



— BUREAU OF —
RECLAMATION

Final Environmental Assessment

**APS Queue 255 Interconnection and Gen-Tie Project
Interior Region 8: Lower Colorado Basin**



**U.S. Department of the Interior
Bureau of Reclamation
Interior Region 8: Lower Colorado Basin
Phoenix Area Office
Glendale, Arizona**

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Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Acronyms and Abbreviations

8ME	8MINUTE SOLAR ENERGY
ADOT	ARIZONA DEPARTMENT OF TRANSPORTATION
AGFD	ARIZONA GAME AND FISH DEPARTMENT
AOU	AMERICAN ORNITHOLOGISTS' UNION
APE	AREA OF POTENTIAL EFFECT
APLIC	AVIAN POWERLINE INTERACTION COMMITTEE
APS	ARIZONA PUBLIC SERVICE
BIA	UNITED STATES BUREAU OF INDIANS AFFAIRS
BM&LP	BLACK MESA & LAKE POWELL
BMPs	BEST MANAGEMENT PRACTICES
CAP	CENTRAL ARIZONA PROJECT
CEQ	COUNCIL ON ENVIRONMENTAL QUALITY
CFR	CODE OF FEDERAL REGULATIONS
COVID-19	CORONAVIRUS DISEASE 2019
DOI	DEPARTMENT OF THE INTERIOR
EA	ENVIRONMENTAL ASSESSMENT
EO	EXECUTIVE ORDER
ESA	ENDANGERED SPECIES ACT
EXPN	EXPERIMENTAL POPULATION, NON-ESSENTIAL
FT	FEET
FR	FEDERAL REGISTER
GHGs	GREENHOUSE GASES
IO	ISOLATED OCCURRENCES
IPAC	INFORMATION, PLANNING AND CONSERVATION SYSTEM
ITA	INDIAN TRUST ASSETS
KV	KILOVOLT
LGIA	LARGE GENERATOR INTERCONNECTION AGREEMENT
MBTA	MIGRATORY BIRD TREATY ACT
MHI	MEDIAN HOUSEHOLD INCOME
MW	MEGAWATT
NDFW	NAVAJO DEPARTMENT OF FISH AND WILDLIFE
NEPA	NATIONAL ENVIRONMENTAL POLICY ACT
NGS	NAVAJO GENERATING STATION
N-HRE	NON-HYDRO RENEWABLE ENERGY
NHPA	NATIONAL HISTORIC PRESERVATION ACT

NSTS	NAVAJO SOUTHERN TRANSMISSION SYSTEM
NTUA	NAVAJO TRIBAL UTILITY AUTHORITY
NVE	NEVADA ENERGY
NWI	NATIONAL WETLANDS INVENTORY
NWP	NATIONWIDE PERMIT
NWTS	NAVAJO WESTERN TRANSMISSION SYSTEM
O&M	OPERATION AND MAINTENANCE
OPGW	OPTICAL GROUND WIRE
PL	PUBLIC LAW
PPE	PERSONAL PROTECTIVE EQUIPMENT
RECLAMATION	UNITED STATES BUREAU OF RECLAMATION
ROW	RIGHT-OF-WAY
RUS	RURAL UTILITIES SERVICE
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SHPO	STATE HISTORIC PRESERVATION OFFICE
SO	SECRETARIAL ORDER
SRP	SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT
SR98	STATE ROUTE 98
T&E	THREATENED AND ENDANGERED
TCP	TRADITIONAL CULTURAL PROPERTIES
TEP	TUCSON ELECTRIC POWER
THPO	TRIBAL HISTORIC PRESERVATION OFFICE
UHF	ULTRA-HIGH FREQUENCY
USFWS	UNITED STATES FISH AND WILDLIFE SERVICE
VHF	VERY HIGH FREQUENCY

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1.0. Introduction, Background, Purpose, and Need

1.1 Introduction

The Bureau of Reclamation (Reclamation) has prepared this Final Environmental Assessment (EA) to analyze and disclose the potential environmental consequences of the proposed Arizona Public Service (APS) Queue 255 Interconnection and Gen-Tie Project (Project). This Project would be located on Navajo Nation lands near Page, Arizona (Figure 1). The Project would interconnect the proposed Red Antelope Solar Project, also located within Navajo Nation, to the existing Navajo Generating Station (NGS) Switchyard. 302PN 8me LLC, a wholly-owned subsidiary of 8minute Solar Energy (8ME), has filed an interconnection request at the NGS Switchyard for the solar project. The Navajo Tribal Utility Authority (NTUA) would construct and operate the Project. The NGS Switchyard is part of the Navajo Southern Transmission System (NSTS), which is partially owned by the federal government. Reclamation is responsible for the federal interest in the NSTS and must approve the interconnect into the NGS Switchyard. Prior to making and implementing a decision, Reclamation must complete an environmental review of the proposed interconnect in compliance with the National Environmental Policy Act (NEPA).

This EA was prepared to thoroughly examine the potential environmental impacts of the proposed action and alternatives to support informed decision-making. This Final EA is consistent with the purpose and goals of NEPA; the requirements of the Council on Environmental Quality's (CEQ) implementing NEPA regulations at 40 CFR Parts 1500 - 1508; longstanding Federal, judicial, and regulatory interpretations; the Department of the Interior's NEPA regulations (43 CFR Part 46); and Administration priorities and policies including Secretarial Order No. 3399.

1.2 Background

The 1968 Colorado River Basin Project Act (Public Law 90-537, 82 Statute 885) authorized the construction, operation, and maintenance of the Central Arizona Project (CAP). It also provided the authority for the federal government, through the Secretary of the Interior, to enter into agreements to participate in the "Navajo Project," which generates the power and energy used to operate the CAP pump stations. The agreements authorized by the Colorado River Basin Project Act covered construction and operation of the NGS, including the power plant and associated transmission. The participants in the NGS (NGS Participants) include Salt River Project Agricultural Improvement and Power District (SRP), APS, Tucson Electric Power (TEP), Nevada Energy (NVE), and the federal government. Reclamation is responsible for administration of the federal government's 24.3 percent interest in NGS on behalf of the Secretary of the Interior under a 1969 delegation of authority.

The NGS was a 2,250-megawatt (MW) coal-fired power plant located on leased Navajo Nation lands about 5 miles east of Page, Arizona. The NGS and related facilities¹ operated pursuant to a 1969 “Navajo Project Indenture of Lease” (1969 Lease). Construction of the facility began in 1969 and power production started in 1973. Power was transmitted from NGS via two transmission systems known as the Navajo Western Transmission System (NWTS) and NSTS. These two transmission systems are integrated into the country's western electrical grid. Since the decommissioning of the NGS in 2020, NWTS and NSTS have been and will continue to be in use by the NGS Participants until 2054.

In 2017, the decision was made by the NGS Participants to close the NGS power plant. An extension lease was negotiated in 2017 to enable the retirement² of the NGS after the end of the 1969 Lease term of December 22, 2019. It also allowed for the continued operation and maintenance of the transmission systems (NWTS and NSTS) for 35 years until the end of the extension lease term in 2054. At the end of the Extension Lease term, there would be an automatic one-time extension option for either 2 years to allow for retirement of the two transmission systems or for an additional 35 years of operation and subsequent retirement. In November 2019, all three units of the NGS were permanently shut down and decommissioning of the power plant site was initiated.

The 2017 lease extension identified, among other things, that the Navajo Nation can use a portion of the federal government's entitlement to NGS transmission capacity under certain conditions that were to be described in a separate agreement. Reclamation, Western Area Power Administration, and the Navajo Nation subsequently signed a Transmission Capacity Use contract in December 2017 that identified that the Navajo Nation may use up to 300 MW on the NSTS and 200 MW on the NWTS of Reclamation's transmission rights. The Navajo Nation or its assignee can use the transmission rights to deliver electric energy from new solar or other generation sources to regional markets in California, Arizona, and Nevada. The 2017 lease extension also specified that all operation and maintenance (O&M) costs would be paid by the NGS Participants for the first 10 years. After the first 10 years, the Navajo Nation would be responsible for paying the transmission system O&M costs for their use and capacity. These transmission rights would facilitate the Navajo Nation's plan to move toward a cleaner energy economy.

In line with this agreement, NTUA worked with the NGS Participants to identify options for the best interconnection to promote more renewable development on the Navajo Nation, while also providing the opportunity for NTUA to have an additional wholesale energy distribution point on

¹ NGS and related facilities include an approximately 78-mile railroad and coal handling facilities at the railroad terminus and at the plant; the lake pump facility and water supply system from Lake Powell; coal-fired boilers; steam turbine generators; water treatment; air pollution control systems; waste management facilities; transformers, switchyards, transmission lines, and substations; roads; communication sites; administration, operation, maintenance and warehouse facilities.

² NGS “retirement” refers to all work that would occur on the NGS to remove facilities and restore the land, including decommissioning, dismantling, removal, reclamation, restoration, monitoring, and remediation where applicable.

the Navajo Nation. NTUA proposed to have the NGS Switchyard as an energy delivery point and to further utilize any excess capacity on the transmission line for expanding its electric distribution resources.

8ME and NTUA Generation, Inc. are partnering on the Red Antelope Solar Project, which is located approximately 12 miles south of the NGS Switchyard on Navajo Nation land. The interconnection and gen-tie would support the development of renewables on the Navajo Nation and thus allow the Navajo Nation to not only utilize the negotiated transmission rights but also to encourage parties with queue positions at NGS to locate their projects on the Navajo Nation rather than surrounding lands.

Navajo Nation's general leasing regulations and recently enacted federal law (25 U.S.C. Section 415[e]) authorize the Navajo Nation to issue leases and/or rights-of-way (ROW) that are not subject to the Secretary of the Interior's approval. Additionally, in 2020, the Navajo Nation passed a tribal resolution allowing ROW access to tribal land by wholly owned and operated Navajo Nation entities, such as NTUA. Under this authority, NTUA will seek the Navajo Nation's approval for the proposed interconnection and gen-tie.

1.3 Project Location

The proposed interconnection and gen-tie would connect the Red Antelope Solar Project to the NGS Switchyard near Page, Arizona. The Project would include the interconnection at the NGS Switchyard and the approximately 12-mile gen-tie lines, associated access roads, and temporary construction laydown areas. All facilities would be located on the Navajo Nation. Figure 1 shows the general location of the Project.

1.4 Purpose and Need

As owner of a share of the NSTS, Reclamation's purpose is to consider the application for interconnection of the Project to the NSTS at the NGS Switchyard. Reclamation's need for the action is to respond to 8ME's application for a Large Generator Interconnection Agreement (LGIA) in accordance with applicable laws, regulations, and policies described below and, if appropriate, approve the LGIA.

Reclamation's need is based on the partial ownership of the Navajo Transmission System by the United States (U.S.) government. The NGS and the associated transmission lines were authorized by the Colorado River Basin Project Act, and Reclamation manages the Federal government's interests. Reclamation, along with the other owners, must approve the proposed interconnection into the NGS Switchyard.

Additionally, the DOI Strategic Plan for Fiscal Years 2018-2022 commits DOI agencies, including Reclamation, to expanding the production of energy resources (DOI 2018). Executive Order

(EO) 14057 supports American clean energy industries and jobs through Federal sustainability and accompanying Federal Sustainability Plan (collectively referred to as "The Federal Sustainability Plan"). Efforts by Reclamation to facilitate the development of non-federal Non-Hydro Renewable Energy (N-HRE) projects are also supported by a number of federal statutes, including the Energy Policy Act of 2005 (Public Law [PL] 109-58); the Energy Independence and Security Act of 2007 (PL 110-140); and the Omnibus Public Land Management Act of 2009 (PL 111-11).

On behalf of the Red Antelope Solar Project, 8ME has applied to the operator of the NGS Switchyard, APS, to interconnect the solar project at the switchyard. The Proposed Action would deliver renewable energy from the Red Antelope Solar Project, located on lands owned and managed by the Navajo Nation, to the regional electric grid via its interconnection to the NGS Switchyard. In addition, any excess capacity on the transmission lines would provide potential interconnection opportunities for future projects which would help the Navajo Nation, state, and federal government meet their renewable energy goals.

1.5 Public Involvement

Reclamation solicited input from the public about the proposed project to assist in identifying key issues and defining the scope of the project and environmental analysis. Reclamation conducted scoping via mail (to 50 potentially interested agencies organizations, tribes, and neighbors to the Proposed Action), newspaper notices (in both the Navajo Times and Lake Powell Chronicle), and internet publication. Appendix A contains a copy of the scoping letter. Scoping for this project began on March 11, 2022. Within the 15-day scoping period, Reclamation received one comment from the Arizona State Historic Preservation Office (SHPO) indicating that they did not have jurisdiction over the Project. No significant issues were brought up during scoping to be addressed in this EA.

On August 25, 2022, Reclamation made available the Draft EA for public review and comment. A Notice of Availability was posted on Reclamation's website (<https://www.usbr.gov/lc/phoenix/index.html>), published in the same local newspapers, and mailed to the same potentially interested agencies, organizations, tribes, and neighbors. During the 15-day comment period, no comments were received.

1.6 Cooperating Agencies

Reclamation is the lead Federal agency responsible for preparing the EA. The Navajo Nation and the Bureau of Indian Affairs (BIA) were invited to be cooperating agencies to the EA. The Navajo Nation has a responsibility for management of the lands upon which the interconnection and gen-tie are located and would grant a temporary and permanent ROW associated with the gen-tie line and interconnection. Neither entity responded to the request to be a cooperating agency.

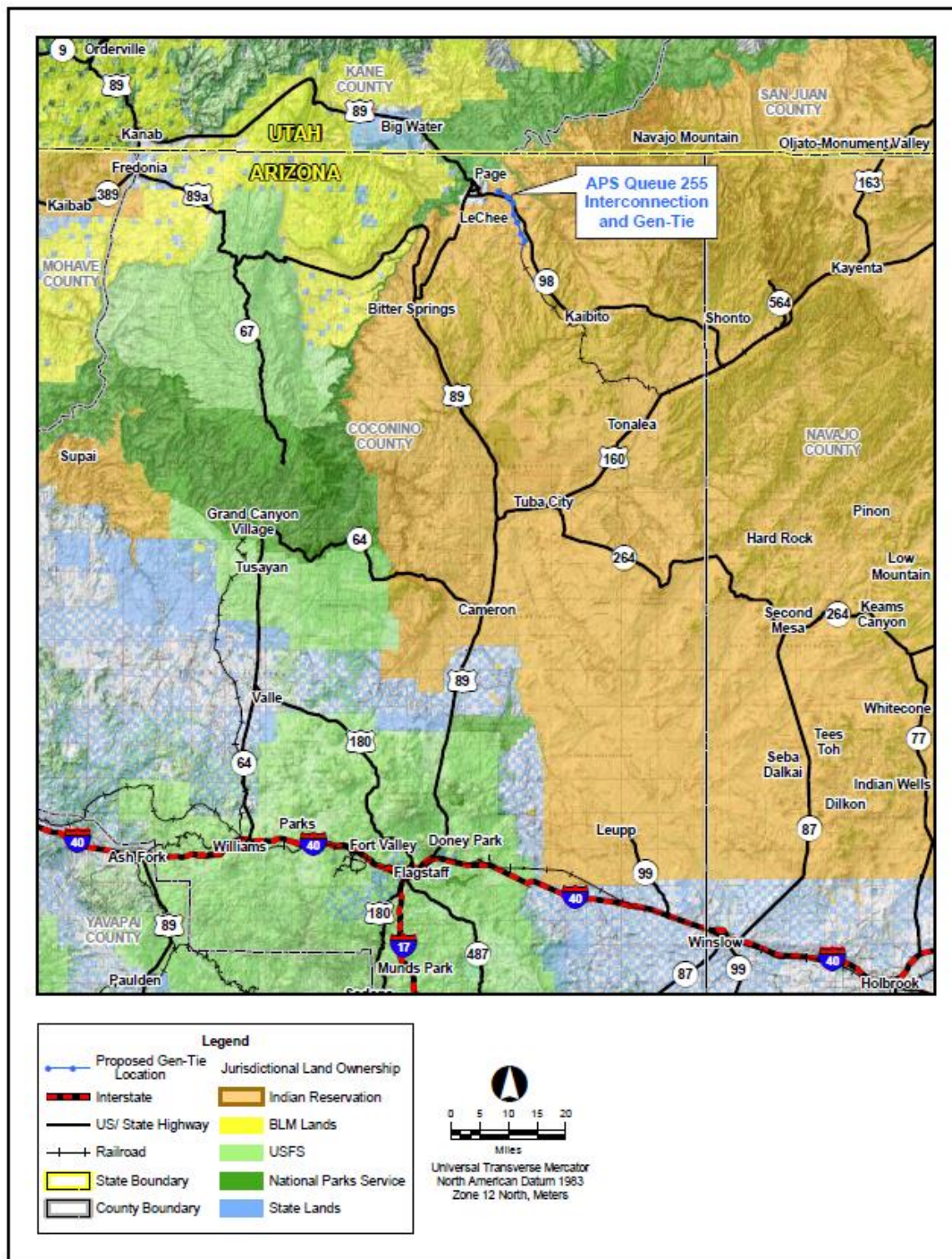


Figure 1. APS Queue 255 Gen-Tie and Interconnection Project Location

2.0 Proposed Action and Alternatives

Under the Proposed Action, Reclamation would approve the LGIA for the APS Queue 255 Interconnection and Gen-Tie Project. The Project would involve the construction, operation, maintenance, and eventual decommissioning of three approximate 12-mile long, 500 kilovolt (kV) gen-tie lines for interconnection to the regional transmission grid system at the NGS Switchyard. An overview of the proposed Project route is shown on Figure 2.

For most of its length, the new interconnection and gen-tie lines would parallel a segment of the former Black Mesa and Lake Powell (BM&LP) Railroad that was used to deliver coal to NGS. NGS, including its related rail infrastructure, is currently going through decommissioning, which is being managed by SRP under a lease with the Navajo Nation. The NTUA, an enterprise of the Navajo Nation, would construct the interconnection and gen-tie from the solar project substation to the NGS Switchyard.

2.1 Proposed Action Alternative

The major components of the interconnection and gen-tie include transmission lines and related facilities, NGS switchyard facilities, and related communications facilities. Typical design characteristics are listed in Table 2-1 with more detail below. Final design characteristics would be determined in the detailed design phase, which is prior to construction of the interconnection and gen-tie.

Table 2-1. General Project Design Characteristics

Transmission Line Facilities	
Line length	Approximately 12 miles
Type of Structure	Double-circuit and single circuit H-frame, single steel pole, or lattice
Structure height	Up to 190 feet
Span length	1,000 to 1,600 feet
Number of structures per mile	Approximately 4 to 5
ROW width	200 feet
Access roads	A new road located within the gen-tie ROW. Within the gen-tie ROW, there would also be short spurs from existing access roads from where they are adjacent.
Voltage	500 kV
Circuit configuration	Double-circuit and single circuit (three phases per circuit)
Minimum ground clearance of conductor	30 to 35 feet at expected operating temperature
Pole foundation depth/diameter	15 to 30 feet / 6 to 12 feet 10 to 20 feet / 6 to 10 feet

Interconnection Facilities	
Existing NGS Switchyard	Upgrades to accommodate the interconnection and gen-tie (termination structures, circuit breakers, switches, and transformers); minimal disturbance expected within the existing footprint of the switchyard.
Communications Facilities	
Systems	Digital radio system, microwave, very high frequency (VHF)/ultra-high frequency (UHF) radio, potential radio towers, and fiber line/optical ground wire (OPGW)
Functions	Communications for fault detection, line protection, supervisory control and data acquisition (SCADA), and two-way voice communication.

2.1.1 PROJECT FACILITIES

Transmission Line

The proposed interconnection and gen-tie would be built as a double-circuit 500 kV line and an adjacent single-circuit 500 kV line that would use lattice, H-frame, or single steel pole structures. Each circuit would have two or three conductor bundles per phase. All structure types would be made of self-weathering or galvanized steel. Illustrations of the typical 500 kV structures that could be used for this Project are provided in Figure 3.

Structure heights would be up to 190 feet varying with terrain and associated span lengths. The average span length is expected to be approximately 1,200 to 1,600 feet, resulting in about 4 to 5 structures per mile of line.

Each H-frame or single pole would be either directly embedded into the ground or installed on drilled piers with anchor bolts which would be typically 15 feet to 30 feet deep and 6 feet to 12 feet in diameter. Lattice structures would be installed on drilled piers with anchor bolts. The foundation depths and diameters would depend on prevailing soil properties. A geotechnical study would be conducted prior to final foundation designs.

The interconnection and gen-tie would also have two shield wires mounted on the top of the structures. One or both shield wires would be composed of extra high strength steel wire. One of the shield wires may be constructed with OPGW, or the OPGW could be strung on the structures below the conductors.

Access Roads

The proposed interconnection and gen-tie was designed to parallel the existing railroad and would utilize existing roads where available. The existing roads in this area are approximately 15 to 20 feet wide. For most of the route, a new road would be built within the ROW to access work areas for the new Project transmission structures. Where existing parallel roads occur, spur or off-shoot

roads would be constructed to each proposed transmission structure location. Both new roads and spur roads would be approximately 20 feet wide and would be located within the ROW for the proposed transmission line. The existing and proposed roads are shown on the detailed Project mapbook in Appendix B.

Interconnection Facilities

The point of interconnection for the proposed Project would be the existing NGS 500 kV Switchyard located near Page, Arizona, also on Navajo Nation lands. All work associated with the Project interconnection would be done inside the switchyard fence, with an expected disturbance footprint of up to 3 acres. New interconnection facilities within the existing switchyard would include the following:

- Terminus for each gen-tie line (two of the gen-ties would terminate at existing A-frame structures at bay positions within the switchyard and a new A-frame structure would be required for the new bay position for the third line.
 - An additional structure could be required within the switchyard for the third line depending on the final design approach for the new A-frame.
- 500 kV circuit breaker, disconnect switch, instrument transformers, bus supports, and bus conductors for the new bay.
- All required foundations, grounding, and conduit within the switchyard.
- Metering and protection equipment inside the NGS switchyard control building for the new bay position.

Communication Facilities

Communications facilities are needed for fault detection, line protection, SCADA, and two-way communication. This would include facilities located within the fence of the NGS 500 kV Switchyard. As stated previously, the OPGW may be installed above or below the conductors.

2.1.2 PRE-CONSTRUCTION

Geotechnical Pre-Construction Surveys

A detailed geotechnical field survey would be conducted as part of final design and engineering prior to construction. The purpose of the geotechnical survey will be to observe subsurface conditions and obtain samples of site soils for laboratory testing and classification with results from the analyses helping determine the foundation design for the transmission structures. Because this work will focus on the transmission structure locations, all associated disturbance would be located within the proposed 200-foot ROW. Borings would be obtained typically using a truck-mounted auger. No core drilling of rock nor the need for drilling fluids or water are anticipated.

Drill crews would utilize the existing roads to access each boring site. Off-road travel would be used where new access is needed. The boring holes would be backfilled upon completion.

Construction Crew Training and Safety

Prior to construction, all contractors, subcontractors and NTUA personnel necessary for the construction phase would undergo an environmental training program to become familiarized with construction requirements. All contractors and company personnel would be required to attend this training prior to gaining access to the ROW. This training will familiarize participants with required environmental protection measures outlined in a Construction and Environmental Compliance Monitoring Plan that would be developed in compliance with NTUA's existing Plan and Rural Utilities Service (RUS) Guidelines.

Additionally, safety training would be mandatory for all Project personnel (e.g., supervisors, inspectors, surveyors, employees, construction engineers, contractors, contractor's employees, and subcontractors) prior to performing any work on-site. Team members would attend daily construction briefs, detailing specific safety hazards for all work locations, acceptable Personal Protective Equipment (PPE), work location awareness and communication of unsafe work practices. All team members will be required to wear appropriate PPE while on-site. A detailed Health and Safety Plan developed and approved prior to construction will be kept on-site to be used during training.

A detailed Emergency Preparedness and Response Plan would be developed and kept on-site to address emergency protocols.

Transmission Line Surveying, Flagging, and Staking

Prior to construction, pre-construction engineering survey work would be conducted locating the centerline, structure center hubs, ROW boundaries, and access roads. All of these features would be staked in the field and no paint or permanent discoloring agents would be applied to rocks or vegetation to indicate survey or construction limits. As identified in Appendix C, any sensitive resources within or near the planned work areas would be flagged so they can be avoided or appropriately dealt with during construction as described below.

2.1.3 CONSTRUCTION

Construction is anticipated to proceed in a sequential manner along the line. The construction and installation of the transmission line would generally be performed using the proposed construction techniques discussed in the following subsections.

Lay-down Yard

Construction of the transmission line would begin with the establishment of a lay-down yard, which would be required for storing materials, construction equipment, vehicles and in some cases as a show-up yard for the construction crews. The Project would have a lay-down yard near the NGS Switchyard in an area that has been previously disturbed within the recently demolished NGS site. The proposed location for this laydown yard is included in Appendix B.

Access to and along the ROW (Permanent and Temporary)

Access to the ROW, both temporary during construction and permanent through operation, would be provided by the existing roads adjacent to and crossed by the transmission line. No upgrades are expected to be required. The locations of these existing roads are included on the maps in Appendix B.

Access to each new structure location would be provided by a new road developed within the proposed 200-foot ROW. Where some structure locations are near existing roads, short spur roads from the existing roads would be built. These roads would be up to approximately 20 feet wide. The locations of proposed access roads are shown on the detailed Project mapbook in Appendix B.

After construction, the non-public roads would remain to be used for inspection and maintenance activities.

Structure Site Clearing, Foundation Excavation, and Foundation Installation

Structure sites would be located 1,000 to 1,600 feet apart. Structure locations would be determined by topography and best engineering practices. The locations of proposed structure sites are shown in the mapbook in Appendix B.

Vegetation clearing and ground disturbance would be required at each structure site for excavation of holes and pouring of concrete foundations. Each structure location would be cleared of vegetation, used for construction, and remain available for future line maintenance. Structure sites will only be graded if necessary. Each structure site would be approximately 125 feet by 60 feet in size resulting in approximately 0.17 acres of temporary disturbance per structure site. These sites would be smaller where needed if limited workspace is available.

Foundation excavations would be made using mechanized equipment. Lattice structures would require four holes and H-frame structures would require two holes with each hole being 6 to 10 feet in diameter. Steel poles would require one 12 to 15-foot diameter hole. Structure foundation excavations would be made with power drilling equipment using a vehicle-mounted power auger or backhoe to excavate the structure foundations. In rocky areas, the foundation holes could be excavated by drilling. Although not expected, in some instances blasting could be necessary because of the specific geologic conditions. Foundation holes left open or unguarded would be covered to protect the public and wildlife. Additionally, any holes left open would be cleared by a monitor to ensure any trapped wildlife are removed before work resumes.

Foundations would be installed by placing reinforced steel and transmission structure steel components into each foundation hole, positioning the steel components, and encasing them in concrete. Excess soil material would be used for fill where suitable and any remaining soil would be spread on the access road.

Water would be used for soil compaction and dust abatement at each structure site and along access roads, as needed. Water for footer construction and dust abatement would be obtained from local water sources approved by the Navajo Nation and trucked to the construction area.

Structure Assembly and Erection

Structural steel components and associated hardware would be transported to each structure site by truck. Steel structure sections would be delivered to structure locations where they would be fastened together to form a complete structure and hoisted into place by a large crane. At each structure site, a work area of approximately 125-feet by 60-feet would be required for the structure foundation locations, structure assembly, and the necessary crane maneuvers. The work area would be cleared of vegetation only to the extent necessary. Concrete for use in constructing foundations would be dispensed from concrete mixer trucks.

Conductor Installation

After the structures are erected, insulators, hardware, and stringing sheaves would be delivered to each structure site. The structures would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position.

For public protection during wire installation, guard structures could be erected where the line would cross roads, existing power lines, and other obstacles. Guard structures would consist of H-framed wood poles placed on either side of an obstacle. These structures would prevent ground wire, conductor, and equipment from falling on an obstacle, and would be removed following the completion of conductor installation in that area. Equipment for erecting guard structures would include augers, line trucks, pole trailers, and small cranes. Guard structures may not be required for small roads or other areas where suitable safety measures, such as barriers, flagmen, or other traffic controls, could be used.

Pilot lines would be pulled (strung) from structure to structure either using helicopters or pulling equipment and threaded through the stringing sheaves at each structure. Following pilot lines, the stronger line with a greater diameter would be attached to conductors to pull them onto structures. This process would be repeated until the ground wire or conductor is pulled through all sheaves.

The shield wire (and/or OPGW) and conductors would be strung using powered pulling equipment at one end and powered braking or equipment tensioning at the other end of each conductor stringing segment. Sites for tensioning equipment and pulling equipment would be approximately 14,500 feet apart. Each pulling or tensioning site would be approximately 100-feet by 400-feet and all are planned to be within the proposed ROW as shown on the detailed Project drawings in Appendix B. There would be no blading at pull sites if the terrain is sufficiently level. Final pull site locations will be confirmed during final design.

Construction Workforce and Schedule

The interconnection and gen-tie would be constructed primarily by contract personnel with NTUA responsible for administration and construction review. Construction could include multiple construction crews working simultaneously at various locations. The typical work week on the Navajo Nation is approximately 8 hours per day, five days per week. The total length of time for construction of the gen-tie line is estimated to be 12 to 16 months. If time constraints occur, a more aggressive production schedule may be required and implemented, with construction starting at two or more points concurrently.

Ground Disturbance

Table 2-2 shows the acres of temporary and permanent ground disturbance that would result from development of the interconnection and gen-tie. The construction activities and areas of potential impact would be limited primarily to access roads, spur roads, structure locations, lay-down yards, and pull tensioning sites.

Mitigation and best management practices would be employed as part of the Project (Appendix C). Some of these would be applied to specific areas (i.e., where a specific type of resource exists). In these cases, the locations of these geographically specific measures would be shown on the detailed design drawings prepared prior to construction.

Table 2-2. Ground Disturbance from the Proposed Action

Disturbance Type	Work Area Type	Total Acres
Permanent		
	Structure Work Areas	3.6
	Roads	21.8
Permanent Total		25.4
Temporary		
	Work/Laydown Areas	7.0
	Pull/Stringing Sites	20.6
Temporary Total		27.6
TOTAL DISTURBANCE		53.0

2.1.4 POST-CONSTRUCTION REHABILITATION

This section outlines the actions that would be employed by the Applicant (NTUA) immediately following the completion of construction to ensure Project stabilization and rehabilitation.

Transmission Line Restoration

Restoration treatments would be applied to construction-related disturbances to rehabilitate temporary use areas. Restoration would focus on restoring plant communities and associated wildlife habitat, preventing substantial increases in noxious weeds in the construction area, minimizing any related soil erosion, and reducing visual impacts caused by construction activities.

Weed Management

A weed management plan would be developed prior to construction that would outline the measures to control noxious weed species during transmission line construction, operation and maintenance as well as reclamation and revegetation of the disturbed areas. Surveys would be conducted in areas disturbed during construction within the construction corridor and along access roads.

Erosion Control

An erosion control plan would be developed prior to construction, identifying site-specific erosion control measures that would be implemented to prevent erosion and runoff during and immediately following construction.

2.1.5 OPERATIONS

This section outlines those procedures that would be employed during the operation and maintenance phase of the Project after construction and post-construction restoration has been completed.

Operation and maintenance activities would include all requirements set forth by the Western Energy Coordinating Council, including activities like the patrol of the lines, climbing inspections, transmission structure (tower or pole) and wire maintenance and repair, routine insulator washing, and repairs of access and spur roads.

The following sections provide details on the anticipated operation and maintenance requirements for the interconnection and gen-tie.

Transmission Line Safety

In accordance with the electrical safety regulations of the RUS and other applicable standards identified in Appendix C, the safety measures implemented during construction for worker protection would be applicable during operation and maintenance and would be detailed in a Health and Safety Plan. The transmission line would be protected with power circuit breakers and related line relay protection equipment. Lightning protection would be provided by overhead ground wires (shield wires or OPGW) along the line. Electrical equipment and fencing at the switchyard would be grounded. All existing fences, metal gates, pipelines, etc. that cross or are within the transmission line ROW would be grounded to prevent electrical shock.

Transmission Line Maintenance

Inspection Patrols and Maintenance Schedule Regular inspections would be performed in accordance with the RUS requirements for transmission facility maintenance. Transmission lines and structures would be inspected for corrosion, equipment misalignment, loose fittings, and other mechanical problems. Access for this routine repair work would be confined to roads and access designated for this purpose.

If dirt and dust builds up on insulators, it can compromise their insulating capabilities. In desert environments where rain is rare, a washing of the insulators can be conducted, if necessary. Insulator washing involves driving a water truck to within six feet of a tower base and using a high-pressure hose to spray deionized water at the insulators. Insulator washing would not be expected more than twice a year.

ROW Maintenance ROW maintenance would include grading or repairing of access and spur roads or work areas with erosional damage. Required equipment could include a motor grader, backhoe, four-wheel drive pickup truck, and a loader. All access roads would be maintained on a regular schedule.

Vegetation Management Around the base or foundation of all transmission structures, an area of 10 feet by 10 feet would be cleared of all vegetation and maintained for fire protection and vehicle and equipment access needs necessary for operations, maintenance, and repair. Shrubs and other obstructions would be removed as needed near structures to facilitate safe inspection and maintenance of equipment and to ensure system reliability. In addition, though not expected to be an issue for this Project, vegetation with a mature height of 15-feet or taller would not be allowed to grow within the ROW to protect system reliability and public safety.

Fire Control All applicable fire laws and regulations would be observed during the operation and maintenance period. NTUA's fire safety standards would be followed and requirements for fire tool availability, spark arresters/mufflers on equipment, and coordination of extreme fire conditions would be followed. All personnel would be advised of their responsibilities under these requirements, including taking practical measures to report and suppress fires.

Noxious Weed Control Implementation of weed abatement methods, practices, and treatment timing would be conducted as required by NTUA and Navajo Nation policies.

2.1.6 DECOMMISSIONING

This section outlines the measures that would be implemented in the future should the interconnection and gen-tie need to be decommissioned by NTUA. A Decommissioning Plan would be developed and finalized before decommissioning activities would start. At this time, these activities are anticipated to include:

- Removal of structures
- Recontouring of roads, structure pads, etc., if needed

- Stabilization and re-vegetation of disturbed areas

In general, all decommissioning and subsequent maintenance activities would be conducted in accordance with NTUA and the Navajo Nation's standards. Restoration would adhere to the accepted standard procedures at the time. In addition, restoration would be implemented to achieve results that will reuse/recycles materials to the maximum extent practicable.

Prior to restoration, any necessary resource surveys would be conducted in accordance with accepted standards and procedures at the time. During the course of any necessary restoration activities, education similar to that given to construction crews would be given to workers regarding environmentally sensitive areas and resources. In addition, environmental monitors would be utilized at any areas deemed necessary.

Standard safety procedures associated with restoration activities would be implemented. If any special construction techniques are needed for restoration, safety procedures would be outlined and implemented prior to beginning restoration activities.

2.2 No Action Alternative

Under the No Action Alternative, the proposed interconnection would not be approved by Reclamation. This would result in renewable energy from the Red Antelope Solar Project and possibly other future projects developed on the Navajo Nation not being delivered to the regional electric grid at the NGS Switchyard. The renewable energy goals of the Navajo Nation to facilitate the development of renewable energy on their land would not be advanced by the proposed Project. Also, the contribution made by the interconnection and gen-tie to help meet the state and federal renewable energy goals by the addition of the renewable energy generated in the northwest region of the Navajo Nation would not be realized.

2.3 Alternatives Considered but Eliminated from Further Study

As part of the development of the proposed Project, the Applicant and Reclamation considered multiple options for interconnection to the regional grid that would promote solar development opportunities on Navajo Nation lands. These options and the reasons they were not carried forward are described below.

2.3.1 Connection via Line-Tap to the NGS-Moenkopi 500 kV Line

This alternative would facilitate interconnection to the regional electrical grid via a direct line-tap into the NGS-Moenkopi 500 kV Line. This alternative is not technically feasible because of utility limitations, so it was not carried forward as a viable option. A direct tap into this line would not be allowed because utilities do not allow a three-way line tap connection on the 500 kV bulk

transmission system. These connections increase risk of outages so it would not be allowed for reliability purposes on critical infrastructure, like the NGS-Moenkopi 500 kV Line.

2.3.2 Connection via New Switching Station on the NGS-Moenkopi 500 kV Line

This alternative would facilitate interconnection to the regional electrical grid via a new switching station built in the middle of NGS-Moenkopi 500 kV line. This alternative would result in greater cost and environmental impact than the Proposed Action, so it was not carried forward for detailed analysis. The cost of building a new switching station would be more expensive than utilizing existing infrastructure in an existing switchyard. Additionally, it would take longer to build a new switching station than using existing infrastructure, including additional time to coordinate outages that would be required on the NGS-Moenkopi 500 kV Line to facilitate connecting to a new switching station. Furthermore, the environmental impacts of a new switching station would be greater than the minor upgrades required at the NGS Switchyard under the Proposed Action.

2.3.3 Development of Red Antelope Station as a Mid-Point on the NGS-Moenkopi 500 kV Line

This alternative would facilitate interconnection to the regional electrical grid via two direct line taps of the NGS-Moenkopi 500 kV line and constructing a new switching station to operate as a middle point between the NGS Switchyard and Moenkopi Substation. This alternative was dismissed from detailed analysis because, relative to the Proposed Action, it would be more costly and result in greater environmental impacts. Similar to the alternative above, it would also take longer to build a new switching station than using existing infrastructure to facilitate interconnection, and additional time would be needed to coordinate outages that would be required on the NGS-Moenkopi 500 kV Line to connect to a new switching station.

2.3.4 Connection via the APS Four Corners-Moenkopi 500 kV Line

This alternative would facilitate interconnection to the regional electrical grid via construction of a new switching station on the APS Four Corners-Moenkopi 500 kV line. This line is 100 percent owned by APS and, like all other alternatives considered but dismissed from detailed analysis, would require submittal of a new interconnection request, in this case through the APS interconnection process.

The Applicant's interconnection team conducted a preliminary evaluation of the potential viability of this interconnection alternative and determined that it meets the requirements of having sufficient voltage (500 kV) to be able to electrically transport the energy from large generating facilities over long distances to reach their target off-takers and delivery point(s). In addition, APS has previously allowed projects to enter the interconnection process for new switching stations along existing 500 kV lines, including on this Four Corners-Moenkopi 500 kV Line.

However, this alternative was not carried forward for detailed analysis because it would not help meet the Applicant's long-term goal of building additional electric distribution facilities in the northwest portion of the Navajo Nation – a need that was expedited when the owners of the NGS determined that the facility would be closed. Likewise, it would not exercise the Navajo Nation's

rights to utilize federal transmission capacity on the Navajo Transmission System (NSTS and NWTS). Furthermore, relative to the Proposed Action, this alternative would have a number of disadvantages. It would be at least five times more expensive and result in greater environmental impacts associated with longer transmission lines and construction of a new switching station. It also would require additional time to construct and implement due to the requirements for more new infrastructure and coordination for required outages on the Four Corners-Moenkopi 500 kV line.

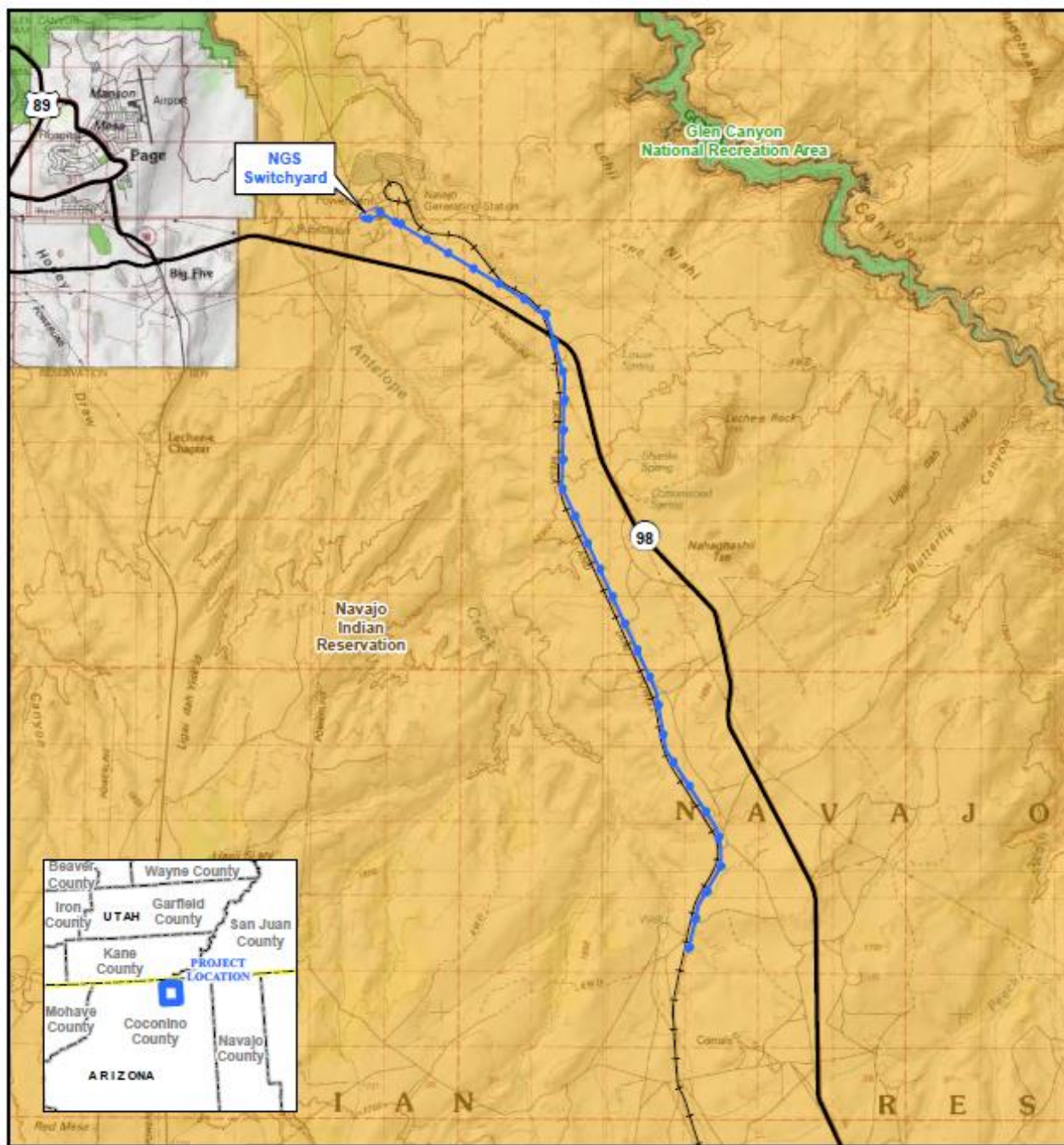


Figure 2. Overview of APS Queue 255 Gen-Tie and Interconnection

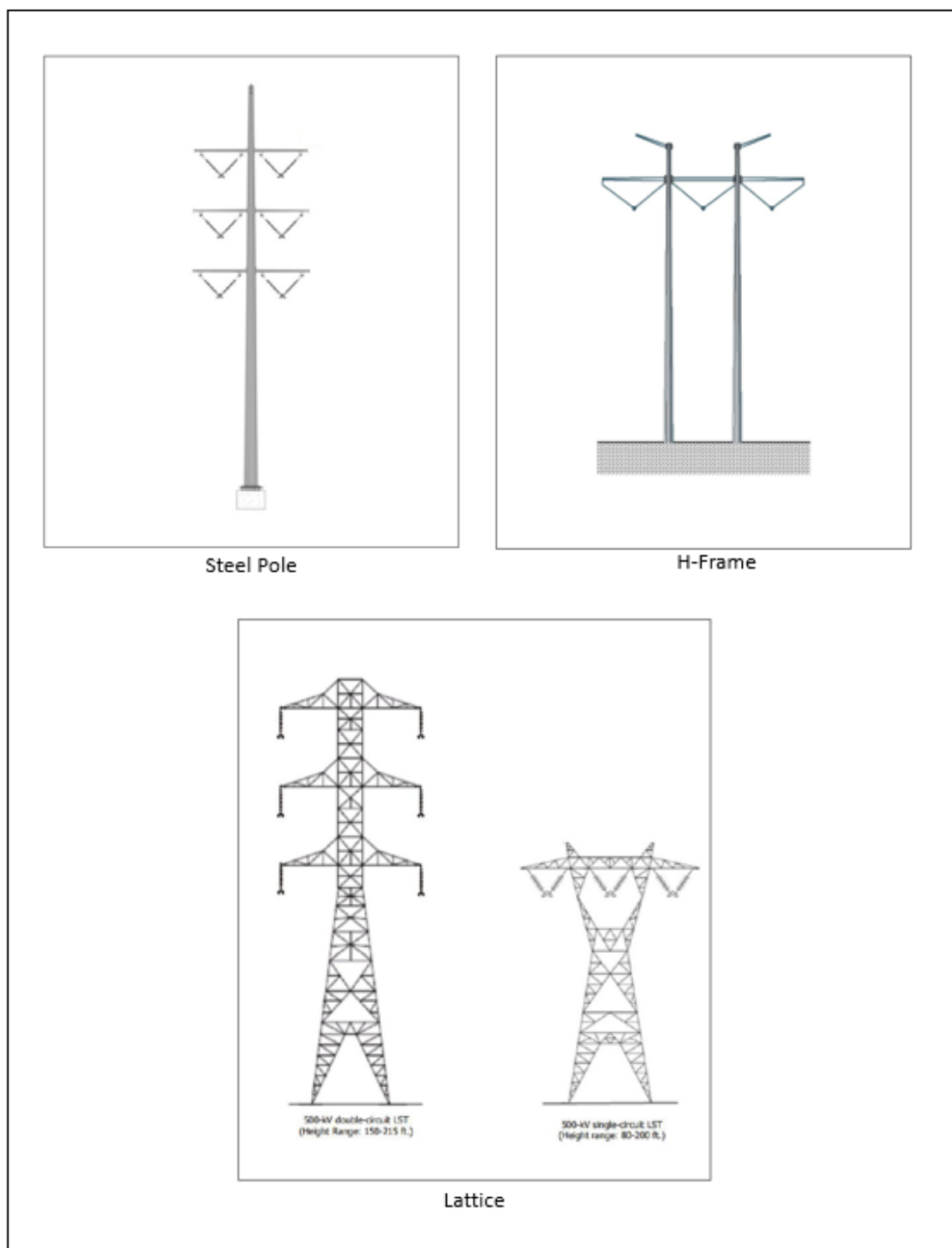


Figure 3. Schematics of 500 kV Transmission Structure Schematic

3.0 Affected Environment and Environmental Consequences

This chapter presents the existing conditions in the project area, as well as the environmental effects that would be reasonably expected from implementing the Proposed Action and the No Action Alternative. Environmental consequences are analyzed based on direct, indirect, and cumulative effects to resources under consideration within the project area.

To quantify cumulative effects, it was necessary to identify other ongoing or reasonably foreseeable future projects within the vicinity of the project area. The geographic scope for this analysis includes the project area, and any projects near the project area if impacts from those other projects have potential to affect project area resources. The temporal scope would include projects within a range of approximately twenty years (2012-2032). Outreach to the Navajo Nation, BIA, and NTUA was conducted and meeting minutes from the Navajo Nation and the LeChee Chapter were consulted to identify potentially foreseeable projects or actions within the area. No future, foreseeable projects were identified except the ongoing activities associated with the demolition of NGS, livestock grazing, usage of existing high and low transmission lines, transportation along Arizona State Route 98 (SR 98) and existing dirt roads, and tourism. The non-project activities identified in the project area discussed below in the affected environment section for land use (Section 3.5.1) would be expected to continue.

The following table (Table 3-1) is a list of all resources considered in the evaluation of the Proposed Action and alternative(s). The resources found that may be affected by this proposal have been carried forward for analysis and are discussed further in this chapter. The resources that are not present or not impacted by the Proposed Action because they would be completely mitigated with the implementation of standard best management practices (BMPs) will not be discussed further.

Table 3-1. Resources Considered And Rationale for Those Topics Eliminated from Detailed Analysis

Resource/Use	Discussion
Air Quality/Climate Change	The air quality in the Project area meets air quality standards and is not located in a nonattainment or maintenance area. Air quality would be temporarily impacted during construction of the Project from equipment emissions and fugitive dust. BMPs for fugitive dust control identified as part of the project description would be applied during construction consistent with the Navajo Nation's requirements. This resource is not evaluated in detail in the EA.

	Climate change is affected by a number of factors including the release of greenhouse gases (GHGs) from human activities as well as by natural factors (e.g., the Sun, volcanic eruptions, etc.). It includes changes in temperature, precipitation, storm frequency, and severity, etc. Transmission projects that interconnect renewable energy, like the proposed Project, generally have an overall net long-term beneficial effect on climate change by their operations offsetting fossil-fuel generation. There would be short-term minor increases in GHGs from construction and decommissioning associated with exhaust emissions from construction equipment and vehicles, and long-term benefits from operation of the renewable project.
Biological Resources (including vegetation, wildlife, threatened and endangered (T&E) species)	See discussion in Section 3.1.
Cultural Resources	See discussion in Section 3.2.
Environmental Justice	See discussion in Section 3.3.
Farmlands (prime/unique)	No farmlands occur in the Project area. This resource is not evaluated in detail in the EA.
Indian Trust Assets	See discussion in Section 3.4.
Land Use (including Grazing)	See discussion in Section 3.5.
Noise	There are seven noise receptors (residences, other occupied structures, etc.) within a half a mile of the proposed ROW. Construction activities would produce a short-term increase in noise within the proposed ROW over the existing ambient noise levels but would be temporary and minor in nature. Long term noise effects from the O&M of the proposed Project would be negligible. This resource is not evaluated in detail in the EA.
Public Health and Safety	Potential health and safety impacts that could result from use of hazardous materials, electrical hazards, or fire hazards would be expected to have a small, minor potential risk to public health and safety. No hazardous materials, including fuel trucks, would be stored/used within the ROW. The construction contractor would be required by the NTUA to develop and implement plans to minimize health and safety risk including a Health and Safety Plan, an Emergency Preparedness and Response Plan, a Hazardous Materials Management Plan, and a Waste Management Plan. This resource is not evaluated in detail in the EA.
Recreation	There are no developed recreation facilities or specific recreational uses in the vicinity of the Project. The section of SR 98 near the proposed ROW is designated as a scenic byway. The Project would not be expected to affect the scenic quality of views from this road as it would be consistent with existing transmission lines that parallel the highway more closely. This resource is not evaluated in detail in the EA.

Socioeconomics	See discussion in Section 3.6.
Soils/Geology/Topography	Soils in the Project area are predominantly relatively shallow fine sandy and sandy soils with coarse to moderately coarse-textures and somewhat excessively-drained and well-drained with interspersed rock outcrops. Ground disturbance, totaling 25.4 acres, would occur within the Project ROW along parts of the access road and at each structure facility. However, it would not result in a long-term effect on the local topography. The Project would not create or be affected by geologic hazards in the Project area. This resource is not evaluated in detail in the EA.
Water Resources (including Floodplains, Wetlands, Riparian)	<p>There are no perennial waterways or wetland habitats in the Project area. No new permanent impacts to the several small intermittent/ephemeral drainages crossed by the Project would occur as they would be spanned by the Project (structures would be located outside of drainages) and existing roads would be used for access.</p> <p>Data was obtained from the National Wetlands Inventory (NWI) to determine whether jurisdictional wetlands could occur in the Project area. The NWI data indicates four small, unnamed washes would be crossed by the proposed gen-tie ROW but several smaller drainages would also be crossed. No wetlands were identified on the NWI map within or near the Project corridor.</p> <p>NTUA would comply with Section 404 of Clean Water Act by avoiding construction within jurisdictional waters and would comply with the Navajo Nation's Clean Water Act by limiting ground disturbance to the extent possible to reduce the potential for sedimentation. If minor impacts to jurisdictional waters were to occur from road crossings, they would be covered under the applicable Nationwide Permits (NWP) that has been issued by the U.S. Army Corps of Engineers for utility lines (NWP 58) and roads (NWP 14).</p> <p>This resource is not evaluated in further detail in the EA.</p>

3.1 Biological Resources

3.1.1 Affected Environment

The Project area is located in the Colorado Plateau physiographic region. The vegetation in the Colorado Plateau is adapted to cold temperate and arid to semiarid conditions. Land cover types are divided into more detailed vegetative communities and are described in more detail below.

Wildlife and Plants

The Navajo Department of Fish and Wildlife (NDFW) provided a list of tribal species of concern, which is included below with status definitions, habitat type, and potential for occurrence.

Table 3-2. NDFW Species of Concern/Status

Scientific Name	Common Name	Status ¹	Habitat	Potential for Occurrence
<i>Antilocapra americana</i>	Pronghorn	NDFW-G3	Grasslands with open terrain with wide alluvial basins	Low None observed
<i>Aquila chrysaetos</i>	Golden eagle	NDFW-G3	Forages throughout the Navajo Nation. Nests in tall trees or cliffs.	Low; during foraging None observed
<i>Asclepias welshii</i>	Welsh's milkweed	NDFW-G3	Open, sparsely vegetated, semi stabilized sand dunes within sagebrush, juniper, and ponderosa pine communities	None; no habitat
<i>Buteo regalis</i>	Ferruginous hawk	NDFW-G3	Grasslands, arid prairies, or areas of scattered pinyon-juniper woodlands. Nests in tall trees or cliffs.	Low; during foraging None observed
<i>Camissonia alwoodii</i>	Atwoods's camissonia	NDFW-G4	Clay soils within salt desert shrub community, typically at 4,060 to 5,000 feet elevation	None; no habitat
<i>Cinclus mexicanus</i>	American dipper	NDFW-G3	Riparian areas and streams in or near mountains at high and moderate elevations	None; no habitat
<i>Coitus bairdi</i>	Mottled sculpin	NDFW-G4	Aquatic habitats – rivers, streams, lakes, and ponds.	None; no habitat
<i>Empidonax traillii extimus</i>	Southwestern willow flycatcher	NDFW-G2	Riparian habitats, specifically areas of high shrub densities, including monotypic willow thickets, gallery cottonwood forests, and tamarisk.	None; no habitat

<i>Falco peregrinus</i>	Peregrine falcon	NDFW-G4	Open country with tall cliffs and open airspace.	None; no habitat
<i>Lithobates pipiens</i>	Northern leopard frog	NDFW-G2	Aquatic habitats – edges of rivers, streams, lakes, and ponds.	None; no habitat
<i>Xyrauchen texanus</i>	Razorback sucker	NDFW-G2	Aquatic habitats – rivers and streams	None; no habitat

¹Navajo Endangered Species List Status Codes and Definitions

G2 - Group 2: Endangered • Any species or subspecies which is in danger of being eliminated from all or a significant portion of its range on the Navajo Nation.

G3 - Group 3: Threatened • Any species or subspecies which is likely to become endangered within the foreseeable future, throughout all or a significant portion of its range on the Navajo Nation.

G4 - Group 4: Candidate • Any species or subspecies for which the NDFW does not currently have sufficient information to support their listing as G2 or G3 but has reason to consider them. The NDFW is actively seeking information to determine if they warrant inclusion in a different group or removal from the list.

Wildlife

There are no wetland habitats in the project footprint for the American dipper, mottled sculpin, southwestern willow flycatcher, northern leopard frog or razorback sucker which are NDFW wildlife and fish species of concern. Pronghorn inhabit grasslands with open terrain and wide alluvial basins, but were not present during surveys. The biological evaluation prepared by Zoology Unlimited, LLC for NDFW indicated that the southern portion of the Project gen-tie corridor is located within one mile of a known occurrence of pronghorn. The golden eagle, peregrine falcon, and ferruginous hawk can be found on the Navajo Nation, and they forage in habitats consistent to where the project will be constructed. Both the golden eagle and ferruginous hawk nest in high trees and cliff faces, which do not occur near the project location.

Vegetation

The vegetation community in the Project area corresponds with the Great Basin Desertscrub (Brown 1994). The dominant vegetation includes sand sagebrush (*Artemisia filifolia*), ephedra (*Ephedra viridis*) and blackbrush (*Coleogyne ramosissima*). There are no trees or riparian habitats present in the Project corridor.

The Project area has been previously disturbed by several uses within and near the corridor including SR 98, the BM&LP Railroad, multiple power lines, and pipelines. In addition, ongoing livestock grazing and commercial tour business, along with many unimproved dirt roads and fences associated with these uses, occur throughout the area. The proposed gen-tie alignment closely parallels the BM&LP Railroad for much of its length, crosses and parallels several existing unimproved roads, crosses the existing high and low voltage power lines, and crosses SR 98.

Field surveys were conducted by Zoology Unlimited, LLC (2020) for the sensitive vegetation species identified by the Navajo Nation [Welsh's milkweed (*Asclepias welshii*) and *Camissonia atwoodii*] during the appropriate flowering season (June – July and September – November, respectively).

The Welsh's milkweed is a member of the Asclepiadaceae (milkweed family). This species is recognized by large seeds, which are 0.79 inches long. The main leaves are obovate or broadly elliptic and rounded to truncate apically (Atwood et al., 1991). Welsh's milkweed habitat requirements are open, sparsely vegetated, semi-stabilized sand dunes or lee slopes of actively drifting sand dunes (USFWS 1992). No suitable habitat, such as sand dunes, were observed within the project corridor, and no individuals were observed during the surveys.

The *Camissonia atwoodi* is a listed plant on the Navajo Nation with the closest location being in southern Utah. None were detected within the project footprint.

Invasive Plants During field reconnaissance for this project there were no weeds detected from the Navajo Nation Region Noxious/Invasive Weed List.

Federal Threatened and Endangered Species

A list of federally listed species potentially occurring within the Project area was obtained from the U.S. Fish and Wildlife Service (USFWS) (2022). Table 3-3 summarizes those species and their potential for occurrence in the Project area.

Table 3-3. Federally Listed Species Considered

Common Name	Scientific Name	Status ¹	Habitat	Potential for Occurrence
Birds				
California Condor	<i>Gymnogyps californianus</i>	E/EXPN	Steep remote mountainous or canyon terrain on rock or cliff escarpments at low to moderate elevations.	Low potential to fly over
Mexican Spotted Owl	<i>Strix occidentalis</i>	T	Old-growth forest in mixed conifer, pine-oak woodland, deciduous riparian forest.	None; no habitat
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	T	Low - to moderate-elevation riparian woodlands within arid to semiarid landscapes.	None; no habitat
Reptiles				
Northern Mexican Gartersnake	<i>Thamnophis eques megalops</i>	T	Riparian obligate occurring in wetlands, large river riparian woodlands and forests, and streamside gallery forests.	None; no habitat
Fishes				

Razorback Sucker	<i>Xyrauchen texanus</i>	E	Pools and eddies, runs and pools, runs and backwaters within the Green River, Upper Colorado River, and San Juan River subbasins; Lower Colorado River between Lake Havasu and Davis Dam; Lake Mead and Lake Mohave; and in small tributaries of the Gila River subbasin.	None; no habitat
Roundtail Chub	<i>Gila robusta</i>	C	Stream and river reaches with pool and riffle habitats, relatively deep, low-velocity habitats.	None; no habitat
Insects				
Monarch Butterfly	<i>Danaus plexippus</i>	C	Milkweed and flowering plants are required for survival, and lay eggs on obligate milkweed plants.	Low; during migration
Plants				
Welsh's Milkweed	<i>Asclepias welshii</i>	T	Open, sparsely vegetated, semi stabilized sand dunes and the lee slopes of actively drifting sand dunes within sagebrush, juniper, and ponderosa pine communities from 4,700 to 6,200 feet amsl	None; no habitat

1 E = Endangered; Threatened = T; C = Candidate; EXPN = Experimental Population, Non-essential

As shown in Table 3-3, the California condor is the only listed species with the potential to occur in the Project area. The following sections describe the environmental baseline and potential for Project-related effects to this species and its critical habitat.

Life History and Habitat Association

California condors are opportunistic scavengers that feed only on carrion. California condors are social feeders with typical foraging behavior consisting of long-distance reconnaissance flights, circle-soaring over a carcass, and hours of waiting at roosts or on the ground near a carcass (USFWS 1996). California condors have an expansive home range and are capable of travelling

from 50 to over 100 miles in a single day. They require open habitat for soaring and easily locating feeding opportunities.

California condors require large foraging areas because feeding opportunities are limited and often widely distributed across their range. Roosts, found in or near both foraging and nesting habitat areas, typically consist of large trees or snags with open lateral branches or cliff faces and rock spires with available perches. Because they are such large birds, condors typically select roosting sites near cliffs where updrafts provide adequate lift for them to take flight (AGFD 2012; American Ornithologists' Union [AOU] 2004; Snyder and Rea 1998; USFWS 1996).

Listing and Conservation Status

The California condor was designated as endangered on March 11, 1967, under the Endangered Species Preservation Act of 1966 (32 Federal Register [FR] 4001). Following passage of the Endangered Species Act (ESA) of 1973, the species was listed as endangered under the ESA in 1975 (50 CFR 17.11). Critical habitat for the California condor was designated in 1976 (41 FR 41914) and subsequently corrected and augmented in 1977 (42 FR 47840). No critical habitat is present within the Project area.

Despite protection under the ESA, California condor populations continued to decline, and by 1982, only 22 wild condors remained (AGFD 2022). A decision was made to rely on captive breeding programs for recovery of the species, and the last wild California condor was brought into captivity in 1987. In 1992, the first eight birds raised in captivity were released in southern California. The reintroduction of birds continued in Arizona in 1996; central coastal California in 1997; northern Baja California, Mexico, in 2002; and Pinnacles National Monument, California, in 2003 (USFWS 1996).

A special provision of the ESA, the 10(j) rule, allows for the designation of EXPN for listed species. Re-introduction efforts for the California condor in Arizona were developed under this rule. A nonessential experimental [10(j)] population was designated in Arizona, Utah, and Nevada in 1996 and reintroductions began later that year.

Habitat Suitability and Species Status within the Project Area

In the vicinity of the Project area, California condors are part of the “Southwest population” of condors, a designated nonessential experimental population. For the purposes of section 7, California condors outside of the 10(j) area are treated as fully endangered; the Project area is within the 10(j) and not considered to be endangered (USFWS 1996b). Within the 10(j) area but outside of National Wildlife System and National Park System lands, California condors are treated as a proposed species for section 7 consultations, and federal action agencies are required to consult with the USFWS only if their actions are likely to jeopardize the species. Critical habitat is not present within the area occupied by the Southwest population and does not occur within the Project area.

Telemetry data indicate that California condors occasionally fly by the Project, but the majority of condor activity occurs in and around Vermilion Cliffs National Monument (where a release site is

located), Grand Canyon and Zion National Parks, the Kaibab Plateau, and, to a lesser extent, Marble Canyon (Reclamation and BIA 2017).

3.1.2 Environmental Consequences

3.1.2.1 No Action

Under the No Action Alternative, the Project would not be built and biological resources in the area would continue to be subject to existing conditions.

3.1.2.2 Proposed Action

Vegetation Up to approximately 27.6 acres of native vegetation would be temporarily impacted by construction activities at laydown areas, structure sites, and pull sites. Additionally, up to approximately 25.4 acres would be permanently directly affected by the locations of access roads and transmission structures. NTUA would develop a Restoration Plan outlining measures for post construction erosion control and reestablishment of vegetation where needed.

Necessary work areas around all structures would be kept clear of vegetation. The height of vegetation along the ROW would be limited so as not to interfere with operation of the gen-tie but the need for this is expected to be limited.

The small amount of increased construction traffic along the ROW could also indirectly result in increased non-native species introductions. This could promote the expansion of noxious weeds within the transmission line ROW. Prior to construction, a Weed Management Plan would be developed that includes measures designed to reduce the propagation and spread of designated noxious weeds and other undesirable plants during construction, operation, and decommissioning. In addition, during construction, NTUA would implement controls at ROW entry locations to facilitate weed management and invasive species control to minimize infestation to the project site from an outside source.

No suitable habitats and no individuals were observed within the Project corridor for either of the sensitive vegetation species identified by the Navajo Nation. Therefore, no impacts are expected to Welsh's milkweed or Atwood's camissonia.

Wildlife As described in the affected environment section, there would be no anticipated impact to the following NDFW species of concern:

- Southwestern willow flycatcher
- Peregrine falcon
- American dipper
- Northern leopard frog
- Mottled sculpin
- Razorback sucker

These species were not present in the proposed Project corridor or nearby area and are highly unlikely to be present in the Project area due to the absence of suitable habitat.

Other NDFW species have the potential to occur in the area and are expected to be directly or indirectly affected by construction, operation, and decommissioning of the Project. No nesting/calving habitat exists within both the Project corridor and nearby area for the pronghorn, golden eagle, and ferruginous hawk. Marginal to good foraging habitat exists within both the Project corridor and nearby area for the pronghorn, golden eagle, and ferruginous hawk. Up to approximately 27.6 acres of foraging habitat would be temporarily impacted and up to approximately 25.4 acres would be permanently impacted for the pronghorn, golden eagle, and ferruginous hawk. Foraging individuals could be temporarily displaced from foraging habitat during construction. However, due to the transient nature of foraging species, they would be expected to occupy the Project area during operation after the noise and activity associated with construction have ended and are not expected to be adversely impacted. Because of the size of the lines (500 kV) and their spacing, the structures and conductor would not create a line strike or electrocution hazard for the golden eagle and ferruginous hawk during operation. Effects from decommissioning are expected to be the same as construction. The Project has the potential for a minor, adverse impact to these foraging species.

T&E Species Direct or indirect impacts on the California condor associated with the Proposed Action are unlikely because the occurrence of California condors near the Project area is infrequent and transitory. Because the substation facilities are fenced, cattle and big game that could provide a source of carrion that would attract California condors do not occur in the substation facilities. Cattle and big game could provide a source of carrion along the gen-tie and associated access road reducing the chance for cattle or big game mortality that would attract California condors. Consequently, the Proposed Action would have inconsequential impacts on the California condor.

California condors fly over the Project area. The relative size of the proposed 500 kV gen-tie structures and conductors (versus low voltage lines) make these facilities highly visible. The space between conductors exceeds a condor's wingspan, which eliminates the potential that wings could touch two conductors and cause an electrocution. Therefore, the likelihood of a condor colliding with or being electrocuted by the gen-tie line is very low. In addition, these proposed lines would be designed and constructed to meet the most current Avian Powerline Interaction Committee (APLIC) design standards to prevent bird electrocutions and collisions.

Given the overall lack of potential habitat in and around the Project area, the proposed design in accordance with APLIC standards, and the lack of known sightings in the area, it is determined that the Proposed Action would have "no effect" on the California condor.

NDFW Review NDFW reviewed the biological evaluation prepared by Zoology Unlimited (2020) for the Project and issued a Biological Resources Compliance Form (Review No. 20ntua131) on February 5, 2021. NDFW's Biological Resources Compliance Form indicates that the project is in compliance with Tribal laws protecting biological resources.

3.1.2.3 Cumulative Effects

During the construction, operation, and decommissioning of this Project, the existing land uses in the area including high and low voltage transmission lines, the demolition of NGS, SR 98, dirt roads, tourism, and livestock grazing would be expected to continue. The proposed Project would temporarily impact approximately 27.6 acres and permanently impact approximately 25.4 acres of vegetation and foraging habitats for wildlife adding a minor cumulative contribution to impacts to these resources. Except for grazing, all of the ongoing uses would have limited contribution to cumulative impacts on vegetation and wildlife habitats as they would not disturb new lands and these activities would be confined to existing roads. Both the proposed Project and the continued use of the local roads by the existing projects could contribute to a minor cumulative increase the potential for the spread of noxious weeds and could periodically disrupt or otherwise impact wildlife. The proposed Project and existing land uses would have no cumulative effects on T&E species.

3.1.3 Conservation and Mitigation Measures

The following measures would be implemented to reduce impacts to biological resources:

- In accordance with the biological evaluation stipulation, if construction has not been completed before the start of the raptor breeding season (January through August), a survey for the golden eagle and ferruginous hawk is recommended to determine if these raptors are potentially nesting within the Project area.
- NTUA will employ a qualified biologist to ensure compliance with the Migratory Bird Treaty Act (MBTA) during construction. Every attempt will be made to complete land-clearing activities between September 1 and February 28 to avoid the breeding season of migratory birds. Between the dates of March 1 and August 31, all vegetation where ground disturbance will occur along the gen-tie and interconnection will be surveyed for active bird nest(s) immediately prior (within 48 hours) to being disturbed. If an active nest is discovered, activities will not be allowed to proceed in the vicinity of the nest(s). No activities will occur within an appropriate buffered distance from active nests until after the young birds have fledged from the nest. If an active nest is discovered, Reclamation and NDFW would determine the appropriate buffered distance.
- All work in the immediate area would cease if any federally listed species were observed in the construction area. Reclamation, NDFW, and USFWS personnel would be notified immediately.
- Construction personnel would be instructed not to collect, disturb, or molest wildlife species.
- NTUA and its contractors would be instructed to exercise care to preserve the natural landscape and conduct operations so as to prevent unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the work.
- To prevent the spread of invasive plant species, all construction equipment will be washed at the Project's construction storage facility prior to entering the construction site. In addition,

the construction personnel will inspect construction equipment and remove all attached plant debris prior to leaving the construction site to prevent the spread of invasive plant species to off-site locations.

- The gen-tie lines must be designed and constructed to meet the most current APLIC design standards to prevent bird electrocutions and collisions.

3.2 Cultural Resources

3.2.1 Affected Environment

Cultural History

In the general area, the beginning dates of the Paleoindian Period range from 11150 to 9950 BC. Ending dates for this period range from 10850 to 7050 BC. The Paleoindian Period occupation of the region generally is represented by rare surface or isolated finds of large lanceolate projectile points found throughout the U.S. Southwest and the Great Basin.

The Archaic Period is divided into three temporal categories: the Early (9050 to 7000 BC to 5550 to 4250 BC), Middle (5500 to 3500 BC to 2650 to 2000 BC), and Late (2600 to 2000 BC to 400 BC to AD 400) Archaic Periods. During the Early Archaic Period, human groups began to rely less on big game hunting and more heavily on plant and small animal resources for subsistence. There is an increase in the frequencies of sites and isolated surface projectile points that date to the Middle Archaic Period, possibly indicating an increase in the size of populations and a more intensive use of the landscape. Overall, the archaeological record of the Middle Archaic Period reflects a hunter-gatherer adaptation where people were still reliant on hunting but were becoming more generalized in their subsistence pursuits. Subsistence and settlement practices continued to intensify during the Late Archaic (2600 to 2000 BC to 400 BC to AD 400) and Basketmaker II (AD 1 to 500) Periods throughout the U.S. Southwest. The frequency of sites appears to increase dramatically from the Middle Archaic Period to the Late Archaic Period and sites consist of a wide variety of types including caves and rock shelters, rock art, and open-air artifact scatters.

The chronology of the Ceramic Period in the area consists of the Basketmaker III Period (ca. AD 550 to 850), the Pueblo I and II Periods (ca. AD 850 to 1150), and the Pueblo III Period (ca. AD 1150 to 1300). The Basketmaker III Period exhibited substantial changes in technology, architecture, settlement, and construction throughout the area including the widespread adoption of ceramics, farming of maize, adoption of bow-and-arrow technology, construction of larger more permanent pit houses, and more formal settlement layouts. The Pueblo I Period is characterized by the addition of aboveground masonry storage rooms, ceremonial pit structures or kivas, and formalized site configurations known as unit pueblos. During the Pueblo II Period, kiva construction became more standardized, and aboveground masonry or jacal (wattle-and-daub) habitation structures were more commonly constructed.

The Late Prehistoric/Protohistoric Period in the U.S. Southwest was a time of important cultural change. Major population movements and abandonments beginning ca. AD 1300 characterize

much of the area. The end of the Late Prehistoric/Protohistoric Period is defined by the arrival of the Spanish into the U.S. Southwest, but the dates for this incursion vary.

Navajo oral traditions hold that the ancestors of Navajo clans were created by Changing Woman; however, the history of each clan is distinct and involves migration, divergence, convergence and intermarriage with various groups in different locations across the Dinétah (Laurilia et al., 2011). Sustained integration with many unique groups over long periods of time resulted in the formation of over 60 clans among the Diné. Using archaeological data to define the emergence of a specific ethnic group is a difficult undertaking prone to error. In general, archaeologists have argued that the earliest archaeological sites that can be definitively associated with the Navajo are clustered in northwestern New Mexico and date to the seventeenth century. It is important to note that this timeframe may be the result of limitations in modern absolute dating technology. These early archaeological sites are characterized by brush structures, forked-pole hogans, and low-density artifact scatters. The archaeological record shows that there was frequent exchange between the less sedentary Navajo and Puebloan people. Puebloan influence increased during the eighteenth century, as reflected by increasing frequencies of Hopi and Rio Grande Pueblo ceramics at Navajo archaeological sites.

Beginning in about AD 1800, Navajo people spread farther west, largely as a result of violent confrontations with Spanish colonists and Ute peoples (Laurilia et al., 2011). Although Mexico achieved independence from Spain in 1821 and the U.S. expelled Mexican forces from the region in 1846, neither of these events changed relations between the Navajo and regional government. Raiding and warfare between these groups continued until the Navajo were forcibly removed from their homelands in 1864 to Fort Sumner. Known as the Long Walk, thousands of Navajos were forcibly marched hundreds of miles east and confined on the Bosque Redondo Reservation. Bosque Redondo was not suitable for farming or raising sheep and Navajos experienced frequent raids, disease, and starvation. As conditions continued to deteriorate, the Navajo entered into negotiations with the U.S. military to return to their homeland. The terms of the 1868 Treaty allowed the Navajo to return to their homeland, where the U.S. government established a new Navajo reservation, with the conditions that the Navajo would cease raids, remain on the reservation, relinquish claims to lands outside of the reservation, and send their children to school. In the following years, the Navajo population expanded dramatically, as did their herding and weaving economy. The boundaries of the reservation were later expanded as a result of this growth and trading posts became a focus of commerce, especially for the sale of Navajo textiles.

The historic period also included numerous Spanish, Mexican, and American exploration efforts. Exploration began with early Spanish colonial forays of the mid-1500s and early 1600s, and though the Spanish used travel and supply routes through the region, they implemented only limited colonization efforts. Commercial trade on the routes was encouraged under Mexican rule in the 1800s. Surveys and expeditions by the U.S. government in the last half of the 19th century provided mapping and information critical for settlement in the American Period. The establishment of local roads in the late 19th and early 20th centuries was critical for the success of remote ranches, mines, and settlements.

Existing Data Review

The affected environment for the proposed Project includes the 200-foot-wide corridor proposed for the Project. Records searches and traditional cultural properties (TCP) searches of the Project area were not able to be completed at the time of the field investigation for the proposed Project due to the closure of the Navajo Nation's Historic Preservation Department Cultural Resources Compliance Records Room from the Coronavirus Disease 2019 (COVID-19) health pandemic. However, previous searches were conducted associated with actions at the NGS and associated facilities and were identified in the Class I Inventory for the 2017 NGS Lease Extension EA (Graves 2015).

The northern approximately 1.1-mile portion of the Project route is within the footprint of the recently demolished NGS facility. A preliminary survey report for the NGS (Pilles 1969) implies that the entirety of the NGS was subject to survey, which located five archaeological sites and two modern Navajo sites, only one of which was described. Based on GIS data and the results of the Class I Inventory conducted for the NGS Lease Extension EA (Graves 2015), only two previously recorded sites were located within the NGS (AZ K:5:17[ASM] and AZ K:5:18[ASM]). A general location is known for site AZ K:5:17(ASM) but no information is known about site AZ K:5:18(ASM). Seven surveys were found to overlap the NGS Lease Extension Area of Potential Effect (APE), but all predate 2005, the threshold defined in the Class I Inventory for acceptable survey data (Graves 2015). The portion of the Proposed Action within the NGS switchyard will be restricted to areas that have previously been substantially disturbed by the construction and decommissioning of NGS.

In the vicinity of the southern portion of the proposed Project, previous surveys had been conducted for the BM&LP Railroad, which generally parallels the proposed transmission route. No modern survey of the railroad ROW has occurred since the original survey conducted between 1969 and 1971. A total of 62 to 65 sites were identified within the entire railroad ROW (1,520 acres) including ten sites with unknown data, two sites recommended eligible, with the remaining sites having been subject to data recovery excavation prior to construction of the railroad.

Cultural Resources Survey

A Class III cultural resources survey was conducted on the portion of the proposed Project located outside the footprint of the demolished NGS facility (approximately 11.1 miles) (Begay et al., 2020). The proposed transmission line corridor was surveyed by walking parallel transects spaced no more than 32 feet apart along the Project route. A 270-foot-wide corridor was surveyed consisting of a 200-foot-wide ROW and a 35-foot buffer zone on each side of the ROW. The locations of all resources identified during the inventory were recorded using a hand-held GPS unit. The 3 acres within the NGS Switchyard was not included in the survey because it already had been entirely disturbed by the construction and decommissioning of the NGS.

In addition, during the survey, the project archaeologists also conducted ethnographic interviews of nearby residents concerning any sacred places, burials, or TCPs that may be affected by the proposed undertaking. The interviews were conducted in Navajo and English. No TCPs or sacred sites were identified within the Project area.

During the inventory, one newly identified archaeological site and 36 isolated occurrences were encountered. The one archaeological site (AZ-K-11-10) is a prehistoric Anasazi Pueblo II habitation site with two recorded features and is summarized in the table below. The 36 scattered artifacts or isolated occurrences (IOs) are mostly historic trash scatters, and some were prehistoric isolated materials.

All cultural resources were evaluated for significance under the National Historic Preservation Act (NHPA). AZ-K-11-10 was determined eligible for inclusion in the National Register of Historic Places under Criterion D, for its potential to yield significant information regarding prehistoric Anasazi occupation, settlement patterns, and subsistence strategies in the greater LeChee region. None of the IOs were determined eligible under any criteria.

Table 3-4. Cultural Resources within the Project Area

Site Number	Site Type	Eligibility	Mitigation Measure
AZ-K-11-10	Prehistoric Anasazi Pueblo II habitation	Eligible	Avoidance

In compliance with Section 106 of the NHPA, Reclamation consulted with the Navajo Nation and seven other tribes regarding the NRHP-eligibility of AZ-K-11-10 and Reclamation's determination of *No Adverse Effect*. The Navajo Nation Tribal Historic Preservation Officer concurred with Reclamation's determinations on June 15, 2022. The Hopi Tribe Tribal Historic Preservation Officer also concurred on April 24, 2022. The Moapa Band of Paiutes' Cultural Manager responded on June 3, 2022 that they had no questions or comments on the survey report. Reclamation did not receive any other comments during the Section 106 consultation process.

3.2.2 Environmental Consequences

3.2.2.1 No Action

Under the No Action Alternative, the Project would not be built and cultural resources in the area would continue to be subject to existing conditions.

3.2.2.2 Proposed Action

Ground-disturbing activities associated with construction of the Project could result from work near cultural resource sites that could unintentionally disturb or destroy artifacts or site features. No impacts on cultural resources are expected from O&M or decommissioning activities because these activities would be confined to areas in the disturbance footprint created during construction of the Project.

One new archaeological site (AZ-K-11-10) and 36 isolated occurrences were identified during the field inventory for the Project. AZ-K-11-10 would be avoided by the proposed Project as described in Section 3.2.3 below.

Potential disturbance and/or loss of currently unidentified cultural resources resulting from the implementation of the Project could occur and possibly add to the loss of information about the Navajo Nation's heritage in the area and in the region. Such losses would not be expected, however, because if any new discoveries of cultural resources are encountered during construction, all operations in the immediate vicinity of the discovery would cease and the discovery would be immediately reported to the Navajo Nation's Historic Preservation Department. The inadvertent discovery would be evaluated and, if necessary, treatment measures would be developed and implemented before construction could resume.

3.2.2.3 Cumulative Effects

The construction, operation, and decommissioning of the proposed Project would have minor impacts to cultural resources with the one eligible resource being avoided. The ongoing existing land uses in the area, including high and low voltage transmission lines, SR 98, dirt roads, NGS demolition, tourism, and livestock grazing, would be expected to continue but would have no expected impacts as they would not disturb new lands and would be confined to existing roads. The Project and other existing uses in the area together would have limited cumulative impacts on cultural resources.

3.2.3 Conservation and Mitigation Measures

The following avoidance measures would be implemented to eliminate adverse effects to cultural resources:

- AZ-K-11-10 would be avoided by the proposed Project and would be flagged or fenced with a 50-foot buffer prior to and during construction, maintenance, and decommissioning. The site would be spanned by the proposed lines and the Project would be designed so no transmission structures, ROW access, or pull sites would be located near this location. The flagging/fencing would remain in place throughout construction and removed after Project construction is completed.
- All vehicular traffic would be restricted to existing roads and the access road within the ROW, and no mechanical blading or improvements would be made to roads within cultural site boundaries.
- An archaeological monitor would be present during construction of the Project to observe surface-disturbing activities near the identified site.
- Any inadvertent discoveries of cultural resources during construction would require all operations in the immediate vicinity of the discovery to cease and the discovery would be immediately reported to the Navajo Nation Historic Preservation Department.
- All employees of the Project, including NTUA and its contractors/subcontractors, would receive training on archaeological site locations, sensitive areas, and stipulations before any construction activities begin. In addition to the need to avoid the identified cultural sites, they would also be notified that it is illegal to collect, damage, or disturb cultural resources and that such activities would be punishable by criminal and/or administrative penalties.

3.3 Environmental Justice

3.3.1 Affected Environment

Executive Order (EO) 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” was issued by the President of the United States on February 11, 1994. This order established requirements to address Environmental Justice concerns within the context of agency operations. As part of the NEPA process, agencies are required to identify and address disproportionately high and adverse human health or environmental effects on minority or low-income communities. Federal agencies are directed to ensure that Federal programs or activities do not result, either directly or indirectly, in discrimination on the basis of race, color, or national origin. The order also requires that “the responsibilities set forth [in the EO] shall apply equally to Native American programs.” In addition, the recent EO 13990 and Secretarial Order 3399 also address environmental justice.

The CEQ guidelines specify that “Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis” (CEQ 1997). The members of the Navajo Nation meet the criteria of a minority population. In addition, poverty rates for the Navajo Nation and the three northeastern Arizona counties are substantially higher than the rest of Arizona. Together, these criteria warrant the Project area being considered an environmental justice population subject to environmental justice consideration under EO 12898.

Native Americans (referred to as American Indians by the Census Bureau, so that term is used throughout this section) are the single largest population group in northeastern Arizona (Table 1). The Coconino County racial and ethnic minority populations include the Navajo and Hopi within the county. The state of Arizona and Coconino County both have lower proportions of American Indian residents than on Navajo Tribal Trust Lands, as seen in Table 3-5. In the Project area, the vast majority of the minority population is American Indian. The Navajo Nation’s minority race population proportion is sufficient to be considered an environmental justice population. In addition, an EJScreen Report was run for the area around the gen-tie route. EJScreen was developed by the U.S. Environmental Protection Agency as an environmental justice mapping and screening tool that provides a nationally consistent dataset and approach for combining environmental and demographic indicators. The results of the screening confirm that the Project area qualifies as an environmental justice area.

Table 3-5. Minority Race Populations within the Project Area

Geographic Area	Percent Race			Percent Ethnicity
	American Indian	White (Alone)	Other Race(s)	Hispanic or Latino
Navajo Nation	95.2	1.9	0.9	2.1
Coconino County	27.4	65.7	6.9	45.9
State of Arizona	5.3	82.6	12.1	45.9

Source: U.S. Census Bureau 2020.

Poverty Rates for the Navajo Nation are substantially higher than in Coconino County and the state of Arizona (Table 3-6). High unemployment, low labor force participation, greater income disparity, and factors such as reliance on seasonal and part-time work are reflected in median household incomes (MHI) that are below the countywide and statewide levels. As shown in Table 3-6, the percent of families below the poverty level in the Navajo Nation are more than triple that of Coconino County and the state of Arizona. Similarly, the percent of individuals below the poverty level in the Navajo Nation are more than double that of Coconino County and the state of Arizona. The poverty rates for the Navajo Nation are sufficiently higher than the rates in Coconino County and Arizona to warrant being considered a low-income environmental justice population.

Table 3-6. Income and Poverty in Project Area

Geographic Area	Median Household Income (MHI)	Percent Household Income Less than \$25,000 per year	Percent Families Below Poverty Level	Percent Individuals Below Poverty Level
Navajo Nation	\$28,765	45	33.3	37.9
Coconino County	\$59,000	22.2	9.4	17.1
State of Arizona	\$61,529	18.2	10.1	14.1

Source: U.S. Census Bureau ACS, 2022

3.3.2 Environmental Consequences

3.3.2.1 No Action

Under the No Action Alternative, the Project would not be built and potential benefits to the Navajo Nation from the Project would not be realized.

3.3.2.2 Proposed Action

The proposed Project is being developed by and to benefit the Navajo Nation. The Project would provide indirect beneficial impacts of creating both jobs and revenue for the Navajo Nation and its members (see Section 3.6.2.2 below).

All physical impacts associated with the Project would occur on the Navajo Nation, but the Project would not disproportionately and negatively affect the Navajo Nation or its members. The Project would not result in significant adverse effects to human health or the environment, so it would not have disproportionately high or adverse effects on the environmental justice population.

3.3.2.3 Cumulative Effects

During the construction, operation, and decommissioning of this Project, the existing land uses in the area including high and low voltage transmission lines, SR 98, dirt roads, NGS demolition, tourism, and livestock grazing would be expected to continue. These uses and the proposed Project would have limited cumulative impacts on the local population as they all benefit the Navajo Nation and do not create high adverse health effects or environmental effects.

3.4 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in assets held in trust by the United States for the benefit of federally recognized Indian Tribes or individual tribal members. The United States, as trustee, protects and maintains the specific rights reserved by, or granted to, Indian tribes or individuals by treaties, statutes, and EOs.

ITAs may include lands, minerals, hunting and gathering rights, water rights, groundwater, and instream flows. Cultural and paleontological resources located on Indian trust lands also may be ITAs in some specific situations. The Secretary of the Interior is the Trustee and holds many assets in trust for the Navajo Nation.

3.4.1 Affected Environment

The Navajo Nation is a federally recognized Indian tribe whose reservation covers 12.5 million acres within New Mexico, Utah, and Arizona. The Navajo Reservation initially was established by treaty in 1868 and has been expanded by EOs in 1884, 1900, and 1930. The affected environment for Navajo Nation trust assets includes those trust assets that may be affected by the No Action or Proposed Action. These assets are located within the northwest portion of the Reservation, in Arizona (Figure 2). These assets include but are not limited to water rights, lands, minerals, and traditional land use, like grazing, hunting, and gathering. The project components that may affect ITAs include the gen-tie line, the interconnect at NGS Switchyard, and the NSTS.

The gen-tie corridor crosses lands where grazing permits have been issued by the Navajo Nation. The area is considered a Customary Use Area for various permittees where tribal members are authorized to graze a number of animal units identified in their grazing permits. There are no specific boundaries identified for each grazing permit or permittee. This is described more in the land use section below (Section 3.5).

3.4.2 Environmental Consequences

3.4.2.1 No Action

Under the No Action Alternative, the Project would not be built and trust resources in the area would continue to be subject to existing conditions.

3.4.2.2 Proposed Action

Navajo Nation land trust assets within the Project area that would be impacted under the Proposed Action include 53 acres (25.4 of those acres would be permanent and 27.6 acres would be temporary). The ROW associated with the gen-tie and interconnection would be issued by the Navajo Nation in accordance with 25 U.S.C. Section 415(e) and the Tribe's general leasing regulations. Thus, the affected lands would continue to be subject to tribal land policies, regulations, and laws. The Proposed Action would permanently occupy tribal trust land and some of these lands have been previously disturbed (including portions within the decommissioned NGS footprint and the existing ROWs in the area). The portion of the ROW within the NGS footprint is subject to the restoration requirements on the NGS lease but it is unclear whether traditional uses would be continued. In general, the use of the land affected by the Project ROW would change but the Navajo Nation would continue to benefit from the trust resource and no adverse impacts would occur with the change in use.

The Navajo Nation would economically benefit from the Proposed Action. In addition, the interconnection and gen-tie would support the development of renewable energy on Navajo Nation lands held in trust. The gen-tie and interconnection would encourage parties with queue positions at NGS to locate their projects on the Navajo Nation rather than surrounding lands.

Hunting and gathering, grazing, and other traditional land uses on the tribal trust lands crossed by the Project would continue. These activities could be temporarily interrupted for up to 12 to 16 months during construction of the Project and then again during decommissioning. Construction would move along the ROW so any traditional land uses in the area would be impacted for a short time at any individual location. Through their coordination with local residents and permittees before and during construction, NTUA would identify locals who could be using the area for traditional uses. During operations, hunting and gathering, grazing, and other traditional land uses would continue in the ROW and would only be negligibly affected. Overall, there would be no net loss to traditional land use rights from the construction, operation, and decommissioning.

The proposed Project would have direct and indirect impacts to Navajo Nation lands and associated vegetation and wildlife resources and associated hunting and gathering where the gen-tie line and roads are constructed. There would be a negligible, long-term impact to habitat utilized for hunting and gathering and for grazing forage as a result of the construction, operation, and decommissioning of the gen-tie and associated road. This effect is considered negligible as adjacent lands and the LeChee Chapter have a vast quantity of contiguous, Great Basin Desertscrub habitat available for traditional land use. In addition, construction of the Project would be coordinated with the grazing permittees to minimize potential conflicts. This is described in more detail in the Section 3.5 below.

3.4.2.3 Cumulative Effects

The proposed Project would have a negligible impact on ITAs. During the construction, operation, and decommissioning of this Project, the existing land uses in the area, including high and low voltage transmission lines, SR 98, dirt roads, NGS demolition, tourism, and livestock grazing, would be expected to continue. The proposed Project when combined with these uses would have limited cumulative impacts on ITAs as they all benefit the Navajo Nation and do not create major adverse effects on trust resources.

3.5 Land Use

3.5.1 Affected Environment

The existing condition of lands in the Project area include the recently demolished NGS facility in the northern part of the Project area near the NGS Switchyard. Roads, parking lots, and building foundations remain in this area along with remnants and debris from the recent demolition of the NGS facility.

Along the transmission line route, there are several existing land uses including high and low voltage transmission lines, SR 98, dirt roads, the BM&LP Railroad, livestock grazing, and fences associated with these uses.

The BM&LP Railroad was an electrified rail line constructed in the early 1970s specifically to deliver coal to fuel the NGS facility while it was operating. It is isolated from the national rail network and does not connect to any other railroad. The railroad's final delivery to the NGS was in 2019. The electrical components of the railway were dismantled between the winter of 2019 and fall of 2020. The Navajo Nation now owns the line and the tracks have remained in place to be evaluated for future use.

There is an existing 500 kV transmission line that generally follows the route of the proposed gen-tie, as well as the highway and railroad, for the entire proposed route. A lower voltage line parallels the west side of SR 98 for approximately the northern one-third of the route.

There are a few residences in the Project area. One residence is in the northern part near the NGS Switchyard. There are three other residences in the southern portion of gen-tie line, including one near the proposed ROW where the line is adjacent to and parallels the BM&LP Railroad.

Many of the residents graze cattle, sheep, goats, and other livestock as a food source and for income. Grazing occurs on the lands crossed by the proposed Project. As discussed above under ITAs (Section 3.4), the area is considered a Customary Use Area where tribal members are authorized to graze a number of animal units identified in their grazing permits issued by the Navajo Nation. In the area crossed by the proposed Project, there are eight active grazing permits along the gen-tie line and three grazing permits in process of being transferred (Table 3-7). There are no specific boundaries identified for each grazing permit or permittee.

Table 3-7. Grazing Permits within the Project Area

Permit Number	Date Issued	Sheep Units/Year Long
Active Grazing Permits		
1-1867	1997	55
1-1877	1997	55
1-1950	2001	67
1-1648	1990	140
1-1423	1981	20
1-1643	1990	27
1-1521	1984	15
1-1520	1984	15
Grazing Permits in Process of Transfer		
1-1698	1992	106
1-1085	1957	66
1-1801	1995	45

The tourism industry is a large contributor to the economy of the surrounding area. Antelope Canyon Tribal Park is located on Navajo Nation lands immediately to the west and north of the northern part of the ROW near the NGS Switchyard. Guided tours are required to visit the canyon and several Navajo Nation-owned tourism businesses that offer guided tours of Antelope Canyon have parking/staging areas located along SR 98 in this area. Two occur along the highway in the southern portion of the route but most of these are north and west of the proposed Project near the recently demolished NGS site. The section of SR 98 that crosses through the Project area was designated as the Naa'tsis'aaan (Navajo Mountain) Scenic Byway in 2005.

The proposed Project is located within the LeChee Chapter of the Navajo Nation. The LeChee Chapter community development objectives related to land use include enhancing rangelands to support livestock grazing and developing water capture systems for farming and domestic use.

3.5.2 Environmental Consequences

3.5.2.1 No Action

Under the No Action Alternative, the Project would not be built, and land uses in the area would continue to be subject to existing conditions.

3.5.2.2 Proposed Action

Existing land uses near the proposed Project would not be impacted by its construction, operation, maintenance, and decommissioning. In the northern part of the proposed ROW, located on the former NGS facility, construction of the Project would be coordinated to avoid potential conflicts with any residual activities at the demolished NGS facility near the NGS Switchyard.

The proposed Project would cross each of the existing ROWs (i.e., high-voltage line, low-voltage line, railroad, dirt roads, and highway ROW), and the locations of those crossings are shown on the detailed maps of the proposed route shown in Appendix B. These crossings would be coordinated with each ROW-holder to ensure the Project would not negatively affect any of these existing ROWS during construction, operation, maintenance, and decommissioning.

Traffic associated with workers, equipment, and material deliveries could cause a small temporary increase to traffic on SR 98 during construction of the Project. In addition to the minor traffic impacts expected from general project construction, traffic on the highway would be temporarily affected during the stringing of the transmission conductor across it. During this crossing, temporary traffic control, speed reductions, and intermittent traffic stops would be required for the safety of the public and workers, and these measures would be developed in consultation with the Arizona Department of Transportation (ADOT). Tourists and local residents are not expected to be impacted by the Project except for the short traffic delays that could occur during the few days when the line is strung across the highway and local roads.

Grazing in the immediate vicinity of the proposed route could be temporarily affected during the short duration of construction activities along the ROW. Activities at individual structure locations would occur over several weeks at intervals over the course of construction (site preparation, structure assembly/erection, stringing, and restoration), so access to the grazing allotments would be limited within the proposed ROW. Following construction, because the ROW would not be fenced, grazing would continue within the ROW. A negligible, long-term impact to grazing is expected during operation of the Project from the loss of 25.4 acres that would be disturbed by structure sites and ROW access. Because of this being a Customary Use Area without defined permit boundaries, this small amount of forage loss is not expected to have a measurable impact on any individual permittee(s).

In addition to minor traffic delays when roads are crossed by the gen-tie line during construction, local residents could be minimally impacted by construction noise and dust when construction activities are being conducted nearby. Because of the way transmission line constructions moves along the ROW, these localized impacts are expected to be short in duration for any one location.

Construction of the Project would be coordinated with the grazing permittees and local residents to minimize potential conflicts. NTUA is in the early stages of their standard practice of engaging with residents and grazing permit holders within the proposed Project area. Prior to construction, NTUA would obtain consent from those residents and grazing permittees impacted by the proposed ROW.

3.5.2.3 Cumulative Effects

The proposed Project would have limited short-term effects on local land uses. During the construction, operation, and decommissioning of this Project, the existing land uses in the area, including the NGS demolition, high and low voltage transmission lines, SR 98, existing dirt roads, tourism, and livestock grazing would be expected to continue. The proposed Project coupled with these continued uses would have a negligible cumulative impact on land use.

3.6 Socioeconomics

3.6.1 Affected Environment

The proposed Project is in northern Coconino County on tribal trust lands where ROW would be obtained from the Navajo Nation. Many of the people in the area live in the city of Page and in the LeChee Chapter of the Navajo Nation.

The tribal government is the largest employer on the Navajo Nation employing almost 5,000 people. Primary and secondary schools that operate on the Navajo Nation along with tribal enterprise operations owned and operated by the Tribe also employ many people. The NTUA supplies electricity, water, natural gas, wastewater treatment, and solar power to residents, the tribal government, and other commercial and industrial customers.

Recently, the closure the NGS facility eliminated the associated socioeconomic benefits to the Tribe and its residents. The NGS facility was in operation on tribal trust lands leased from the Navajo Nation. The NGS employed approximately 548 workers, with Native Americans making up approximately 81 percent (NREL 2016). Average annual wages of NGS workers ranged between \$70,000 and \$74,000. Due to the closure of NGS, these high paying job losses have had a major, adverse impact on the region (Coconino County, 2018).

Table 3-8. Population on Navajo Nation, Coconino County, and Arizona

Geographic Area	Population					Percent Change	
	2010	2013	2015	2018	2020	2010-2020	2015-2020
Navajo Nation	169,052	173,998	173,822	172,875	173,558	2.7	-0.2
Coconino County	131,824	134,795	136,701	140,217	142,254	8.0	4.0
State of Arizona	6,246,816	6,479,703	6,641,928	6,946,685	7,174,064	14.8	8.0

As shown in Table 3-8, the population of the Navajo Nation has decreased in the past five years, in contrast to Coconino County and Arizona which have both increased. In the past 10 years, the populations of Coconino County and Arizona have increased quite a bit more than that of the Navajo Nation. Arizona's population is expected to increase by 40.7 percent between 2020 and 2050; an increase of approximately 2.9 million people (ACA 2017). The population projections for Coconino County indicate slower growth than those for the state, approximately 15 percent between 2020 and 2050 (ACA 2017). Due to the decreasing trend in population in the Navajo Nation, it can be expected that the Navajo Nation will likely experience slower population growth than Coconino County. The pursuit of education, employment, and the lack of available housing on the reservation are among the factors cited for emigration from the reservations (Navajo Housing Authority 2011).

The Navajo Nation average household size is larger than those in Arizona and the United States. The proportions of multigenerational households are more than double on the Navajo Nation than in Coconino County and Arizona (USCB 2010). This is an indicator both of the strong family structures emphasized in Navajo traditions and of economic dependence among extended family members.

Employment and Income

Unemployment in the Navajo Nation is significantly higher and workforce participation is lower than in Arizona and Coconino County (Table 3-9).

Table 3-9: Labor Force Participation, Employment, and Unemployment, 2016-2020

Geographic Area	Percent Labor Force Participation	Civilian Labor Force	Unemployed	Percent Unemployed
Navajo Nation	40.4	57,362	27,533	48
Coconino County	61.5	89,206	3,479	3.9
State of Arizona	59.7	4,343,960	156,382	3.6

Source: U.S. Census Bureau 2020.

As discussed above, the high unemployment on the Navajo Nation can in part be attributed to the closure of the NGS facility. The Navajo Nation benefitted from employment from the NGS, and the associated lease and royalty payments. The direct, indirect, and induced employment and economic benefits from the NGS increased the standard of living on the Navajo Nation.

3.6.2 Environmental Consequences

3.6.2.1 No Action

Under the No Action Alternative, the Project would not be built and potential socioeconomic benefits to the Navajo Nation and nearby communities from the Project would not be realized.

3.6.2.2 Proposed Action

Construction of the Project would provide a short-term, direct beneficial impact on employment in the area and a negligible, long-term, indirect beneficial impact during operations. Many of the workers employed during the 12 to 16-month construction of the Project would be specialized in high-voltage construction, and they would come from outside the area and would stay in the Project area during construction. The workers would be supported by local contractors who would employ general labor from the local labor pool. Operation of the Project would be conducted by NTUA personnel.

The local workforce would include Navajo Nation members and possibly others from the Page area. This employment could temporarily help offset the jobs lost by the closing of NGS. Under the

Navajo Preference in Employment Act and because NTUA is building the line, it is expected that most of the construction jobs for the transmission line and any interconnected solar projects would be Navajo Nation members. The NTUA is targeting to have at least 75 percent of the construction jobs go to tribal members.

Most of the earnings of the local labor force would be recycled back into the local economy through spending of disposable income. In addition, non-local workers would provide a temporary stimulus to the local economy as they spend their per diem money on hotels, meals, and consumables. This spending in the area would also support local jobs.

During construction, the Project could also generate additional indirect non-recurring contributions to the Navajo Nation's revenue from the sale of water, aggregate, and other materials.

Over the life of the Project, the Navajo Nation would receive long-term benefits from the Project ROW payment(s). In addition, the Navajo Nation could benefit from lease payments associated with the solar projects that could interconnect to the Project using the gen-tie line. This long-term, predictable revenue could be used by the Navajo Nation to expand social programs, economic development, resource protection, and other programs that would benefit the Navajo Nation and its members.

3.6.2.3 Cumulative Effects

Over its life, the Project would have a minor long-term beneficial economic effect on the Navajo Nation. During the construction, operation, and decommissioning of this Project, the existing land uses in the area, including the demolition of NGS, high and low voltage transmission lines, SR 98, existing dirt roads, tourism, and livestock grazing would be expected to continue. These uses each provide socioeconomic benefit to the Navajo Nation and its members. Collectively, the proposed Project and the continued existing uses would result in minor cumulative impacts on socioeconomics.

4.0 Consultation and Coordination

4.1 Permits to be Acquired

NTUA, in coordination with Reclamation, would acquire all applicable permits (Section 401, 402, and 404) under the national and Navajo Nation Clean Water Acts prior to construction, operation, and decommissioning, should it be required.

NTUA would seek ROW for the gen-tie and interconnection from the Navajo Nation. Additionally, NTUA would coordinate with existing ROW holders where the Project would cross existing ROW.

4.2 List of Preparers

Nichole Olsker, Bureau of Reclamation, Environmental Protection Specialist
 Sean Heath, Bureau of Reclamation, Environmental Division Manager
 Carol Evans, Bureau of Reclamation, Wildlife Biologist
 Lauren Jelinek, Bureau of Reclamation, Archaeologist
 Randy Schroeder, Project Manager for ENValue
 Pat Golden, Biologist, Heritage Environmental Consultants
 Rachel Clark, GIS for ENValue

4.3 Agencies and Persons Consulted

Reclamation submitted scoping information to the following entities during development of the EA. The names of individuals that were notified of the NEPA review and/or submitted comments are part of the administrative record. Those names are available upon request.

Native American Communities:

Navajo Nation
 The Hopi Tribe
 Pueblo of Zuni
 Chemehuevi Indian Tribe
 Kaibab Band of Paiute Indians
 Moapa Band of Paiute Indians
 Ute Mountain Ute
 Paiute Indian Tribe of Utah

Local Agencies:

City of Page
 Coconino County

State Agencies:

Arizona Department of Transportation
Arizona Game and Fish Department
Arizona State Historic Preservation Office

Federal Agencies:

Bureau of Indian Affairs
U.S. Fish and Wildlife Service
National Park Service
Federal Highway Administration
Navajo Area Indian Health Service
Western Area Power Administration

Conservation and Environmental Organizations:

Audubon Society
Center for Biological Diversity
National Parks Conservation Association
Sierra Club Sonoran Institute
The Nature Conservancy
Arizona Wildlife Federation

5.0 Reference List

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APPENDIX A. NEPA SCOPING LETTER



United States Department of the Interior



BUREAU OF RECLAMATION
Phoenix Area Office
6150 West Thunderbird Road
Glendale, AZ 85306-4001
MAR 11 2022

IN REPLY REFER TO:
PXA0-1500
2.1.4.17

VIA ELECTRONIC MAIL AND U.S. MAIL

Memorandum

To: All Interested Persons, Organizations, and Agencies

From: Leslie A. Meyers
Area Manager

LESLIE
MEYERS

Digitally signed by
LESLIE MEYERS
Date: 2022.03.02
13:30:26 -07'00'

Subject: Notice of Public Scoping for an Environmental Assessment (EA) on the Proposed Arizona Public Service (APS) Queue 255 Interconnection and Gen-Tie Project (Project), on the Navajo Nation in Coconino County, Arizona (Action by 15 days from the date of this memorandum)

The Navajo Tribal Utility Authority (NTUA) and 8 Minute Energy (8ME) are proposing to construct, operate, and maintain the APS Queue 255 Interconnection and Gen-Tie Project (Project) located on the Navajo Nation near Page, Arizona (Figure 1). The Project would interconnect the proposed Red Antelope Solar Project, also located on the Navajo Nation (Nation), to the Navajo Generating Station (NGS) Switchyard. 8ME has filed an interconnection request with APS at the NGS Switchyard for the solar project. The NTUA would construct and operate the Interconnection and Gen-Tie Project, which would include three approximately 12-mile 500kV gen-tie lines that will deliver the energy to the point of interconnection (Figure 1). NTUA would also acquire the necessary right-of-way (ROW) from the Nation for the proposed interconnection and gen-tie. The NGS Switchyard is part of the Navajo Southern Transmission System (NSTS), which is partially owned by the federal government. The Bureau of Reclamation is responsible for the federal interest in the NSTS and must approve the interconnect into the NGS Switchyard.

Reclamation is preparing an Environmental Assessment (EA) as required under the National Environmental Policy Act (NEPA) that would consider the impacts of Reclamation's approval of the interconnection at the switchyard as well as impacts from the gen-tie lines. Reclamation is requesting public input to help identify issues and concerns associated with the proposed Project. This information will be used to analyze the environmental impacts of the project.

INTERIOR REGION 8 • LOWER COLORADO BASIN

ARIZONA, CALIFORNIA*, NEVADA*

* PARTIAL

The major components of the Interconnection and Gen-Tie Project include transmission lines and associated elements, interconnection facilities at the NGS Switchyard, and related communications facilities. The Project would be built as a double-circuit 500kV line and adjacent single-circuit 500kV line that would use lattice, H-frame, or single steel pole structures. The proposed route for the Project parallels an existing railroad and would utilize existing roads where available. For most of the route, a new road would be built within the transmission ROW to be acquired from the Nation, in order to access work areas for the new Project transmission structures. Where the transmission lines parallel existing roads, spur or off-shoot roads would be constructed from the existing roads to each structure location. Both new roads and spur roads would be approximately 20 feet wide and would be located within the ROW for the transmission line. All work associated with the Project interconnection at the NGS Switchyard would be done inside the switchyard's fencing and would be limited to up to 3 acres of disturbance within this previously disturbed site.

Reclamation has determined that an EA is the appropriate level of review under NEPA. The EA will evaluate the impacts of the proposed action on the human and natural environments. As part of this EA process, Reclamation is seeking your participation in identifying any potential issues or concerns with the proposed activity. Comments should be submitted to APS Queue 255 Interconnection and Gen-Tie, 2514 Tournament Drive, Castle Rock, CO 80108, or via email to rschroeder@envalue.us, no later than 15 days from the date of this memorandum.

Please be aware that by law, your name, address, and other personal identifying information may be made publicly available at any time. Individuals may request that their personal identifying information be withheld from public review by stating so prominently at the beginning of your comment. We cannot guarantee that we will be able to do so; however, we will honor your request to the extent allowable by law. All comments from organizations or businesses will be available for public inspection in their entirety.

For additional information regarding this memorandum, please contact Ms. Nichole Olsker, Environmental Protection Specialist, Reclamation's Phoenix Area Office, at (480) 216-9914 or via email at nolsker@usbr.gov.

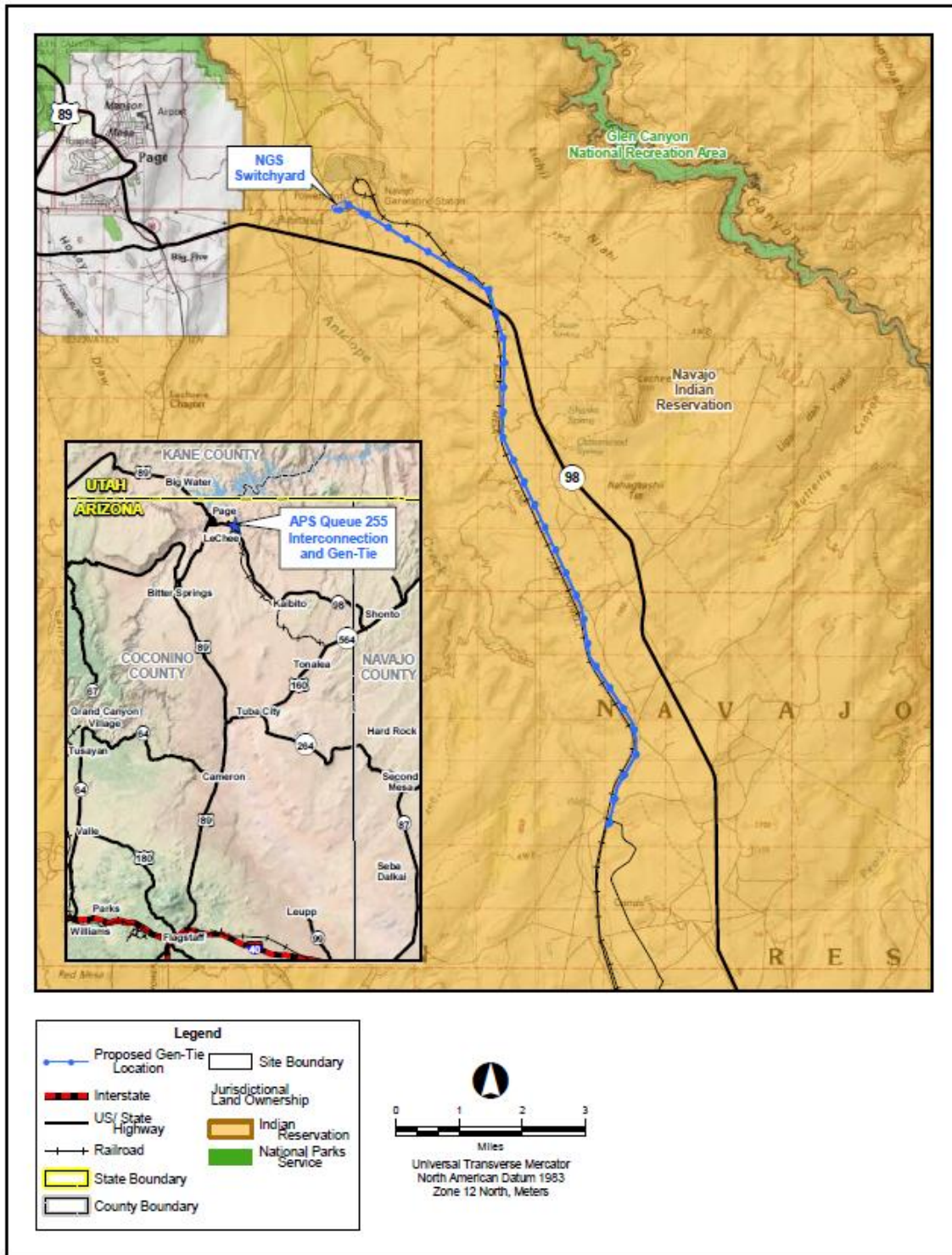


Figure 1. APS Queue 255 Interconnection and Gen-Tie Project Location.

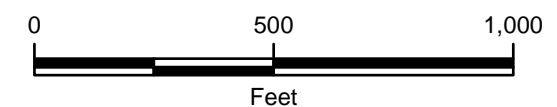
APPENDIX B. DETAILED PROJECT MAPBOOK



- Legend**
- Project Components**
- Estimated Structure Location
 - Proposed Gen-Tie
 - Proposed Access Road
 - ROW - 200ft
 - ▭ Proposed Pull Site Location
 - ▭ Laydown Area
- General Features**
- State Highway
 - Railroad
 - Existing Access Road

Page Number: 1

1 inch = 401 feet



Universal Transverse Mercator
North American Datum 1983
Zone 12 North, Meters

**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
Locations**

Map Extent: Coconino County, Arizona

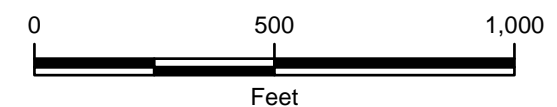
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- Legend**
- Project Components**
- Estimated Structure Location
 - Proposed Gen-Tie
 - Proposed Access Road
 - ROW - 200ft
 - Proposed Pull Site Location
 - Laydown Area
- General Features**
- State Highway
 - +— Railroad
 - - - - Existing Access Road

Page Number: 2

1 inch = 400 feet



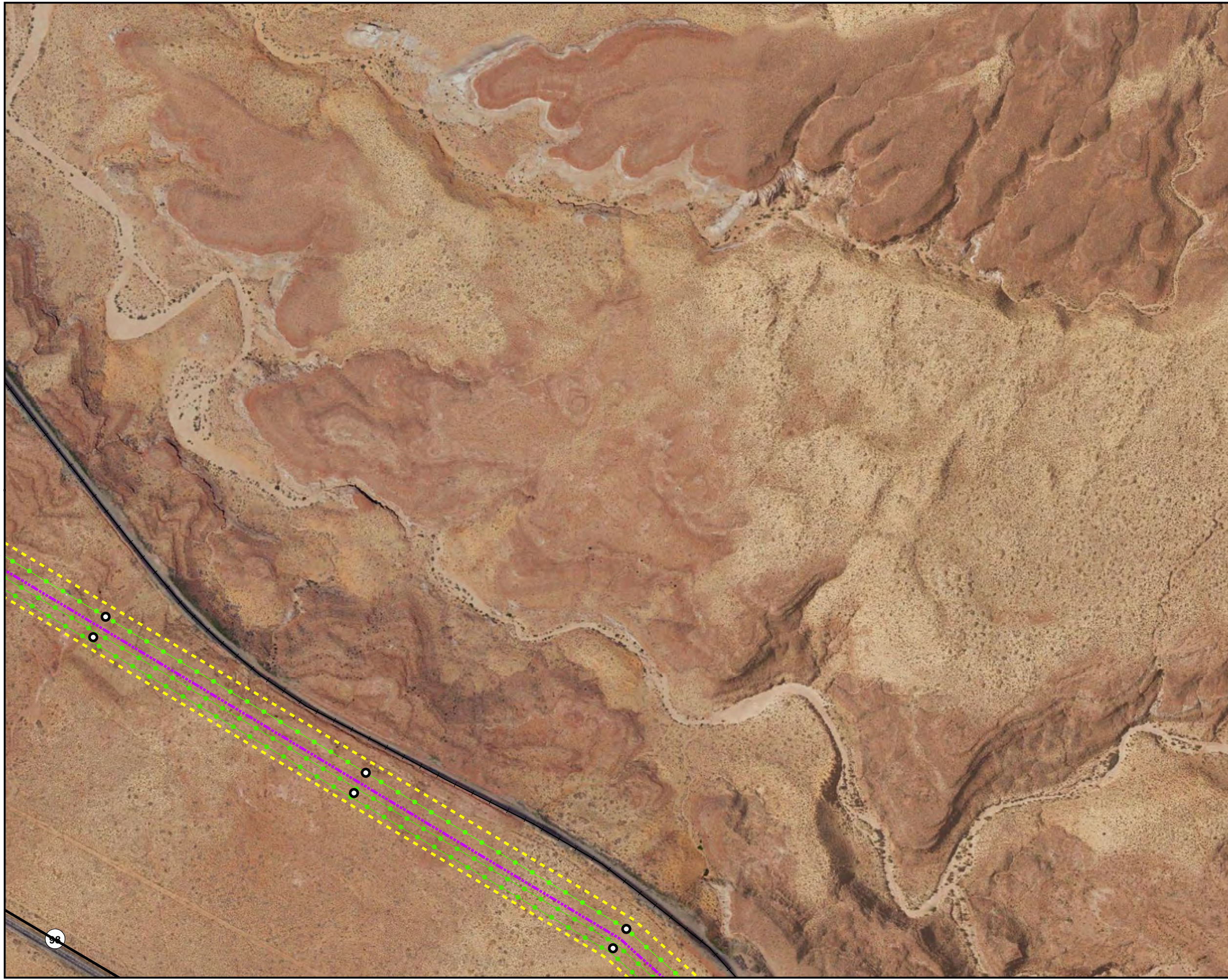
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**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
Locations**

Map Extent: Coconino County, Arizona

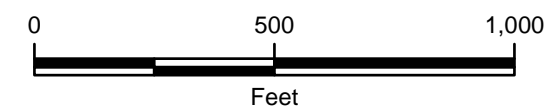
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- Legend**
- Project Components**
- Estimated Structure Location
 - Proposed Gen-Tie
 - - - Proposed Access Road
 - - - - - ROW - 200ft
 - ▭ Proposed Pull Site Location
 - ▭ Laydown Area
- General Features**
- State Highway
 - + + + Railroad
 - - - - - Existing Access Road

Page Number: 3

1 inch = 400 feet



Universal Transverse Mercator
North American Datum 1983
Zone 12 North, Meters

**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
Locations**

Map Extent: Coconino County, Arizona

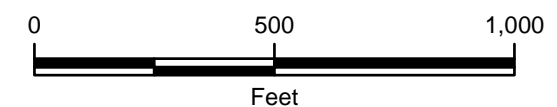
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- Legend**
- Project Components**
- Estimated Structure Location
 - Proposed Gen-Tie
 - Proposed Access Road
 - ROW - 200ft
 - Proposed Pull Site Location
 - Laydown Area
- General Features**
- State Highway
 - +— Railroad
 - - - Existing Access Road

Page Number: 4

1 inch = 400 feet



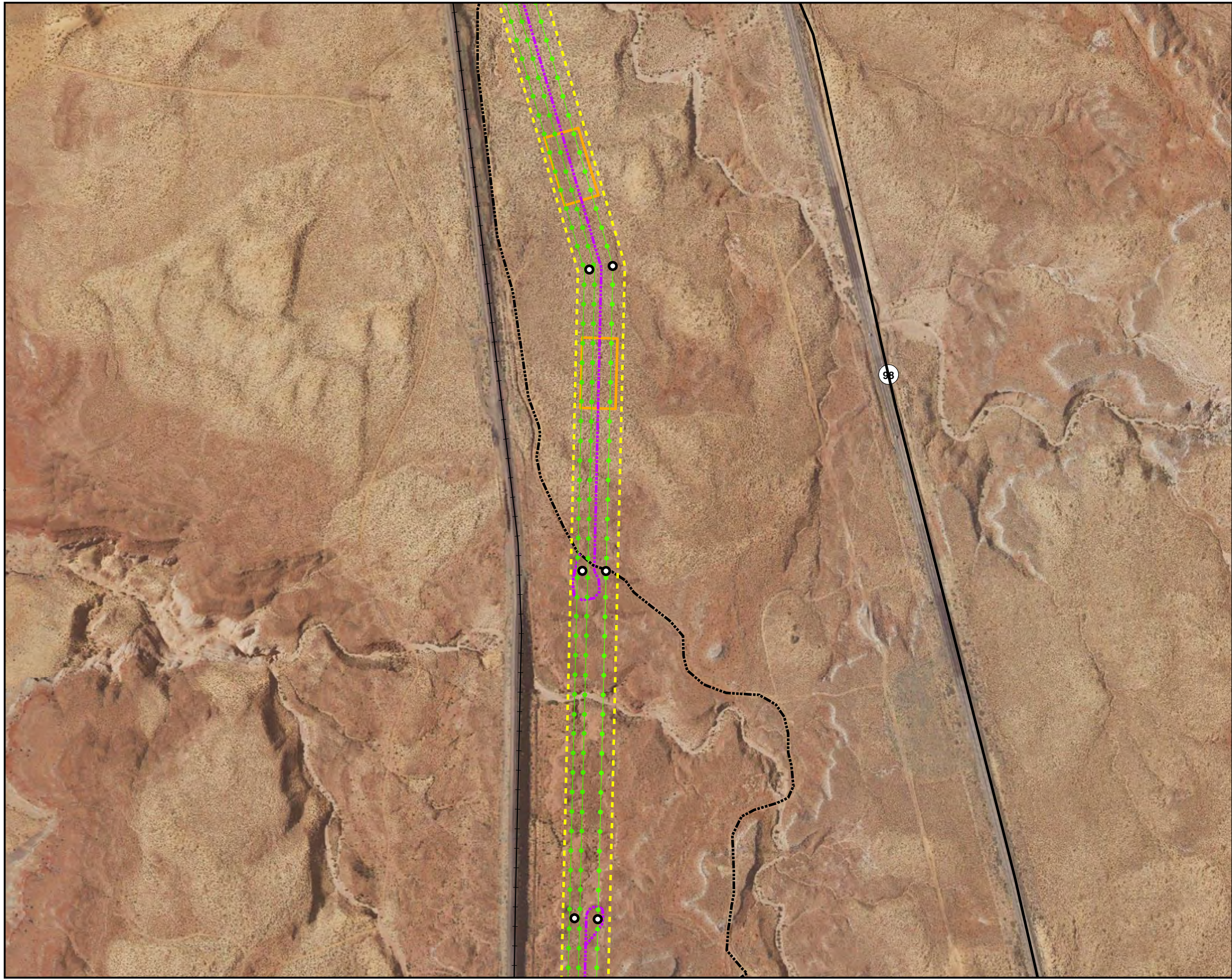
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**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
Locations**

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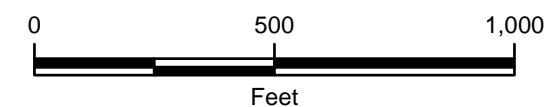
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- Legend**
- Project Components**
- Estimated Structure Location
 - Proposed Gen-Tie
 - Proposed Access Road
 - ROW - 200ft
 - ▭ Proposed Pull Site Location
 - ▭ Laydown Area
- General Features**
- State Highway
 - +— Railroad
 - - - - Existing Access Road

Page Number: 5

1 inch = 400 feet

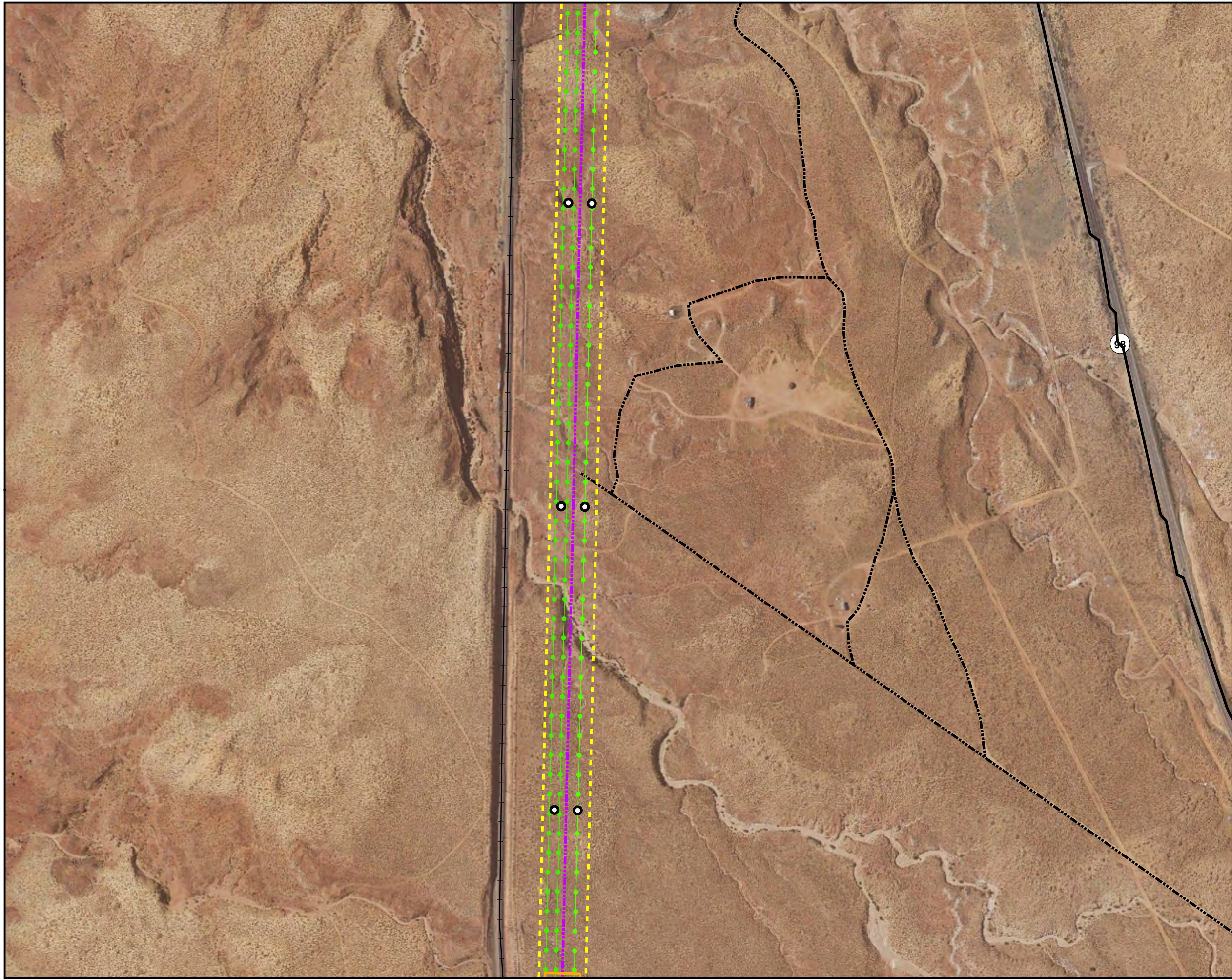


Universal Transverse Mercator
North American Datum 1983
Zone 12 North, Meters

**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
Locations**

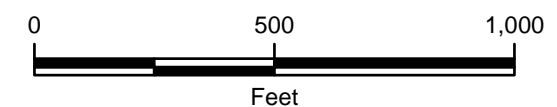
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- Legend**
- Project Components**
- Estimated Structure Location
 - Proposed Gen-Tie
 - - - Proposed Access Road
 - - - - - ROW - 200ft
 - ▭ Proposed Pull Site Location
 - ▭ Laydown Area
- General Features**
- State Highway
 - + + + Railroad
 - · - · - Existing Access Road

Page Number: 6

1 inch = 400 feet

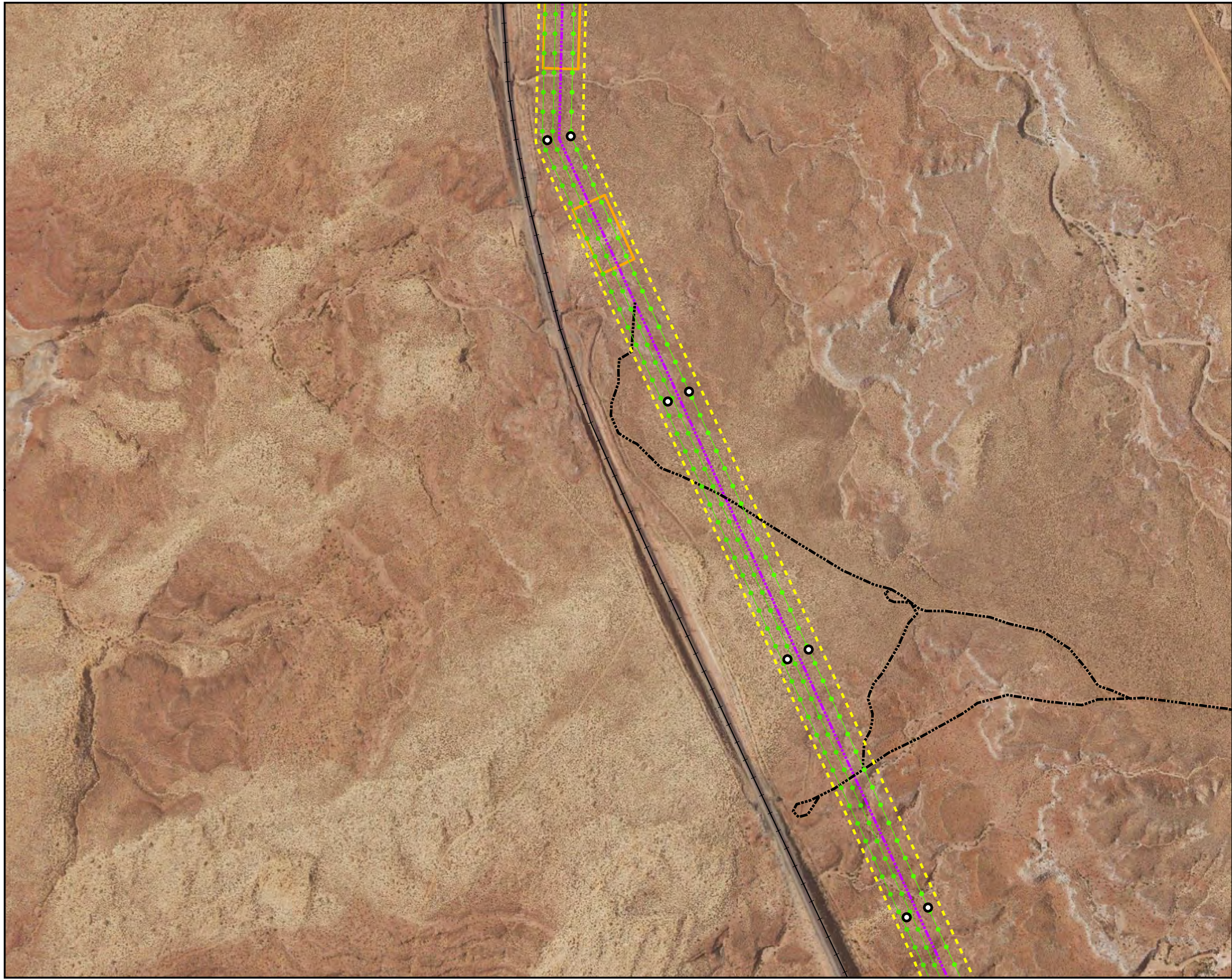


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**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
Locations**

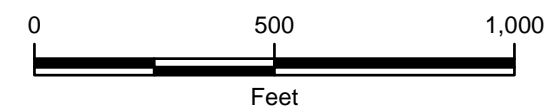
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- Legend**
- Project Components**
- Estimated Structure Location
 - Proposed Gen-Tie
 - - - Proposed Access Road
 - (Yellow dashed) ROW - 200ft
 - (Orange) Proposed Pull Site Location
 - (Red) Laydown Area
- General Features**
- State Highway
 - + - Railroad
 - · - · - Existing Access Road

Page Number: 7

1 inch = 400 feet

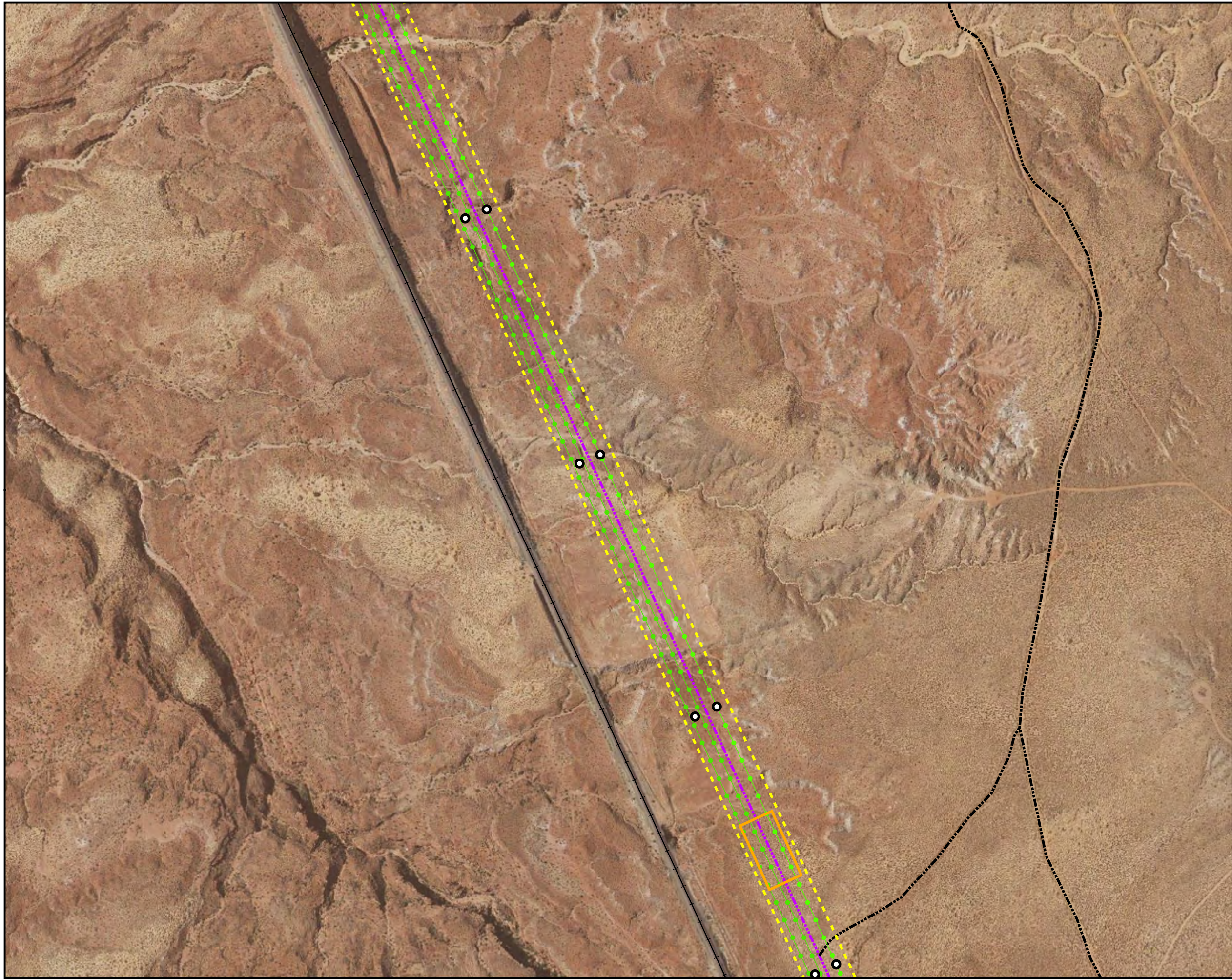


Universal Transverse Mercator
North American Datum 1983
Zone 12 North, Meters

**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
Locations**

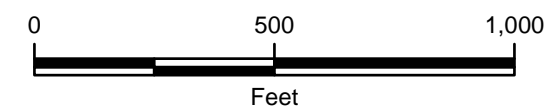
Map Extent: Coconino County, Arizona		
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- Legend**
- Project Components**
- Estimated Structure Location
 - Proposed Gen-Tie
 - - - Proposed Access Road
 - - - - - ROW - 200ft
 - ▭ Proposed Pull Site Location
 - ▭ Laydown Area
- General Features**
- State Highway
 - + - Railroad
 - · - · - Existing Access Road

Page Number: 8

1 inch = 400 feet

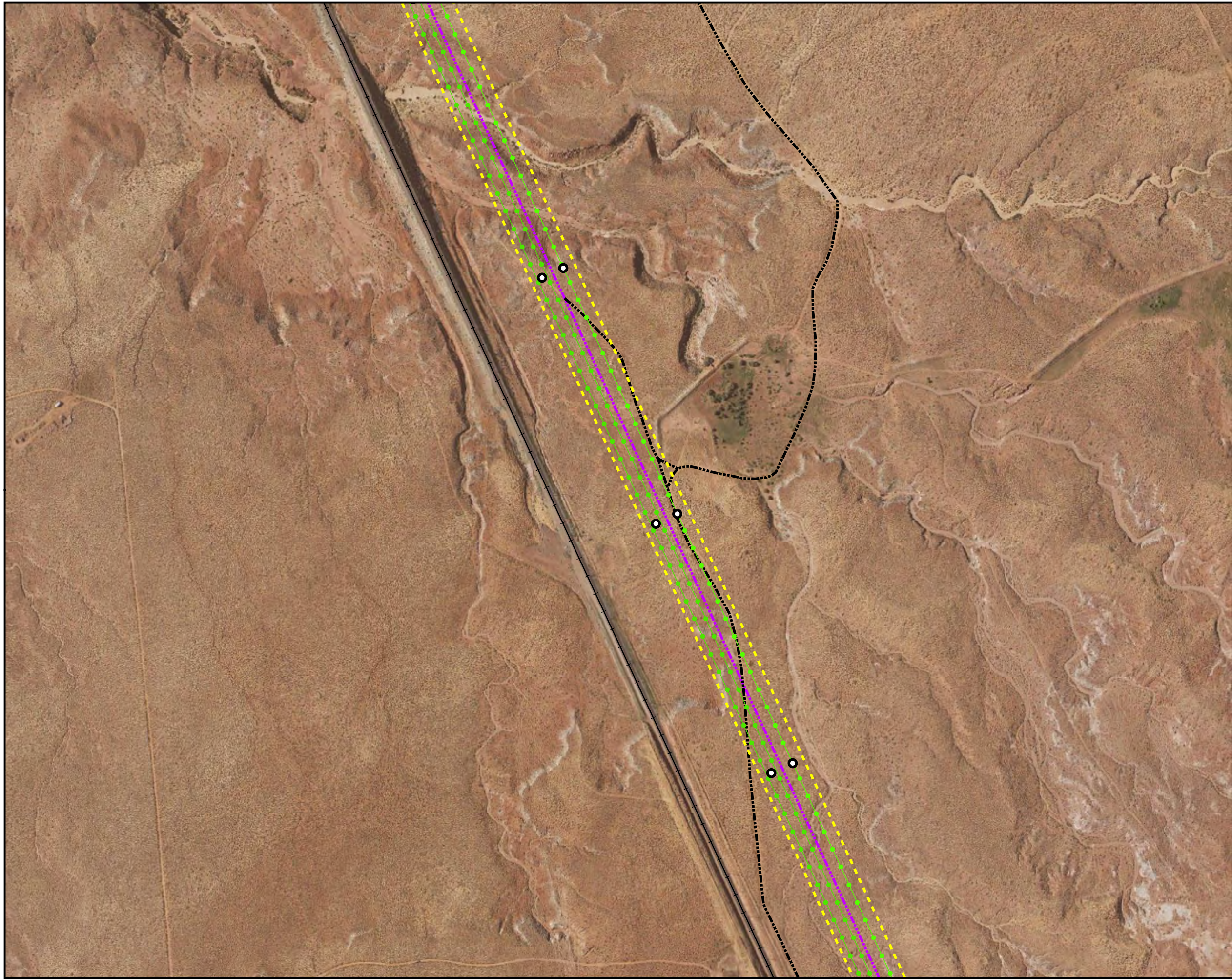


Universal Transverse Mercator
North American Datum 1983
Zone 12 North, Meters

**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
Locations**

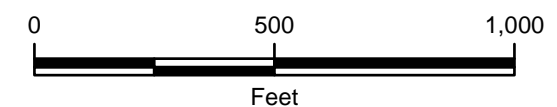
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- Legend**
- Project Components**
- Estimated Structure Location
 - Proposed Gen-Tie
 - Proposed Access Road
 - - - - - ROW - 200ft
 - Proposed Pull Site Location
 - Laydown Area
- General Features**
- State Highway
 - + + + Railroad
 - - - - - Existing Access Road

Page Number: 9

1 inch = 400 feet

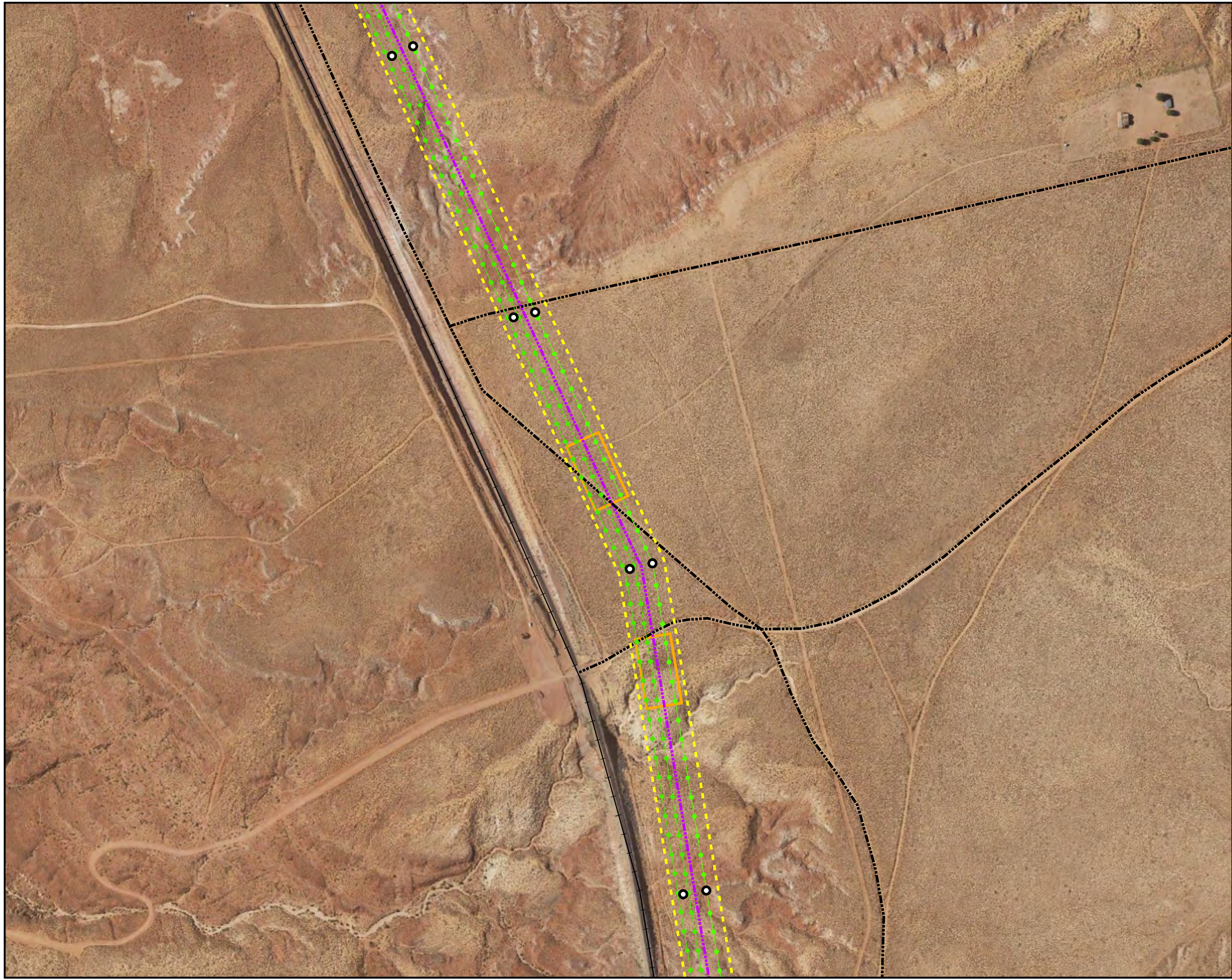


Universal Transverse Mercator
North American Datum 1983
Zone 12 North, Meters

**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
Locations**

Map Extent: Coconino County, Arizona		
Date: 07-18-22		Author: mc
G:\MXD's\Project Location_071822.mxd		



- Legend**
- Project Components**
- Estimated Structure Location
 - Proposed Gen-Tie
 - Proposed Access Road
 - - - - - ROW - 200ft
 - ▭ Proposed Pull Site Location
 - ▭ Laydown Area
- General Features**
- State Highway
 - +— Railroad
 - · - · - Existing Access Road

Page Number: 10

1 inch = 400 feet

Feet

Universal Transverse Mercator
North American Datum 1983
Zone 12 North, Meters

**APS Queue 255
Interconnection and Gen-Tie**

*Gen-Tie Feature
Locations*

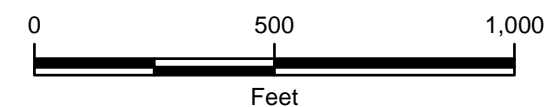
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Date: 07-18-22		Author: mc
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- Legend**
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Page Number: 11
 1 inch = 400 feet



Universal Transverse Mercator
 North American Datum 1983
 Zone 12 North, Meters

**APS Queue 255
 Interconnection and Gen-Tie**

**Gen-Tie Feature
 Locations**

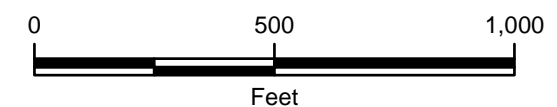
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Date: 07-18-22		Author: mc
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- Legend**
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 - - - Proposed Access Road
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 - ▭ Proposed Pull Site Location
 - ▭ Laydown Area
- General Features**
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 - + - Railroad
 - · - · - Existing Access Road

Page Number: 12

1 inch = 400 feet



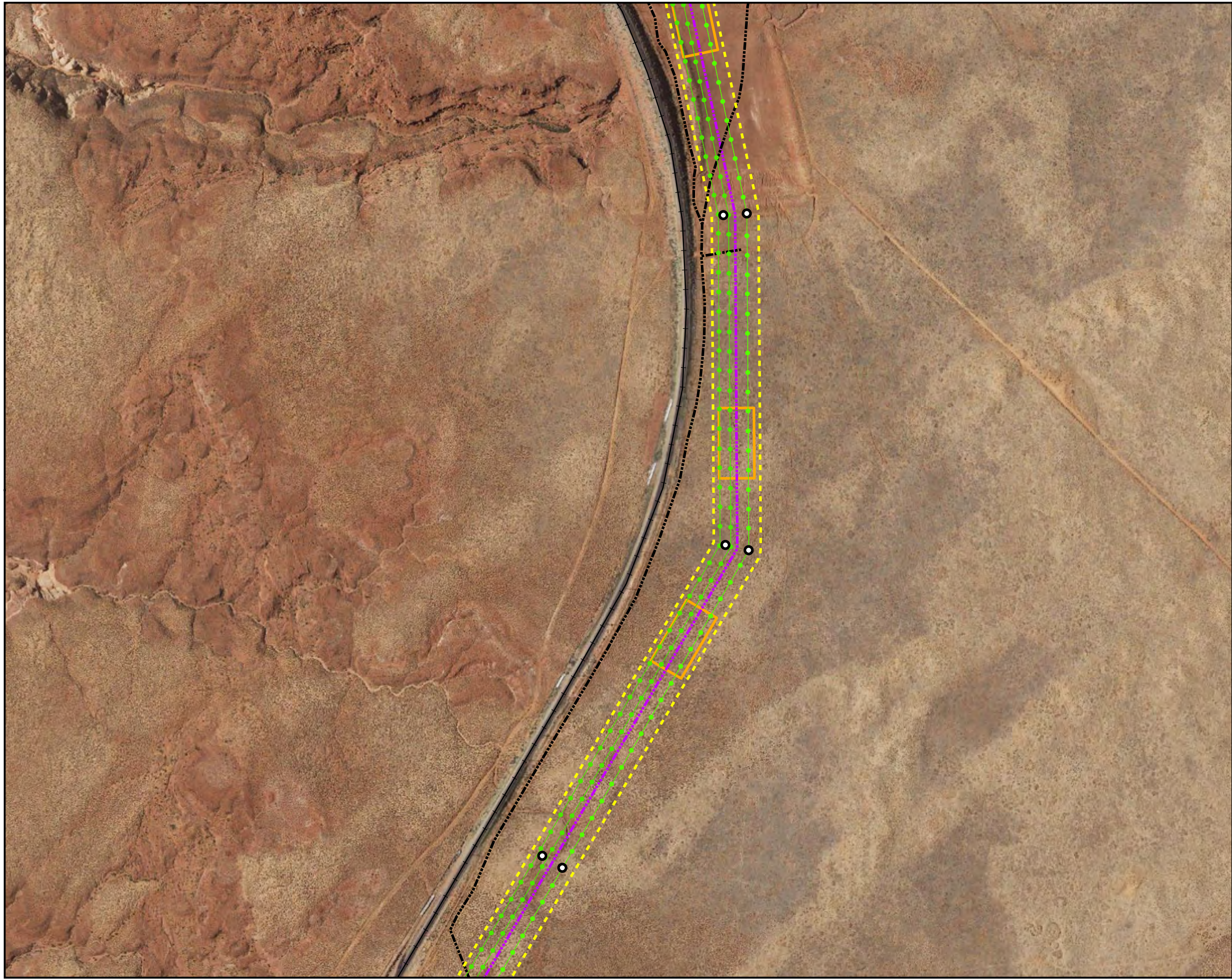
Universal Transverse Mercator
North American Datum 1983
Zone 12 North, Meters

**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
Locations**

Map Extent: Coconino County, Arizona

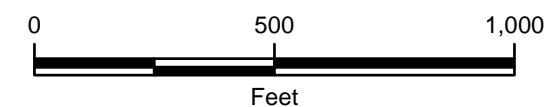
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- Legend**
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 - ▭ Laydown Area
- General Features**
- State Highway
 - + - Railroad
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Page Number: 13

1 inch = 400 feet



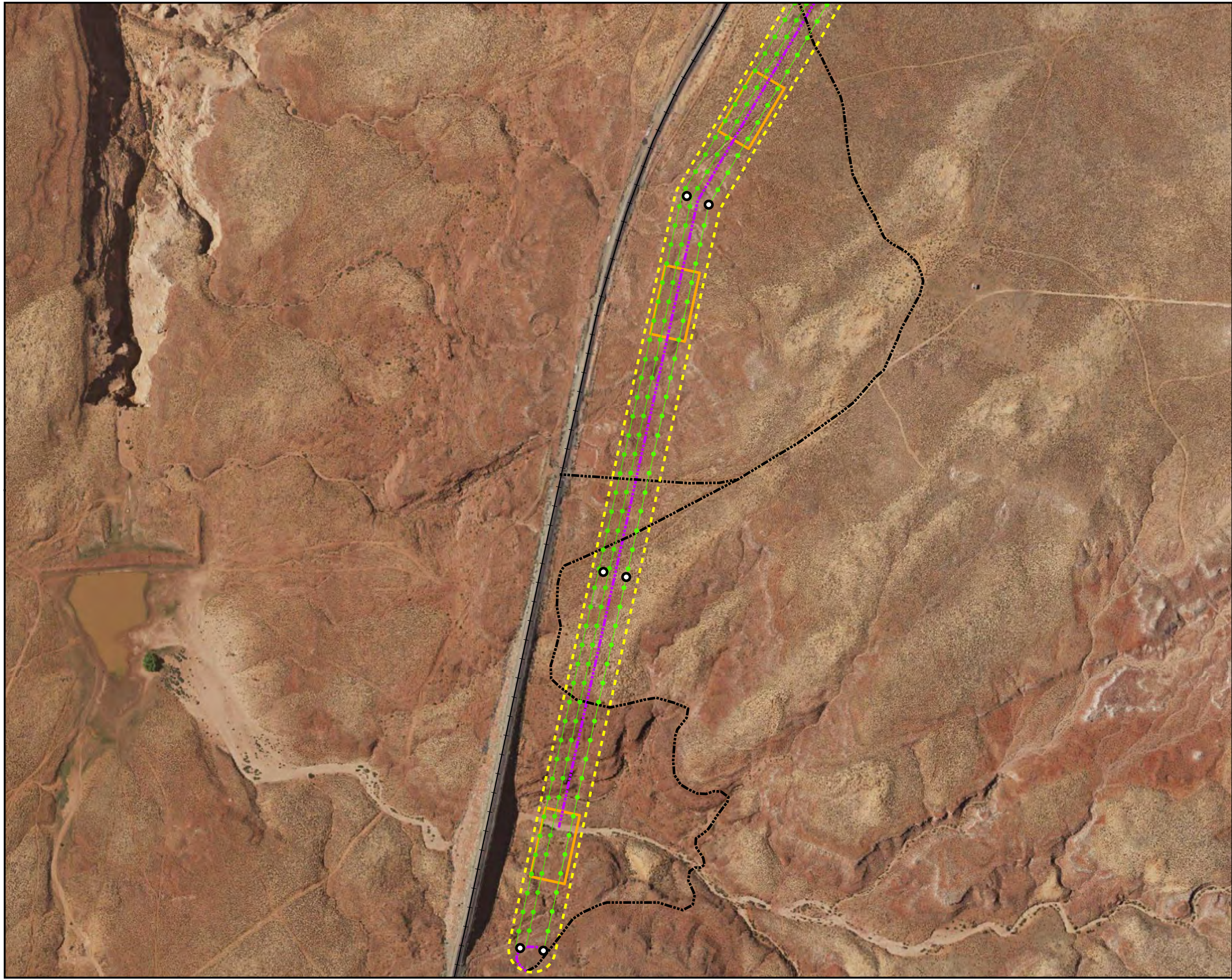
Universal Transverse Mercator
North American Datum 1983
Zone 12 North, Meters

**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
Locations**

Map Extent: Coconino County, Arizona

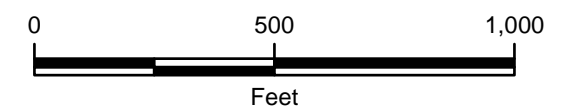
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- Legend**
- Project Components**
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Page Number: 14

1 inch = 400 feet



Universal Transverse Mercator
North American Datum 1983
Zone 12 North, Meters

**APS Queue 255
Interconnection and Gen-Tie**

**Gen-Tie Feature
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APPENDIX C. APPLICANT-PROPOSED MITIGATION AND BMPs

Navajo Tribal Utility Authority
Applicant-Proposed Mitigation and Best Management Practices (BMPs)
TRANSMISSION PROJECT

SOILS / EROSION

Grading would be minimized to only those areas where necessary to meet the construction and operational requirements of the Project.

Construction engineering and design will incorporate stormwater pollution prevention plan (SWPPP) that would include BMPs and other erosion-control measures designed to minimize soil erosion and limit sheet flow and downstream sedimentation. The SWPPP would also incorporate adaptive management actions if erosion and sedimentation control measures are found to be insufficient to control surface water at the site.

A Restoration Plan would be implemented as needed to limit impacts to temporary disturbance areas as much as practicable.

HYDROLOGY / WATER QUALITY

The number of drainage crossings would be minimized to the extent possible and each would be designed to accommodate adequate flow.

Post-storm monitoring of erosion and sedimentation would be conducted during construction. If localized gullies were to develop or result in increased rates of erosion and sedimentation, repairs would be made, and erosion and sedimentation control measures would be updated if needed.

Transmission structures (e.g., project substation) will be located outside of major drainages to the extent practical.

A Spill Prevention, Control, and Countermeasure (SPCC) plan would be developed and implemented during construction phase of the Proposed Project. The Plan would also provide for hazardous material spill prevention and clean-up measures, were a spill to occur.

AIR QUALITY

The area of grading and vegetation removal would be limited to only that area required for Project construction and operation.

Ground disturbing activities would be undertaken in accordance with the applicable dust control plan(s) to minimize fugitive dust emissions.

Ground disturbing activities would be phased where appropriate to limit the amount of disturbance at any one time.

Water would be applied to disturbed areas to control dust and facilitate soil compaction, where necessary. Approved palliatives would be used to control dust as required.

Unnecessary idling of equipment would be limited.

BIOLOGICAL RESOURCES

Prior to construction, a Weed Management Plan will be developed that includes measures designed to reduce the propagation and spread of designated noxious weeds, undesirable plants, and invasive plant species, or as determined by the agencies.

The Applicant will implement controls at ROW entry locations to facilitate weed management and invasive species control in order to minimize infestation to the project site from an outside source.

To minimize activities that attract prey and predators during construction and operations, garbage will be placed in approved containers with lids and removed promptly when full to avoid creating attractive nuisances for wildlife.

All work area boundaries will be conspicuously staked, flagged, or otherwise marked to minimize surface disturbance activities. All workers, equipment, vehicles, and construction materials shall remain within the ROW, existing roads, and designated areas. Staging areas would be located in previously disturbed areas whenever possible.

All transmission towers and poles will be designed to be avian-safe in accordance with the Raptor Electrocutation Prevention Regulations, RCS-43-08 (September 2018).

Pre-construction meeting will be required for staff and contractors working on this project. In addition to an overview of minimization measures for all biological resources reduce effects to listed species of concern.

Navajo Tribal Utility Authority
Applicant-Proposed Mitigation and Best Management Practices (BMPs)
TRANSMISSION PROJECT

CULTURAL RESOURCES

Archaeological monitors will be employed during construction in the vicinity of significant cultural resource sites as needed to ensure that cultural resources are not directly affected by the project.

Fencing or other protective barriers will be placed to protect historic properties during construction as needed.

Should any unrecorded and unanticipated cultural resources be discovered during construction, all activities within the immediate area of discovery shall cease. NTUA will notify Navajo Nation Historic Preservation Department (NNHPD) of any unanticipated discoveries of cultural resources.

TRANSPORTATION

Truck traffic would be phased throughout construction, as much as practical.

PUBLIC HEALTH AND SAFETY

The Project would be designed in accordance with all applicable federal and industrial standards including the American Society of Mechanical Engineers (ASME), National Electrical Safety Code (NEC), the National Fire Protection Association (NFPA) and Navajo Occupational Safety and Health Administration (NOSHA) regulations.

All employees and contractors would be required to adhere to appropriate health and safety plans and emergency response plans. All contractors would be required to maintain and carry health and safety materials including the Safety Data Sheets (SDS) of hazardous materials used on site.

An Emergency Response Plan would be developed and implemented based on the results of a comprehensive Project hazard analysis.

A Hazardous Waste Management Plan would describe the storage, transportation, and handling of wastes and emphasize the recycling of construction wastes where possible.

The Project would coordinate with the holders of all existing ROWs that would be crossed or paralleled by the Project ROWs (transmission lines and access roads) to minimize encroachment conflicts and possible effects to existing transmission lines and pipelines.

APS Queue 255 Interconnection and Gen-Tie

Additional Design Measures / BMPs Incorporated in the Project Description

- A geotechnical survey would be conducted to observe subsurface conditions and obtain samples of site soils for laboratory testing and classification to inform the final design of structure foundations.
- A Fire Control Plan would be developed and implemented to ensure all applicable fire laws and regulations would be observed during construction, operation, and maintenance. NTUA's fire safety standards would be followed including requirements for fire tool availability, spark arresters/mufflers on equipment, and coordination of extreme fire.
- If needed, a Vegetation Management Plan would be implemented to control vegetation within the ROW to ensure it does not interfere with the line.
- An Erosion Control Plan would be developed and implemented to compliment the stormwater pollution prevention plan (SWPPP).
- A Decommissioning Plan would be developed and finalized before decommissioning activities would start and would include the removal of structures, recontouring of roads, structure pads, etc. if needed, and stabilization and re-vegetation of disturbed areas