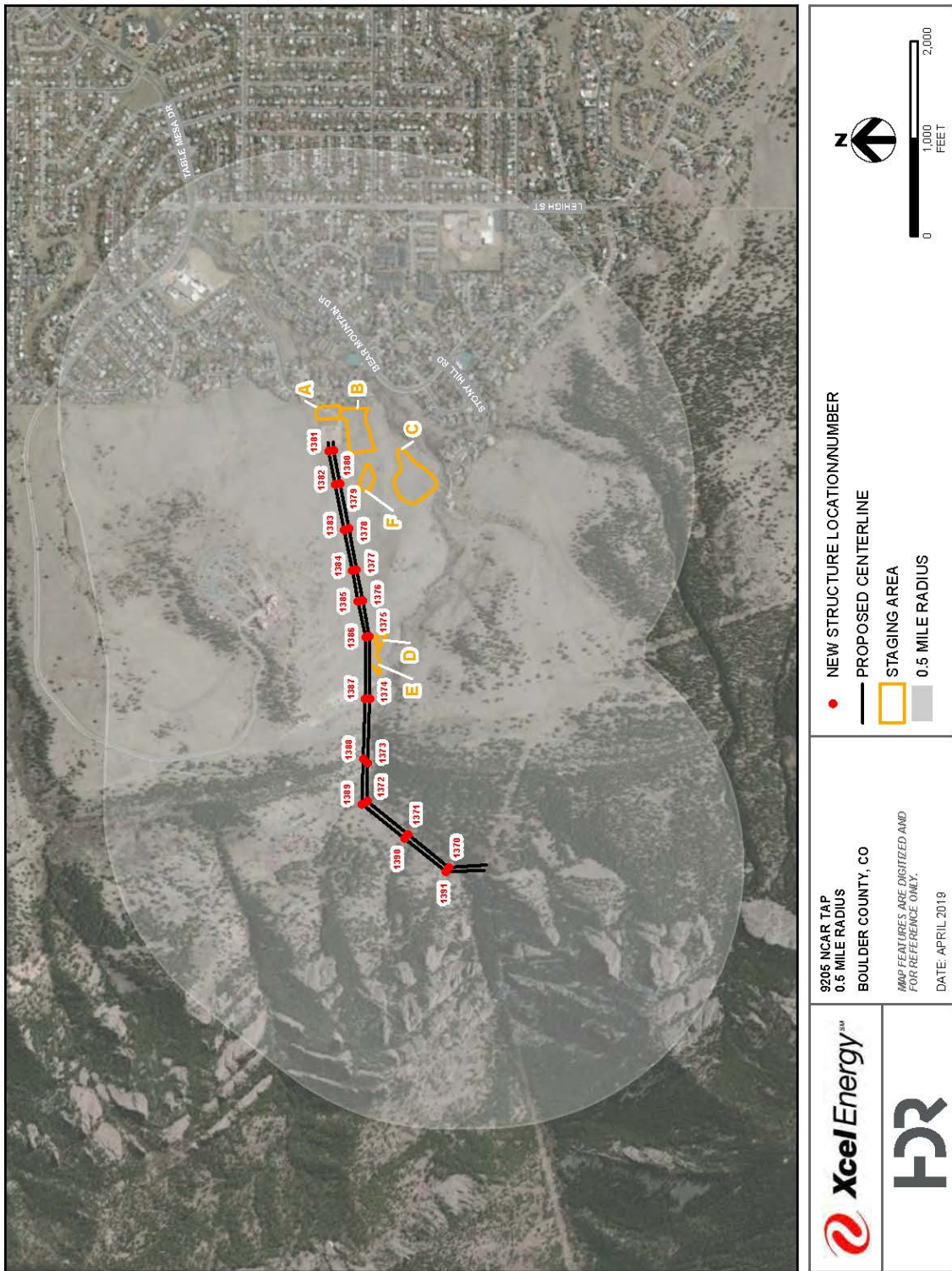


Figure 5. Project with 0.5-mile Radius

PSCo will work with NCAR and UCAR, when possible, to schedule helicopter activities around outdoor events located at the NCAR facility.

Humans are typically more sensitive to increased noise levels during nighttime hours. Helicopter flights and project construction would occur only during daylight hours. However, temporary noise increases would occur during Project construction. To minimize residential noise, PSCo would attempt to utilize the lightest helicopter appropriate for the activity and limit helicopter activities to between 8am and 5:30pm. In addition, PSCo has configured the Project so that the staging areas closest to residences would not be used for helicopter picking.

5.6 Land Resources

5.6.1 Land Use

The project is located within Boulder County, on land owned by NSF and the City of Boulder. The land is maintained as open space, with a number of trails that are managed by the City of Boulder Open Space and Mountain Parks (OSMP) department for recreational uses. Residential areas are found to the east and south of the Project area. Land ownership in the project area is illustrated on the Site Plan in **Appendix A**.

PSCo will notify landowners within one-half mile of project activities (see **Figure 5**). Within 0.5 miles of the Project are about 972 single-family residences, 37 multi-family residences, Bear Creek Elementary School, Mesa Elementary School, and the NCAR Mesa Laboratory and Visitor Center facility. NCAR is managed by the nonprofit University Corporation for Atmospheric Research (UCAR) on behalf of NSF and the UCAR university community. The NCAR Mesa facilities include the flagship Mesa Lab and the Fleischmann Building. The Mesa Lab Visitor Center is open to the public 363 days a year and offers free exhibits about weather and climate, guided and self-guided tours, a gallery featuring local artists, and an outdoor weather trail (UCAR 2019).

5.6.2 Recreation

Several trails maintained by the City of Boulder are located in and around the Project construction area. These trails consist of the NCAR-Table Mesa\Bear, NCAR-Bear Canyon Connector, NCAR-Bear Canyon, Bear Canyon and Mesa. PSCo would work with the City to keep these trails open as much as possible throughout the Project construction. The exception to this is the NCAR-Bear Canyon Connector Trail, which would likely need to be closed during the construction activities. Flaggers and signage will be employed during the construction activities to assure public safety during closures. The NCAR-Table Mesa\Bear Trail should remain open with minimal closures. The NCAR-Bear Canyon, Bear Canyon and Mesa Trails would require intermittent closures during the day to allow passage of construction vehicles, crossing of trails with helicopter suspended loads, and construction activities. All trails, with some exceptions, would be open in the evenings and weekends. Trails closures will be reflected on the City's website and discussed in the preconstruction public outreach efforts. Any changes to these

closures would be relayed to the City and NCAR as soon as possible and appropriate public outreach will be determined.

This approach to reduce impacts to recreational resources while maintaining public safety was reviewed and approved by Bethany Collins, Real Estate Supervisor for the City of Boulder, via email on April 26, 2019.

5.6.3 Transportation and Access

The transmission line would be accessed by driving along the existing ROW and where necessary from existing public or private roads. No new roads would be built. Some access points would require additional grading so construction equipment can drive into the project area. New culverts would be installed at certain access points and along the transmission line so construction equipment can drive to the ROW. These improvements would reduce ground damage during construction. Non-paved roads would not be accessed during wet conditions, except in emergency situations. Any rutting or other damage to access roads would be repaired; ruts would be filled in and revegetated as necessary.

Transmission line materials (poles, wire) and construction equipment would be brought in using semi-trailer trucks along the major US and state highways. Materials would be delivered and stored along the ROW where accessible by semi-truck. In locations where semi-trucks cannot drive along the ROW, the materials would be delivered to the staging areas.

The main state and local roads already experience a relatively high volume of trucks; negligible and short-term impacts are expected to the capacity and conditions of these roads resulting from trips generated by material supply trucks.

Traffic from construction crews is not expected to limit the overall capacity or safety of the road network, Users of the local roads may notice the presence of additional vehicles on the rural roads even though capacity is not diminished.

A helicopter/aviation safety plan would be the responsibility of the helicopter company and would be submitted to NSF prior to flights.

Once construction is complete, the transmission lines typically would be patrolled twice a year, and accessed as needed by a single crew for long-term maintenance of the transmission lines. Impacts to traffic and road condition on existing roads would be negligible.

Consequently, short- and long-term adverse effects to transportation infrastructure and safety conditions would be negligible. During operation and maintenance of the Project, PSCo would implement seasonal and wet weather restrictions to the extent practical to reduce negative impacts to roads and access routes.

6.0 STABILIZATION AND RESTORATION

Following completion of construction in 2020, disturbed areas outside of the transmission line easement would be re-contoured, and all disturbed areas both inside and outside of the easement would be reseeded with a NSF approved seed mixture. PSCo will restore affected areas, including trails, in collaboration with NCAR/UCAR and City of Boulder OSMP staff.

Design features and BMPs that would be applied during the proposed project construction are described in **Table 2**. During construction, work crews would carry spill cleanup kits, and in times of burn bans or wildfire concerns, each crew would have a fire suppression kit. Construction stormwater plans and measures that meet local, state, and federal guidelines and intent would be developed and implemented during construction and revegetation activities.

Table 2. Design Features and Best Management Practices

Proposed Project Phase	Affected Resources	Applicant-Committed Measures and BMPs
Pre-Disturbance/Planning	General	A construction monitoring plan will be developed to monitor the implementation of BMPs during construction.
Pre-Disturbance/Planning	General	All on-site crews will be trained about the importance of staying on defined access routes and within the ROW.
Pre-Disturbance/Planning	General	Low impact boundary fence will be installed to delineate construction limits in coordination with City of Boulder Park staff.
Construction	General	Grading and clearing activities will be phased, minimized, and disturbances will be temporarily or permanently stabilized as soon as practicable.
Construction	General	Vehicle speed restrictions will be enforced to reduce potential for accidents and dust creation. Dust suppression of haul routes by watering will be utilized as appropriate and as coordinated with City of Boulder Park staff.
Construction	Soils, Water	Temporary soil erosion control measures for disturbed land area and soil stockpiles would be implemented before construction commences and during construction as appropriate. After the cessation of construction, up-gradient BMPs will be removed, the site will be reseeded, depending on season, and mulched and down-gradient BMPs will remain on-site. The down-gradient temporary BMPs will remain in place until the site has revegetated.
Construction	Soils	Construction will not occur when the soil is too wet to adequately support construction equipment, if such equipment creates ruts in excess of 4 inches deep. Construction crews may utilize drive-over mats to address rutting and soil compression concerns. Excavated topsoil will be segregated from subgrade soil and replaced as the final lift to establish finish grade mimicking the pre-construction topsoil depth. Excess soils not backfilled into the foundation excavation will be removed from the project area for proper off-site disposal.

Proposed Project Phase	Affected Resources	Applicant-Committed Measures and BMPs
Construction	Air Quality	To limit the emission of fugitive particulate matter, BMPs will be employed as appropriate, including controlling vehicle access and flow routes, covering piles, reestablishing ground cover, and applying water.
Construction	Air Quality	To further minimize the less-than-significant construction exhaust emissions, PSCO will minimize unnecessary construction vehicle idling time. The ability to limit construction vehicle idling time depends on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times that limit their availability for use following startup. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The Project would apply a “common-sense” approach to vehicle use, such that idling would be reduced as much as practicable.
Construction	Biological Resources	<p>Non-native or noxious weeds will be controlled by:</p> <ul style="list-style-type: none"> • All heavy equipment and mobilizing equipment will be cleaned by power-washing before entering each project if: <ul style="list-style-type: none"> a) Equipment is covered with mud, plants, or other foreign materials and/or b) Previous operation site was infested with invasive plant species. • All disturbed areas will be revegetated using NSF- and City of Boulder-approved seed mix. • Seeded areas will be protected and cared for and watered when needed. Supplemental applications of seed, mulch, and fertilizer will be repaired or applied, and watered as many times as needed until seed mix is established.
Construction	Biological Resources	To minimize impacts to migratory birds, construction will occur outside the typical breeding season for migratory birds. Although the provisions of the Migratory Bird Treaty Act apply year-round, most nesting activity occurs between April 1 and August 31. If proposed activities must occur during the nesting season, or at any other time that may result in the “take” of migratory birds, a qualified biologist will conduct pre-construction field surveys of the affected habitats or structures, during the nesting season, to verify the presence or absence of nesting migratory birds. If active nests are located, an appropriate buffer will be provided around active nests in consultation with the OSMP wildlife biologist. If active nests are inadvertently located during construction activities, an appropriate buffer will be provided around active nests in consultation with OSMP.

Proposed Project Phase	Affected Resources	Applicant-Committed Measures and BMPs
Construction	Biological Resources	Construction will begin in early June 2019 and progress from east to west. This would allow work on structures outside of known raptor nest buffers to begin prior to the end of the raptor nesting season which is August 15th. No work will occur within the 0.50 mile OSMP cliff nesting raptor buffers until after August 15th unless nests are determined by OSMP to be inactive or fledging has occurred. PSCo will coordinate with OSMP to determine nest status in July. If nests are determined to be inactive PSCo will discuss starting construction early with OSMP in areas where there are no active nest buffers.
Construction	Biological Resources	The seasonal restrictions recommended by Colorado Parks and Wildlife (CPW) and outlined in CPW's Raptor Buffer Guidelines will be followed.
Construction	Biological Resources	<p>Seasonal restrictions and/or best management practices to minimize impacts on Preble's Meadow Jumping Mouse will include</p> <ul style="list-style-type: none"> • In the unlikely event that a Preble's mouse is encountered (dead, injured, or hibernating) during construction activities, the Colorado Field Office of the USFWS will be contacted immediately at 303-236-4773. • During the Preble's active season (May 1 through November 1) limit work to daylight hours to avoid disrupting the Preble's nocturnal activities. • Vegetation beyond the construction limits will not be disturbed. Vegetation adjacent to pole installation areas will be preserved where possible. • Barriers in work areas will be constructed and maintained to prevent sediment, petroleum products, chemicals, and other liquids and solids from entering waters of the United States.
Construction	Biological Resources	The transmission lines will be constructed in accordance with recommendations and standards outlined in the Avian Power Line Interaction Committee's <i>Suggested Practices for Avian Protection On Power Lines: The State of the Art in 2006</i> and <i>Reducing Avian Collisions with Power Lines: The State of the Art in 2012</i> .
Construction	Cultural Resources	If any inadvertent discoveries are located during construction, the State SHPO cultural resources staff will be notified in accordance with applicable guidance and law.
Construction	Visual Resources	To reduce visual effects, the exterior of the new steel poles will be treated with a weathered steel exterior treatment that provides the necessary rust prevention while minimizing increase of the line visibility to the public and surrounding residents. In addition, the new conductor will be non-specular to reduce reflection.
Construction	Noise	PSCo will not use staging areas closest to residences <u>for helicopter operations</u> , to reduce impacts of helicopter noise. <u>Helicopter use will be limited to occur between 8am and 5:30pm. Helicopter usage would be avoided on Sundays to the maximum extent feasible. If a helicopter does have to be used on a Sunday due to some extenuating circumstance, all efforts would be made to not fly the helicopter earlier than noon on a Sunday.</u>
Construction	Noise	Proper and properly maintained safety equipment, including mufflers, dampeners, covers, and vibration isolators, will be used.

Proposed Project Phase	Affected Resources	Applicant-Committed Measures and BMPs
Construction	Noise, Recreation	PSCo will work with NCAR and UCAR, when possible, to schedule helicopter activities around outdoor events located at the NCAR facility.
Maintenance	Soils, Biological Resources	All BMPs will be inspected and maintained on site as required and as needed until vegetation is established to the required density.

7.0 OPERATION AND MAINTENANCE

The transmission lines would be patrolled on regular basis (typically about twice a year) by a PSCo employee or contractor in a pickup truck or on foot, depending on access. The inspector would observe the line and each structure to identify and correct any damage or mark it for future repair. Most access would be along the transmission line ROW, but access may be across public or private land to minimize disturbance.

The transmission line would generally be inspected during daylight hours. All inspectors would carry spill cleanup kits and fire suppression tools in their vehicles while inspecting the lines. Vegetation would be managed to maintain reliable line operations. Vegetation management following construction would be consistent with current practices in terms of both duration and intensity. Trees are the primary vegetation that would require regular clearing, as they can create mechanical (tree falling on line or structure) or electrical (tree falling on line or close to line creating a short to the earth) outages. Once each year, the line would be visually inspected for line and structure integrity as well as vegetation encroachment. Trees that are seen as a hazard would be scheduled for pruning or removal.

No new permanent jobs would be lost or gained as a result of the project. The projected life span, consisting of the new conductors, insulators, shield wires, and pole structures, would be 50 years.

8.0 REFERENCES

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USEPA 2017	USEPA. 2017. General Conformity <i>De Minimis</i> Tables. Last updated August 4, 2017. Accessed 1 May 2019 at: https://www.epa.gov/general-conformity/de-minimis-tables .
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Appendix A
Site Plan

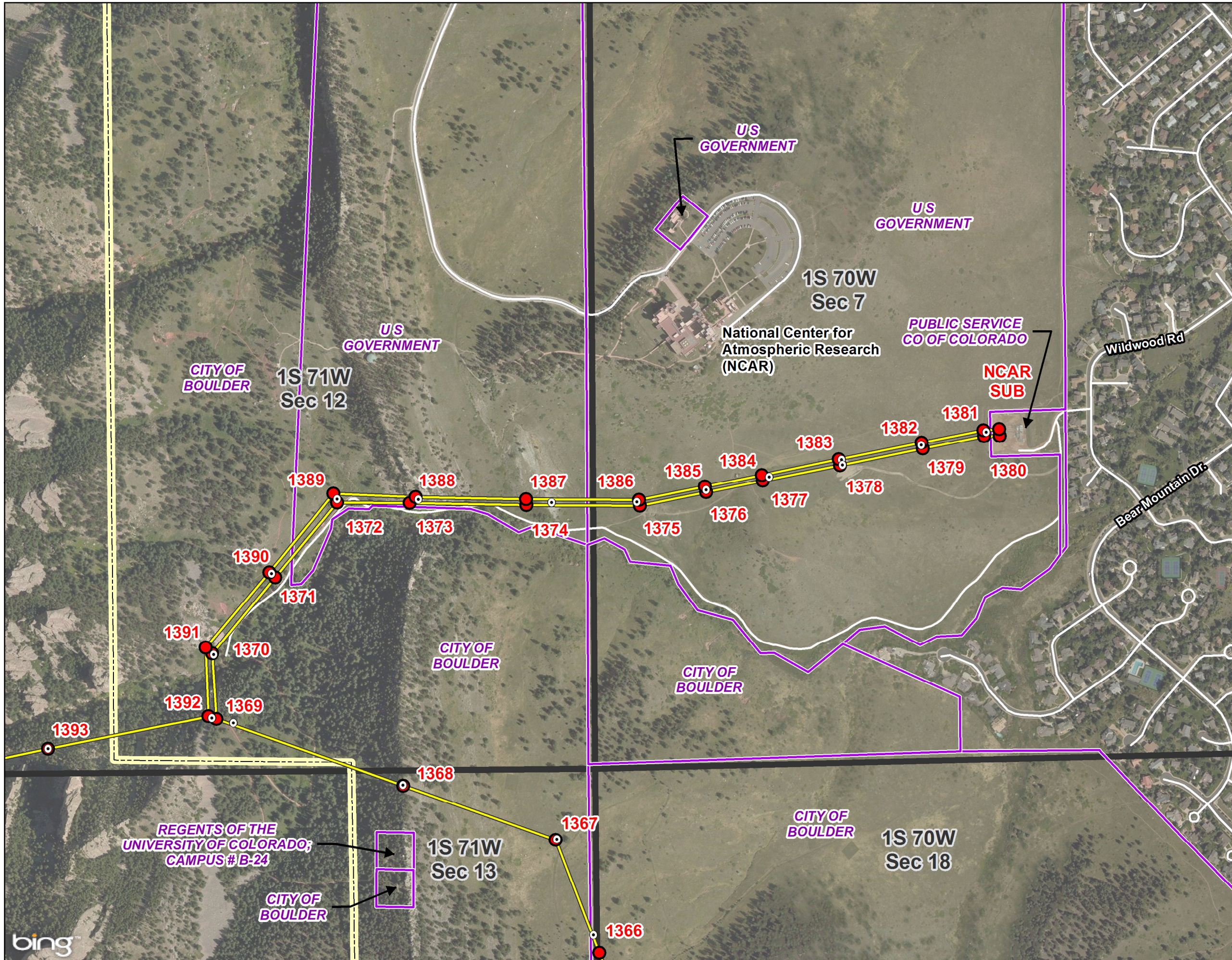
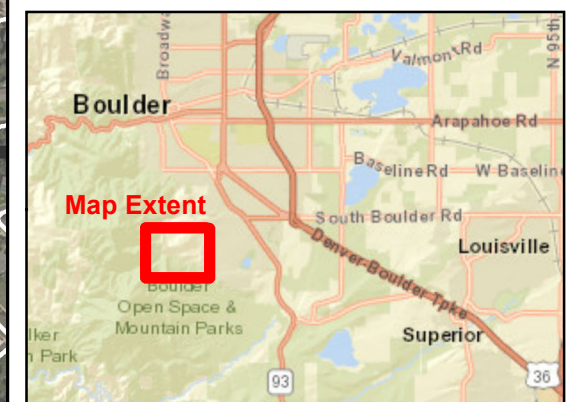
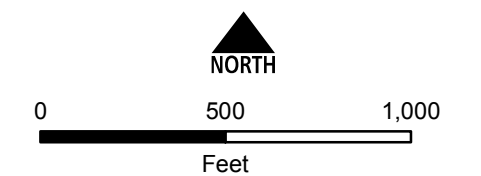
9205 NCAR Tap to NCAR Rebuild

Site Map

APPENDIX A

Legend

- New Structure Location
- ⊙ Existing Structure
- Proposed Centerline
- Parcel Ownership
- Boulder City Limit
- Section Lines



Appendix B

Existing Structure and Viewshed Photos

Appendix B

Part 1: Existing Structure Photos

APPENDIX B



Structure 2



Structure 3



Structure 4



Structure 5



Structure 6



Structure 7



Structure 8



Structure 9



Structure 9A



Structure 10



Structure 11

Appendix B

Part 2: Viewshed Photos



Viewshed Index Map



Viewpoint POD 1



Viewpoint POD 2



Viewpoint POD 3



Viewpoint POD 4



Viewpoint POD 5



Viewpoint POD 6



Viewpoint POD 7



Viewpoint POD 8



Viewpoint POD 9

Appendix C
Easements

69203

Doc. 69203

THIS EASEMENT AGREEMENT, pursuant to the National Science Foundation Act of 1950 (42 U.S.C. 1861 et seq.), and effective 26 October 1964, is entered into by the UNITED STATES OF AMERICA (hereinafter called the Government) represented by the NATIONAL SCIENCE FOUNDATION (hereinafter called the Foundation) and the PUBLIC SERVICE COMPANY OF COLORADO, hereinafter called the Grantee:

W I T N E S S E T H:

WHEREAS, the Grantee desires to construct, operate, and maintain electric transmission and distribution lines across the lands of the government as described below; and

WHEREAS, the granting of such right by the Government, and the exercise thereof by the Grantee under the terms and conditions herein provided, will not be incompatible with the purposes for which said lands are being administered;

NOW THEREFORE, in consideration of the mutual covenants hereinafter contained, and in further consideration of the sum of Two Thousand Eight Hundred Fifty and no/100 Dollars (\$2,850.00) and other good and valuable consideration payable in advance to the Foundation by the Grantee, the parties hereto agree as follows:

The Foundation does hereby convey to the Grantee, its successors, and assigns forever an easement for the construction, reconstruction, operation and maintenance of conductors and conduits for the transmission and distribution of electricity, whether said lines may now or may hereafter serve the property herein described or other property, together with the necessary poles, towers, cables, wires, guys, supports, and other fixtures and devices, used or useful in the operation of electric transmission and distribution lines, through, on, over, and across the following described lands, to wit:

A right-of-way 75 feet in width, 37½ feet on either side of a center line situate in the (SE¼ of Section 12, Township 1 South, Range 71 West,) and the (N½SW¼ and NW¼SE¼ of Section 7, Township 1 South, Range 70 West,) all in the 6th P.M., County of Boulder, State of Colorado, the center line of which right-of-way is more particularly described as follows:

Beginning at a point on the south boundary line of the property of the grantors, whence the S¼ corner of said Section 12 bears S 42° 40' 14" W. 756.78 feet; thence N 1° 47' 21" W 77.49 feet to a point; thence N 39° 54' 59" E. 1119.62 feet to a point; thence S 88° 46' 21" E. 1684.08 feet to a point; thence N 78° 36' 19" E. 2010.57 feet to a point; thence N 88° 46' 39" E. 14.81 feet more or less to a point, whence the center of said Section 7 bears N 1° 12' 30" W. 125 feet; thence N 14° 08' W. 721.10 feet.

Also a right-of-way 10 feet wide, 5 feet on each side of a center line situate in the (S½SW¼ of Section 6,) the (NW¼, and the W½W½NE¼, and W½W½SE¼ of Section 7,) all in Township 1 South, Range 70 West, 6th P.M., County of Boulder, State of Colorado, the center line of which right-of-way is more particularly described as follows:

Commencing at the Northwest corner of said Section 7; thence S 0° 25' 26" E. 5 feet to the true point of beginning; thence S 89° 40' 36" E. 1345 feet; thence N 2° 22' W. 1315.57 feet; thence S 2° 22' E. 1315.57 feet; thence S 89° 40' 36" E. 776.47 feet; thence N 88° 57' 25" E. 600.11 feet; thence S 88° 57' 25" W. 5 feet; thence S 0° 4' 35" W. 4068.42 feet more or less to the south boundary line of National Center for Atmospheric Research property.

✓ NCAR 115KV TAP

Together with the right of ingress and egress over said premises and to remove objects or structures therefrom; and, also to survey, construct, reconstruct, maintain, operate, control and use said lines and facilities subject to the following terms and conditions:

1. The construction and/or operation and maintenance of said facilities shall be accomplished without cost or expense to the Government and in such manner as not to endanger personnel or property of the Government or others on the said Government land or obstruct travel on any road thereon.
2. The use and occupation of said land incident to the exercise of the privileges hereby granted shall be subject to such rules and regulations regarding ingress, egress, safety, sanitation, and security as the Foundation may from time to time prescribe, subject however to the prior rights of the Grantee described in that instrument granted by the State of Colorado to Grantee and recorded in Book 1262 at Page 435 Boulder County Records.
3. The Grantee recognizes the Foundation's concern for preserving the natural beauty of the area and will use its best efforts to preserve such natural beauty insofar as is reasonably possible.
4. The Grantee shall supervise the facilities to be constructed on the right-of-way granted hereby and cause them to be inspected at reasonable intervals, and shall immediately repair any defects found therein as a result of such inspection, or when requested by the Foundation. Upon completion of the installation of such facilities and the making of any repairs thereto, the premises shall be restored immediately by the Grantee, at the Grantee's own expense, to conditions satisfactory to the Foundation.
5. Any property of the Government damaged or destroyed by the Grantee incident to the use and occupation of the said premises shall be promptly repaired or replaced by the Grantee to the satisfaction of the Foundation, or in lieu of such repair or replacement the Grantee shall, if so required by the Foundation, pay to the Government money in an amount sufficient to compensate for the loss sustained by the Government by reason of damage to or destruction of Government property.
6. The Government reserves to itself the right to construct, use, and maintain across, over, and/or under the right-of-way hereby granted, electric transmission, telephone, telegraph, water, gas, gasoline, oil, and sewer lines, and other facilities, but only in such manner as not to create any unreasonable interference with the use of the right-of-way herein granted.
7. The Government shall not be responsible for any damages to property or injuries to persons which may arise from or be incident to the use and occupation of the said premises by Grantee, or for damages to the property of the Grantee, or for damages to the property or injuries to the person of the Grantee's officers, agents, servants, or employees, or others who may be on said premises at their invitation or the invitation of any one of them, arising from or incidental to governmental activities; and the Grantee shall hold the Government harmless from any and all such claims.
8. The Government shall not be responsible for damages to property or injuries to persons which may arise from or be incidental to the construction, maintenance, and use of said facilities.
9. The Grantee shall furnish through said facilities such services as may be required from time to time for governmental purposes on said land, provided that payment for all such services will be made by the Government at rates which shall be mutually agreeable but which shall never exceed the most favorable rates granted by the Grantee for similar service.
10. That, in the event all or any portion of said land occupied by said facilities shall be needed by the Government, or in the event the existence of said facilities shall be considered detrimental to governmental activities, the Grantee shall, from time to time, upon notice, remove said facilities to such other location or locations on Government land as may be designated by the Foundation, provided, however, that if directed to relocate its facilities the Grantee may, at its option, in lieu of taking such action,

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wholly remove its facilities from lands of the Government as described herein, at which time the right granted herein shall cease but the restoration obligation set forth in Condition No. 12, hereof shall remain, and in the event said property shall not be removed or relocated within ninety (90) days after any aforesaid notice, the Government may cause the same to be done at the expense of the Grantee.

11. That this easement may be terminated by the Foundation upon reasonable notice to the Grantee if the Foundation shall determine that the right-of-way hereby granted interferes with the use or disposal of the said land or any part thereof by the Government, or it may be forfeited and annulled by declaration of the Foundation for failure, neglect, or refusal by the Grantee fully and promptly to comply with any and all of the conditions of this agreement, or for nonuse for a period of two years, or for abandonment. No part of any payment made to the Government under this agreement shall be refunded.

12. That upon the expiration, termination, or forfeiture and annulment of this agreement, the Grantee shall, without expense to the Government, and within such reasonable time as the Foundation may indicate, remove said facilities from said land and restore the premises hereby authorized to be used and occupied to a condition satisfactory to the Foundation. In the event the Grantee shall fail, neglect, or refuse to remove the said facilities and so restore the premises, the Government shall have the option either to take over the said facilities as the property of the Government without compensation therefor, or to remove said facilities and perform the restoration work as aforesaid at the expense of the Grantee, and in no event shall the Grantee have any claim for damages against the Government, or its officers or agents, on account of the taking over of said facilities or on account of their removal.

13. That the provisions and conditions of this instrument shall extend to and be binding upon and shall inure to the benefit of the representatives, successors, and assigns of the Grantee.

14. That it is understood that this instrument is effective only insofar as the right of the Government in the said property are concerned; and that the Grantee shall obtain such permission as may be necessary on account of any other existing rights.

Doc 69203

THE UNITED STATES OF AMERICA

NATIONAL SCIENCE FOUNDATION

By John T. Wilson
JOHN T. WILSON
Deputy Director

OCT 2 6 1964
(Date)

GRANTEE:

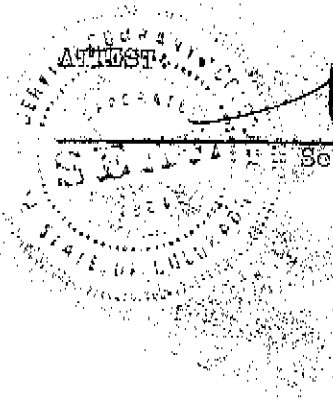
PUBLIC SERVICE COMPANY OF COLORADO

By L. P. Patten
Vice-President

550-15th Street - Denver, Colorado, 80202
(Business Address)

7/30/64
(Date)

MANAGER OF ENGINEERING
Lawrence M. Robertson
LAWRENCE M. ROBERTSON



[Signature]
Secretary

APPROVED FOR EXECUTION
LEE, BRYANS, KELLY & STANSFIELD
ATTORNEYS
By [Signature] 7/30/64

[Handwritten mark]

EASEMENT

776100

THIS INSTRUMENT, Made this 26th day of JANUARY 1965 in the year of our Lord one thousand nine hundred and sixty five, between

Byron L. Wells and Joe Rothmeier, grantor s.

of the County of Boulder and State of Colorado and PUBLIC SERVICE COMPANY OF COLORADO, a corporation duly organized and existing under and by virtue of the laws of the State of Colorado, grantee;

WITNESSETH, That the said grantor s., for and in consideration of the sum of Ten Dollars and other valuable consideration

to the said grantor in hand paid by the said grantee, the receipt whereof is hereby confessed and acknowledged, have granted, bargained, sold and conveyed and by these presents do grant, bargain, sell, convey and confirm unto Public Service Company of Colorado, its successors and assigns forever, an easement for the construction, reconstruction, operation and maintenance of conductors and conduits for the transmission of electricity, together with the necessary poles, towers, crossarms, cables, wires, guys, supports, and other fixtures and devices, used or useful in the operation of electric transmission lines, through, on, over and across the following described lands, to-wit:

Located in the (SW 1/4 SE 1/4 of Section 12, T.1S., R.71W.,) 6th P.M. A right-of-way 75 feet in width 37 1/2 feet on either side of a center line described as follows:

Beginning at a point on the centerline of the Public Service Company of Colorado 115KV Line whence the S 1/4 corner of said Section 12 bears S. 62° 59' 26" W. 585.90 feet; thence N. 1° 47' 21" W. 290.49 feet more or less to the north boundary line of grantor common with N.C.A.R. property.

Together with the right of ingress and egress over said premises and to remove objects or structures therefrom; and, also to survey, construct, reconstruct, maintain, operate, control and use said lines and facilities.

The grantor s. reserve the right to cultivate and use said premises for any purpose consistent with the rights and privileges above granted and which will not interfere with or endanger the grantee's facilities thereon, or the use thereof or of any of the rights herein granted. Such reservation by the grantor shall not include the right to erect or place any structures or objects, including signs, or drill or operate any wells on, upon, above or over the easement herein granted. In case the permanent abandonment of said easement, all right, privilege and interest herein granted shall end, cease and determine.

The work of installing, maintaining and reconstructing its facilities shall be done with care, and all damage to the premises caused thereby shall be paid for or repaired at the expense of the grantee.

The provisions of this easement shall be binding upon and shall inure to the benefit of the heirs, executors, administrators, successors and assigns of the parties hereto.

Signed and delivered this 26th day of JANUARY, A. D. 1965.

In the Presence of

Byron L. Wells (SEAL)
Joe Rothmeier (SEAL)

_____ (SEAL)

STATE OF COLORADO,

COUNTY OF Boulder } ss.

The foregoing instrument was acknowledged before me this 26th day of JANUARY 1965, by Byron L. Wells and Joe Rothmeier

Witness my hand and official seal.

My commission expires Oct 17, 1967

E. J. G. [Signature]
Notary Public

Approved:

E. J. G. [Signature]

R/W Agent

METHOD OF PAYMENT DRAFT # 3545

NCAE 115KV TAP

NAME OF LINE

Document No. 71132

Appendix D

Public Notice and Comment/Response Table

NOTICE

Public Service Company of Colorado (PSCo), a Colorado Company doing business as Xcel Energy, has proposed to replace the NCAR Tap line (overhead electric transmission line) located at the National Center for Atmospheric Research (NCAR) facility (Proposed Action). The NCAR TAP Reconstruction Project is located within the City of Boulder, in Boulder County, Colorado. The NCAR Tap line is approximately 1 mile long and located within a 75-foot-wide easement. The majority of the Proposed Action would occur on property which is owned by the National Science Foundation (NSF) and is managed by the University Corporation for Atmospheric Research (UCAR), which operates NCAR on behalf of NSF. The westerly portion of the Project would occur on property owned by the City of Boulder and managed by its Open Space and Mountain Parks Department.

The existing transmission line has been in use since the mid-1960s and the structures have been identified by PSCo as being in a structural condition that warrants their replacement and/or do not meet current federal code for ground clearance. Their replacement would ensure that PSCo maintains this section of transmission line to the safest and most structurally sound standards.

NSF has reviewed the proposed NCAR TAP Reconstruction Project Plan of Development prepared by PSCo. Based on the proposed activities, which would mainly occur within the easement or on NCAR/NSF property, NSF has determined that the activities would not have a significant impact on the environment. There would, however, be increased noise in the area from construction activities and brief trail closures for safety measures while moving equipment via helicopter. NSF will consult with the U.S. Fish and Wildlife Service (USFWS) to confirm that the Proposed Action would not have adverse impacts on any threatened and endangered species or their critical habitat within the action area. NSF will also consult with the Colorado State Historic Preservation Office (SHPO) to confirm that the Proposed Action would not have adverse impacts on any cultural resources.

NSF welcomes public comments on the proposed NCAR TAP Reconstruction Project Plan of Development prepared by PSCo, which will be made available for comment between May 22 and June 9, 2019 at: <https://www.nsf.gov/geo/ags/envcomp/index.jsp>. Comments can be submitted to: NSFNCARLINE@nsf.gov. NSF will review and consider comments received in collaboration with PSCo and UCAR and will take into consideration any requirements resulting from the federal consultation processes.



Project Location



Public Notice Display at Bear Canyon Trailhead

NCAR-Xcel Transmission Line Rebuild

Summary of Public Comments and Responses to Public Comments

	Date	Category	Comment	Response
Commenter 1	5/28/2019	Noise (Helicopter)	please restrict the helicopter use to hours when residents may not be outside enjoying their patios, like Monday-Friday from 9 to 5 p.m.	To accommodate concerns expressed about noise and balancing the project timeline, PSCo would limit helicopter hour of operations to between the hours of 8 am to 5:30 pm, rather than the originally proposed hours of 7:00am to 7:00pm. Helicopter usage would be avoided on Sundays to the maximum extent feasible. If helicopters do have to be used on a Sunday due to some extenuating circumstance, all efforts would be made to not fly the helicopter earlier than noon on a Sunday. Additionally, PSCo would not use staging areas closest to residences for helicopter operations, to reduce impacts of helicopter noise (see POD, Table 2, page 31).
Commenter 2	5/27/2019	Noise (Helicopter)	Please do not operate helicopters except on weekdays, between the hours of 8:00 AM and 4:30 PM. South Boulder is already under FAA review for noise pollution from DIA jet flight paths, and helicopter noise only adds insult to injury.	<i>Answer provided under Comment #1</i>
Commenter 3	5/31/2019	Vegetation	Do not remove any volunteer trees surrounding the power substation. During the last construction, volunteer trees on the southeastern side of the	No tree removal outside of the right-of-way is expected as part of this project. Tree trimming/removal within the right-of-way will be limited to what is required to allow for safe

			power substation were removed/run over/not replaced. [they provide wildlife habitat and visual barrier]. It would be ideal if NCAR would consider planting some shrubs around power substation, but just keeping what is there would be great.	operation of the transmission line. In the event any trees are removed or damaged, PSCo would consult with NCAR/UCAR/NSF about appropriate mitigation.
		Access/Restoration	<p>At the end of the construction project, please remove the temporary full access road:</p> <ul style="list-style-type: none"> - Better not to tear it up during heavy rains like last time. - Restore (fabric barrier, reseeding, not sure what normal procedure is). - Add "Please Stay on Trail to Help with Revegetation Trail Signs" along the juncture of the Mesa Extension Trail and the temporary full access road. Add signs along the juncture of the path intersections and the top of the temporary road. Last time only through independent efforts by the neighborhood posting their own signs did this road ever revegetate and return to it's natural state. The neighborhood saw that it was becoming a frequently trafficked social path cut through and posted home-made signs to keep hikers on existing trails. 	<p>PSCo will develop and implement a storm water management plan per State requirements for this project. This plan would include the right-of-way, staging areas, and temporary full access road, and, would be developed to adhere to all regulatory requirements and include appropriate best management practices to minimize sedimentation and erosion.</p> <p>The trail is maintained by the City of Boulder as a recreation trail. PSCo will coordinate with the City of Boulder regarding adding trail use signage along key trail intersections.</p>
Commenter 4	5/28/2019	Native American Concerns	I see there is a failure to consult any American Indian tribes in this area as	NSF has consulted with the Colorado State Historical Preservation Office regarding this

			<p>to cultural protocol considerations and historical preservation if any.</p> <p>...it is still not too late to ask some of the tribes in this region to consider preparing a ceremony of respect and permission to violate the Earth and possibly any sacred sites. As insignificant as this may seem to physical scientists it is deeply critical to maintaining relationships to place and across cultures between tribes and sciences.</p>	<p>project. In addition, NSF reached out to six (6) federally recognized tribes that may have an interest in activities within Boulder County regarding the project. These tribes are The Apache Tribe of Oklahoma; Arapaho Tribe of the Wind River Reservation, Wyoming; Cheyenne and Arapaho Tribes, Oklahoma; Comanche Nation, Oklahoma; Fort Belknap Indian Community of the Fort Belknap Reservation of Montana; and, Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana.</p>
Commenter 5	6/2/2019	Noise (Helicopter)	<p>please_ restrict the times of this helicopter noise to reduced business hours -- 9a -- 4p M-F *ONLY*, [to limit] health impacts or having to repeatedly temporarily relocate.</p>	<i>Answer provided under Comment #1</i>
Commenter 6	6/2/2019	Noise (Helicopter)	<p>I am mostly concerned the helicopter phase will last much longer than the proposed time frame, just as our trails were closed/inconvenienced for much longer than promised. Please do all you can to ensure that the activity is completed promptly--on time--and that as little noise impact will be made.</p> <p>I am requesting that the helicopter use could be limited to times after 8:00 a.m. [for benefit of wildlife and residents].</p>	<i>Answer provided under Comment #1</i>

<p>Commenter 7</p>	<p>6/3/2019</p>	<p>Alternatives</p>	<p>Can the new line be buried? With high winds that we get it would pose much less danger to the community.</p>	<p>As described in the POD on page 16, PSCo evaluated a buried line alternative and determined that the alternative would not be feasible for the following reasons: Burying the line would require the excavation of a large trench, placement of a concrete duct bank with several conduits that would disturb a corridor up to 100 feet wide. Pulling vaults would be required approximately every one half mile and large flat areas around each vault would be required for staging pulling equipment. This would result in substantially more ground and subsurface disturbance than the proposed project. Burial would warrant additional environmental review by resource agencies.</p> <p>Photos of the typical construction process for underground/buried transmission lines are provided following this table, for reader reference and perspective. The steep mountainous terrain and rocky conditions make this alternative particularly impactful for the project area and may render the alternative technically infeasible.</p> <p>PSCo designed the proposed overhead line to withstand winds up to 130 mph, which exceeds the National Electric Safety Code minimum requirement of 90 mph. This design would help ensure that the line would operate safely, even during high wind events.</p>
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<p>Commenter 8</p>	<p>5/25/2019</p>	<p>Restoration</p>	<p>The flagging company or Xcel left signs and sign supports warning about trail closures near the start of the NCAR-Bear Canyon Trail, specifically at Bear Mountain Drive where a spur trail heads west to a trail information sign, then turns north and crosses a bridge over Bear Creek, before joining the NCAR-Bear Canyon Trail. The signs/sign supports were left standing after work completed for the winter in approximately October 2018, and the materials have remained there. It would be great if the materials could be collected/picked up.</p>	<p>Although not applicable to this project, PSCo will look into this issue and remove signs where appropriate.</p>
<p>Commenter 9</p>	<p>5/26/2019</p>	<p>Alternatives</p>	<p>Can the new line be buried? With high winds that we get it would pose much less danger to the community.</p>	<p><i>Answer provided under Comment #7</i></p>
<p>Commenter 10</p>	<p>6/3/2019</p>	<p>Access</p>	<p>The Plan calls for a temporary, full access road in the small valley just south of the NCAR mesa. There is a small hill south of the valley, and just south of that is the Bear Canyon Trail.</p> <p>Please do not build this temporary, full access road.</p> <p>The soil in the valley is highly erodible clay. Moisture in this soil turns the current small trail into a giant mud pit. Any road placed in the valley will suffer the same consequences.</p>	<p>Construction of the temporary, full access road would significantly reduce the number of helicopter trips needed to construct the project and would reduce the overall construction duration.</p> <p>As described in the POD (Section 6.0), all disturbance areas outside of the easement would be re-contoured and revegetated and all disturbance areas within the easement would be revegetated at the end of construction. As also described further in the POD (Table 2), PSCo has committed to a number of best management practices (BMPs), including limited construction</p>

			<p>Vehicles attempting to negotiate the mud will spin their tires and cause excessive erosion.</p> <p>The excavation work required to create the road will enhance runoff to the homes below, putting them in much higher risk of significant damage during any large rain storm.</p> <p>...A road, even temporary, will ruin the character of this lovely valley for the next 30 to 50 years.</p>	<p>when soil is too wet to adequately support construction equipment. Mats may be used when the soils are too wet to address rutting and soil compression concerns. Additionally, a number of temporary soil erosion control measures would be implemented to prevent erosion during construction and these measures will remain in place until the site has re-vegetated.</p>
Commenter 11	5/29/2019	Mailing List	<p>I received 20 notices in the mail to the exact same address and addressee. If any other notices are mailed about this project, please send only one to Devil's Thumb HOA in my care.</p>	<p>The third-party contractor (HDR) assigned to this project will review and streamline the mailing list accordingly.</p>
Commenter 12	6/1/2019	Noise (Helicopter)	<p>Please limit the helicopter noise to 8 to 4:30 pm Monday to Friday.</p>	<p><i>Answer provided under Comment #1</i></p>
Commenter 13	6/9/2019	Alternatives	<p>Bury the lines!</p>	<p><i>Answer provided under Comment #7</i></p>
Commenter 14	6/9/2019	Alternatives	<p>Please accept XCEL Energy's offer to bury the obtrusive and possibly health-damaging electrical lines on the NCAR property</p>	<p><i>Answer provided under Comment #7</i></p>
Commenter 15	6/9/2019	Alternatives	<p>My request is to <u>bury</u> the transmission lines rather than replace them as overhead lines.</p> <p>...Burying the lines would add immensely to the beauty and</p>	<p><i>Answer provided under Comment #7</i></p>

			<p>enjoyment of the area, the safety of those hiking, and reliability of service. This is a rare opportunity that won't occur again for decades.</p>	
		Response Request	<p>I would very much appreciate a response to my request so that I know if it was received, and also if you have any comments regarding my suggestion.</p>	<p>NSF will inform all commenters that their comments were received and considered during their review process.</p>
Commenter 16	6/8/2019	Alternatives	<p>...I strongly encourage you to bury them.</p> <p>In addition to improving the fabulous vistas, I understand that buried lines are "down" much less frequently and therefore save money that would normally be spent on maintenance and benefit all customers.</p>	<p><i>Answer provided under Comment #7</i></p>
Commenter 17	6/7/2019	Visual	<p>Xcel has already installed metal "lightning rod" poles at its substation adjacent to NCAR property, constructed of the same or similar "non-reflective" material. The poles were in fact so reflective in sunlight they appeared bright white. Xcel agreed to paint the poles after a large number of neighbors complained strongly. Now Xcel wants to not only again install metal poles but make some of them twice as high, others 50% higher. Please, do not allow this.</p>	<p>PSCo painted the substation structures following receipt of citizen concerns. The new proposed transmission line structures would be corten (self-weathering) steel, so they would appear brown and would not be "reflective". Additionally, the conductor to be installed on this project is non-specular, to further reduce glare.</p> <p>The existing wooden structures were installed in the 1960s and are in need of replacement (see POD Section 1.1). PSCo did consider a burial alternative, as discussed under Comment #7.</p>

			Other options offered, either to leave the existing poles in place (which we believe were actually installed relatively recently) or to bury the lines, would be far better solutions, despite occasional power outages or increased cost.	
		Noise (Helicopter)	We experienced how loud the helicopters were this past year when Xcel replaced lines near the Mesa Trail. This will be far worse, not only because the work area is so much closer to homes but also because the noise will reverberate off the side of the mesa on which NCAR sits. There will be many consecutive days when people will not be able to step outside their homes, perhaps having to leave altogether.	<i>Answer provided under Comment #1</i>
Commenter 18	6/8/2019	Alternatives	...I am in favor of burying the electric power lines that go up to NCAR from South Boulder. These lines are unsafe, especially in high winds that occur a lot around here. It would also add to the beauty of the area, and make for better views of our mountains.	<i>Answer provided under Comment #7</i>
Commenter 19	6/8/2019	Alternatives	...I am in favor of burying the electric power lines that go upto NCAR from S Boulder. These lines are unsafe esp. in high winds that we get a lot around here. It would also add to beautify and make for better views of our	<i>Answer provided under Comment #7</i>

			mountains.	
Commenter 20	6/8/2019	Alternatives	Please do bury the power lines near the NCAR complex above Boulder. They will be safer and more protected from weather, wind and wildfire.	<i>Answer provided under Comment #7</i>
Commenter 21	6/10/2019	Alternatives	the line should be buried, not replaced above ground. The high winds and fire vulnerability of the area make the expense of burial more practical in the long run. Even more, the location in Boulder, fast becoming a world class destination for appreciation of natural beauty of scenery, demands a response in line with the natural surroundings.	<i>Answer provided under Comment #7</i>
Commenter 22	6/10/2019	Alternatives	Bury them	<i>Answer provided under Comment #7</i>
Commenter 23	6/10/2019	Alternatives	Please BURY the power or, alternatively, leave the existing poles. Do NOT introduce even more eyesores into our highly prized open space.f Your document claiming we might have more power failures is an underhanded way to prejudice the decision making process. We seldom have power problems (underground cables were upgraded/replaced several years ago) now and don't anticipate more in the future. It is so absurd to see power poles fall down or snap in half storm after storm when	<i>Answer provided under Comment #7</i> Additionally, in response to the comment about seldom having power problems, it is important to note that in order to maintain reliable service, PSCo must complete proactive replacements of aging infrastructure from time to time. This project is part of that maintenance and also ensures that all federal codes for ground clearance are met. As noted in the POD (Section 1.1), the structures have been identified as being in a structural condition that warrants their replacement. Also, as noted under comment response #17, the new structures have been designed taking high winds into

		<p>the solution is SO OBVIOUS. It is worth the price to bury the lines for safety (wildfires are a serious risk where these lines are located) and to minimize annual repair/maintenance costs.</p> <p>Last year Xcel replaced a bunch of poles and wires that run north-south. The huge poles are an eyesore and, even worse, they replaced dark wires with shiny metallic ones. Before the power lines were barely visible, now they stand out against their green background. Our Mountain Parks and Open Space function as true wilderness, no infrastructure, no roads, no motorized vehicles, only walking and in a few places biking. Please help us maintain this treasured wild space by REDUCING THE RISK OF WILDFIRES from equipment malfunctions caused by extreme weather or negligence.</p>	<p>consideration. This project would allow PSCo to continue to meet its commitment to provide the safest and most reliable electric service to the greater community.</p>
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Construction Photos of Buried Transmission Line

Note that construction site in photos is **not** at the proposed project site and is used herein as an example solely to give commenters a visual of a typical construction site for a buried transmission line.

(photos courtesy of PSCo)





Appendix E
Agency Consultations



United States Department of the Interior



FISH AND WILDLIFE SERVICE
COLORADO FIELD OFFICE/LAKEWOOD
P.O. BOX 25486, DENVER FEDERAL CENTER
DENVER, COLORADO 80225-0486

IN REPLY REFER TO:
ES/CO: National Science Foundation
TAILS: 06E24000-2019-I-0155

JUN 07 2019

Ms. Holly Smith
National Science Foundation
2415 Eisenhower Avenue
Alexandria, Virginia 22314

Dear Ms. Smith:

Thank you for your letter and biological assessment to U.S. Fish and Wildlife Service (Service) received on May 13, 2019, regarding Public Service Company of Colorado's (PSCo) proposed reconstruction of the 115 kV electric transmission line at the National Center for Atmospheric Research Center (NCAR) in Boulder County. You requested concurrence with your determination that the proposed action may affect, but is not likely to adversely affect the Preble's meadow jumping mouse (*Zapus hudsonius preblei*) (Preble's mouse). These comments have been prepared under the provisions of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et. seq.).

The proposed action consists of the reconstruction of the existing 115 kV transmission line along approximately 1 mile in the vicinity of Bear Canyon. Portions of the project area occur within habitat for the Preble's mouse. There would be no direct impact to riparian habitat along Bear Creek, although some upland areas will experience limited disturbance due to pole replacement (6 poles) and some temporary impacts due to staging areas and project access. Critical habitat for the Preble's mouse is not present within the project area; therefore, no critical habitat will be affected.

Based on the information provided in the biological assessment, the Service concurs that the proposed action may affect, but is not likely to adversely affect the Preble's meadow jumping mouse.

If any additional species that are Federally-listed, proposed for Federal listing, or candidate for Federal listing are found in the project area, if critical habitat is designated in the project area, or if new information becomes available that reveals that the action may impact such species in a manner or to an extent that was not previously considered, this office should be contacted to determine if further section 7 consultation will be required.

If the Service can be of further assistance, please contact Leslie Ellwood of this office at (303) 236-4747.

Sincerely,



Drue L. DeBerry
Colorado and Nebraska Field Supervisor

Ref: NSF_Boulder County_NCAR_115 kV reconstruct_FWS concur



OFFICE of ARCHAEOLOGY and HISTORIC PRESERVATION

Holly E. Smith
Environmental Compliance Officer
National Science Foundation
2415 Eisenhower Ave.
Alexandria, Virginia 22314

MAR 11 2019

Re: Class III Resource Survey for PSCo Line 9205 NCAR Replacement Project (HC #75658)

Dear Ms. Smith:

Thank you for your correspondence dated February 25, 2019 and received on March 4, 2019 by our office regarding the consultation of the above-mentioned project under Section 106 of the National Historic Preservation Act (Section 106).

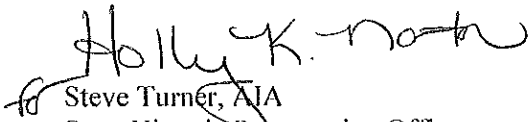
After review of the provided information, we do not object to the proposed Area of Potential Effects (APE) for the proposed project. We concur that 5BL.3924.5 and 5BL.3925.1 are *supporting* to the overall eligibility of their respective resources. Additionally, we concur that 5BL.13400 is *eligible* for the National Register of Historic Places (NRHP), and that 5BL.13401.1 and 5BL.13402 are *not eligible* for the NRHP.

Our office has reviewed the scope of work and assessment of adverse effects, we concur with the recommended finding of *no adverse effect* [36 CFR 800.5(d)(1)] under Section 106 for 5BL.3924.5, 5BL.3925.1, and 5BL.13400, and with a finding of *no historic properties affected* [36 CFR 800.4(d)(1)] under Section 106 for 5BL.13401.1 and 5BL.13402.

Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the National Register eligibility criteria (36 CFR 60.4) in consultation with our office pursuant to 36 CFR 800.13. Also, should the consulted-upon scope of the work change please contact our office for continued consultation under 36 CFR 800.

If we may be of further assistance, please contact Jason O'Brien, Section 106 Compliance Manager, at (303) 866-2673 or Jason.obrien@state.co.us.

Sincerely,


Steve Turner, AIA
State Historic Preservation Officer



MAY 29 2019

Holly E. Smith
Environmental Compliance Officer
National Science Foundation
2415 Eisenhower Ave.
Alexandria, Virginia 22314

Re: Addendum Report to a Class III Resource Survey for PSCo Line 9205 NCAR Replacement Project (HC #75658)

Dear Ms. Smith:

Thank you for your correspondence dated May 13, 2019 and received on May 20, 2019 by our office regarding the additional consultation of the above-mentioned project under Section 106 of the National Historic Preservation Act (Section 106).


After review of the provided information, we do not object to the proposed Area of Potential Effects (APE) for the proposed project. We continue to concur that 5BL.13400 is *eligible* for the National Register of Historic Places (NRHP) and that 5BL.13401 is *not eligible* for the NRHP.

Our office has reviewed the revised scope of work and assessment of adverse effects, we concur with the recommended finding of *no historic properties affected* [36 CFR 800.4(d)(1)] under Section 106 for 5BL.13400 and 5BL.13401.

Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the National Register eligibility criteria (36 CFR 60.4) in consultation with our office pursuant to 36 CFR 800.13. Also, should the consulted-upon scope of the work change please contact our office for continued consultation under 36 CFR 800.

If we may be of further assistance, please contact Jason O'Brien, Section 106 Compliance Manager, at (303) 866-2673 or Jason.obrien@state.co.us.

Sincerely,


Steve Turner, AIA
State Historic Preservation Officer