UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Farmington District
Farmington Field Office
6251 N College Blvd., Ste. A
Farmington, NM 87402

DECISION RECORD

for the

Public Service Company of New Mexico
San Juan Generating Station
Proposed Pumpback Pipeline

NEPA No. DOI-BLM-NM-FO10-2015-0072-EA

I. Decision

I have decided to select the proposed action for implementation as described in the October 2015 Public Service Company of New Mexico San Juan Generating Station (SJGS) Proposed Pumpback Pipeline. Based on my review of the Environmental Assessment (EA) and project record, I have concluded that the proposed action was analyzed in sufficient detail to allow me to make an informed decision. I have selected this alternative because it will provide the Public Service Company of New Mexico with access to construct, operate and abandon the 3,187' x 40' subsurface water pipeline as part of a groundwater recovery system at the SJGS.

II. Conformance and Compliance

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this EA incorporates the information and analysis contained in the 2003 Farmington Proposed Resource Management Plan (PRMP)/Final Environmental Impact Statement (FEIS) (USDI/BLM 2003a). The proposed action would be in conformance with the development management actions in the Resource Management Plan (RMP)/Record of Decision (ROD) signed December 2003 and updated in December 2003 (USDI/BLM 2003b). The proposed action would be in conformance with the 2003 RMP/ROD that states, to the extent possible, new ROWs will be located within or parallel to existing ROWs or corridors to minimize resource impacts (USDI/BLM 2003b, pp. 2-11). The PRMP/FEIS and ROD are available for review at the FFO in Farmington, New Mexico, or electronically at http://www.nm.blm.gov/ffo/ffo_home.html. This project EA addresses site-specific resources and/or impacts that are not covered within the PRMP/FEIS, as required by the NEPA.

PNM would comply with all applicable federal, state, and local laws and regulations, and it would obtain the necessary permits for construction and operation of the Pumpback Pipeline Project. These laws and regulations include, but are not limited to:

- Antiquities Act of 1906, as amended (Public Law [PL] 52-209; 16 USC 431-433)
- American Indian Religious Freedom Act of 1978 (PL 95-431; 92 Stat. 469; 42 USC 1996)

- Archaeological Resources Protection Act of 1979 (PL 96-95; 93 Stat. 721; 16 USC § 470aa et seq.), as amended (PL 100-555; PL 100-588)
- Bald and Golden Eagle Protection Act of 1940, as amended (PL 86-70, PL 87-884,
  PL 92-535, PL 95-616; USC 668-668d)
- Clean Air Act, as amended (PL 88-206; 42 USC § 7401 et seq.)
- Clean Water Act, as amended (PL 107-303; 33 USC § 1251, et seq.)
- Colorado River Salinity Control Act, as amended (PL 93-320; 7 CFR Part 702)
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980
  (PL 96-510; 42 USC § 9601; 40 CFR Part 307)
- Endangered Species Act of 1973 (PL 93-205; 16 USC § 1531 et seq.)
- Executive Order (EO)11988 Floodplain Management
- EO 11990 Protection of Wetlands
- EO 12898 Environmental Justice
- EO 13007 Indian Sacred Sites
- EO 13112 Invasive Species
- EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds
- Migratory Bird Treaty Act of 1918, as amended (16 USC §§ 703-712; 50 CFR Part 21)
- Native American Graves Protection and Repatriation Act of 1990 (PL 101-601; 104 Stat. 3048; 25 USC 3001; 43 CFR Part 10)
- Paleontological Resources Preservation Act as part of the Omnibus Public Land Management Act (PL 111-011, Title VI, Subtitle D)
- Safe Drinking Water Act, as amended (PL 93-523; 42 USC 300F-300-9), 40 CFR Parts 144 and 147).
- Section 106 of the National Historic Preservation Act (NHPA) of 1966 (PL 89-665; 80 Stat. 915; 16 USC 470 et seq.), as amended (implemented under regulations of the Advisory Council on Historic Preservation, 36 CFR Part 800)

III. Finding of No Significant Impact

I have reviewed the direct, indirect and cumulative effects of the proposed activities documented in the EA for the Public Service Company of New Mexico San Juan Generating Station Porposed Pumpback Pipeline. I have also reviewed the project record for this analysis. The effects of the proposed action are disclosed in the Alternatives and Environmental Consequences sections of the EA. I have determined that is project will provide Public Service Company of New Mexico with access to BLM land to construct, operate and abandon the Pumpback Water Pipeline to. The goals and objectives of the proposed action are to meet the United States District Court-approved Consent Decree between PNM and Sierra Club requiring PNM to construct a groundwater recovery system in Shumway Arroyo as described in the EA will not

significantly affect the quality of the human environment. Accordingly, I have determined that the preparation of an Environmental Impact Statement is not necessary.

IV. Other Alternatives Considered

Initially, PNM proposed three alternative alignments for the pipeline: A, B, and C. Alignment A was considered, but not analyzed in detail. Alignment A was located on mostly rock substrate and was the most hydraulically unfavorable alignment due to the topographic elevation changes between the recovery system location and the disposal site. Alignment B was also considered, but not carried forward. Alignment B would have added approximately 2,300 feet to the total length of the pipeline and would have crossed Shumway Arroyo below the recovery system location. This would have resulted in unnecessary impacts to Shumway Arroyo, an ephemeral watercourse regulated by the United States (U.S.) Army Corps of Engineers (USACE) and classified as a Waters of the U.S. Ultimately, PNM preferred. Alignment C (proposed action) is the best solution to meet the terms and conditions of the Consent Decree and result in the least environmental impact. Refer to Page 12 of the EA.

V. Rationale for the Decision

I have determined that the activities described in the proposed action will not adversely affect or cause loss or destruction of scientific, cultural, or historical resources, including those listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8)). Refer to *page 30 in the EA* indicating that proposed activities are not located in an ACEC containing relevant and important cultural values. Cultural resource surveys were completed and cultural resources within the entire APE for the Proposed Action were identified by a literature review and an archaeological BLM Class III level (100%) pedestrian survey by SEAS and a report was prepared and submitted to the BLM. The cultural resources inventory identified one cultural site within the APE (SEAS Report No. 14-104 ; BLM Report 2015(II)015F) dated February 6, 2015. The site is not eligible for nomination to the National Register of Historic Places (NRHP).

The proposed activities are not likely to adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (40 CFR 1508.27(b)(9)). Page 24 of the EA states that no suitable habitat was identified in the project area.

I have determined that the activities described in the proposed action will not adversely affect or cause loss or destruction of scientific, cultural, or historical resources, including those listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8)). The proposed action would not impact any known traditional cultural properties, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act of 1978 (42 USC 1996) or EO13007.

The proposed activities are not likely to adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (40 CFR 1508.27(b)(9)). The proposed project area was surveyed using pedestrian transects to identify potential habitat for Mesa Verde cactus; no Mesa Verde cactus was observed in the proposed project area during the biological survey. Although suitable habitat occurs in the action area, the proposed project area is located within the floodplain of Westwater and Shumway arroyos and is previously disturbed. No suitable

habitat was identified in the project area. The proposed action would have no effect on Mesa Verde cactus. Refer to page 24 of the EA.

VI. Public Involvement

The Council on Environmental Quality (CEQ) defines scoping as "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action alternative" (40 CFR §1501.7). Scoping is the process by which the BLM solicits internal and external input on the issues, impacts, and potential alternatives that will be addressed in an EIS or EA. The BLM/FFO Interdisciplinary Team was integrally involved in the internal scoping to identify potential issues, understand the proposal, develop the purpose and need, and develop a range of alternatives. The following issues were identified by the Interdisciplinary Team during internal scoping on March 2, 2015,

As outlined in the BLM NEPA Handbook, it is optional for the BLM to conduct external scoping on actions analyzed by an EA (USDI/BLM 2008, Section 6.3.2). External scoping was conducted through posting this project on the FFO's on-line NEPA log. The log is located on the BLM New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html). The log contains a list of proposed and approved actions in the FFO. The public is encouraged to provide comments or request information on projects listed in the logs.

VII. Administrative Review and Appeal

This decision may be appealed to the Interior Board of Land Appeals (IBLA), Office of the Secretary, in accordance with the regulations contained in 43 CFR Part 4. Any appeal must be filed within 30 days of this decision. Any notice of appeal must be filed with Victoria Barr, District Manager, Farmington District Office, 6251 College Boulevard, Suite A, Farmington, NM 87402. The appellant shall serve a copy of the notice of appeal and any statement of reasons, written arguments, or briefs on each adverse party named in the decision, not later than 15 days after filing such document (see 43 CFR 4.413(a)). Failure to serve within the time required will subject the appeal to summary dismissal (see 43 CFR 4.413(b)). If a statement of reasons for the appeal is not included with the notice, it must be filed with the IBLA, Office of Hearings and Appeals, U. S. Department of the Interior, 801 North Quincy St., Suite 300, Arlington, VA 22203 within 30 days after the notice of appeal is filed with Victoria Barr, Farmington District Office Manager.

Notwithstanding the provisions of 43 CFR 4.21(a)(1), filing a notice of appeal under 43 CFR Part 4 does not automatically suspend the effect of the decision. This decision can be implemented immediately and remains in effect pending appeal according to 43 CFR 288.1.10(b). If you wish to file a petition for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal.

A petition for a stay is required to show sufficient justification based on the following standards:

(1) The relative harm to the parties if the stay is granted or denied;
(2) The likelihood of the appellant's success on the merits;
(3) The likelihood of immediate and irreparable harm if the stay is not granted; and

(4) Whether the public interest favors granting the stay.

In the event a request for stay or an appeal is filed, the person/party requesting the stay or filing the appeal must serve a copy of the appeal on the Office of the Field Solicitor: United States Dept. of the Interior, Office of the Solicitor, Southwest Regional Office, 505 Marquette Avenue NW, Suite 1800, Albuquerque, NM 87102.

Victoria Barr
District Manager
Farmington District Office

11/4/15
Date

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Farmington District
Farmington Field Office
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Finding of No Significant Impact

Public Service Company of New Mexico
San Juan Generating Station
Proposed Pumpback Pipeline

NEPA No. DOI-BLM-NM-FO10-2015-0072

FINDING OF NO SIGNIFICANT IMPACT

I have determined that the proposed action, as described in Environmental Assessment (EA) DOI-BLM-NM-FO10-2015-0072, will not have any significant impact, individually or cumulatively, on the quality of the human environment. Because there would not be any significant impact, an Environmental Impact Statement is not required.

In making this determination, I considered the following factors:

Context

The Farmington Field Office (FFO) is located in northwestern New Mexico. The field office boundaries include approximately 7,800,000 acres; 1.4 million surface acres and an additional 1 million acres of mineral estate are managed by the BLM. The distribution of BLM-managed lands is fairly well consolidated in the north and becomes increasingly mingled with Tribal lands to the south. BLM-managed lands abut the Navajo Reservation to the west and south, Jicarilla Apache Nation Reservation to the east, and the Ute Mountain Reservation and Southern Ute Indian Reservation to the north. Aztec Ruins National Monument and Chaco Culture National Historical Park, managed by the National Park Service, lie within the field office boundaries. The BLM manages approximately 18% of lands within a 10 mile radius of Chaco Culture National Historical Park.

The FFO encompasses the New Mexico portion of the San Juan Basin. The San Juan Basin and surrounding areas have been occupied by varied cultures since the Paleo Indian period (circa 10,000 BC). The San Juan Basin and Four Comers area have one of the most extensive prehistoric and protohistoric occupations in the United States. The most commonly known archaeological resources are the Anasazi structures at Chaco Culture National Historical Park, Mesa Verde National Park, and other National Park Service sites. Scattered across BLM-managed lands are similar, but smaller structures, which were probably related to these larger sites. Twenty-three Chacoan outliers are known to exist within the FFO. Each contains at least one Chacoan structure and most have associated communities, prehistoric roads, and great kivas along with features such as herraduras and special use areas. The FFO contains an extensive system of finely engineered roads radiating out form Chaco Canyon and extending a considerable distance to outlying sites through the San Juan Basin and beyond. These roads are remarkably straight and carefully constructed. The most notable is the Great North Road, which starts at Chaco Canyon and run north to the Aztec Ruins.

Located within the boundary of the FFO is much of Dinétah, the ancestral homeland to the Navajo. Here the Navajo constructed forked-stick hogans, shades, sweat lodges, and other structures over a several hundred year span. During a short period between 1680 and the mid-1700s, pueblitos were constructed, often associated with other structures. Although not firmly dated, extensive Navajo pictograph and petroglyph sites were painted, etched, pecked, or ground onto the sandstone cliffs of the canyons of Dinétah. Most are believed to be ceremonial art which is no longer traditionally executed in a permanent form.

Native American Traditional and Sacred Areas are known to exist across the FFO. Many are associated with narrative accounts of origin or other traditional stories. Most of the identified sacred areas are associated with the Navajo culture. These places are still important in Navajo ceremonies and daily activities.

Historic Hispanic or Spanish and Anglo sites within the San Juan Basin primarily date from the late 1800s to the present. Although there are some early Spanish land grants in the southern portion of the FFO, most historic sites located on public lands are either Hispanic or Anglo homesteads with associated structures from the late 1800s and early 1900s. Associated with many clusters of homesteads were a school house and often a church which was visited every few months by a priest.

Cultural resource inventories have been conducted throughout the FFO for project undertakings, management studies, and scientific inquiries. As of April 2014, approximately 760,000 acres of the 7,800,000 acres in the FFO boundaries have been inventoried. Over 46,000 sites have been identified ranging from small artifacts to the 800-room structures in Chaco Canyon. Many of these sites are listed on the National Register of Historic Places and Chaco Culture National Historical Park along with several of the Chacoan sites which have been placed on the World Heritage List. The FFO manages 79 Areas of Critical Environmental Concern (ACECs) for relevant and important cultural values, including five World Heritage Sites.

The San Juan Basin is an important area for mammalian and reptilian fossils. A variety of paleontological resources exist in the FFO including animal fossils, fossil leaves, palynomorphs, petrified wood, and trace fossils occurring in the Triassic, Jurassic, Cretaceous, and Tertiary rocks. Dinosaur and other fossils have made significant contribution to the scientific record have been found and excavated in the FFO. Paleontolgical resources are present in the Bisti De-Na-Zin Wilderness Area, Ah-Shi-Sle-Pa Wilderness Study Area, Fossil Forrest Research Natural Area, and seven fossil areas identified in the 2003 Farmington Resource Management Plan.

The San Juan Basin is one of the largest natural gas fields in the nation and has been under development for more than 60 years. Oil was discovered by accident in the Seven Lakes area of McKinley County in 1911. Natural gas was discovered near Aztec, New Mexico, in 1920-1921 with oil of commercial quantity discovered near the Hogback in 1922 (Barnes 1951). Several small pipelines were built to carry the oil and gas from these discoveries to Aztec and Farmington, respectively. Development began in earnest in the late 1940s and early 1950s as the demand for natural gas increased. The FFO manages 2,765 active oil and gas leases in the San Juan Basin consisting of 2.1 million acres. Leasing began in the mid-1930s and accelerated in the late 1940s. By 1950, over 1 million acres were under lease.

In 1951, El Paso Natural Gas completed the first interstate pipeline out of the San Juan Basin to California. That same year, oil was discovered in the Mancos Shale in Dogie Canyon (Barnes 1951). Since that time, over 30,000 oil and gas wells have been drilled in the San Juan Basin with approximately 16,000 associated rights-of-way. Approximately 23,000 wells are currently producing. Since Stanolind Oil introduced hydraulic fracturing in 1949, nearly every well in the San Juan Basin has been fracture stimulated.

Intensity

1. The activities described in the proposed action are to construct a subsurface water pipeline as part of a groundwater recovery system at the San Juan Generating Station and does not include any significant beneficial or adverse impacts (40 CFR 1508.27(b)(1)). Per 40 CFR 1500.1(b), the EA concentrated on

issues that are truly significant to the action in question, rather than amassing needless detail. Issues have a cause and effect relationship with the proposed action or alternatives; are within the scope of the analysis; have not been decided by law, regulation, or previous decision; and are amendable to scientific analysis rather than conjecture (BLM 2008, page 40). The following issues were identified related to the proposed action to construct a subsurface water pipeline:

- How would the alternatives affect air quality in the area?
- How would the alternatives affect vegetation?
- How would the alternatives affect the establishment and distribution of noxious weeds?
- How would the alternatives affect threatened and endangered species listed under the Endangered Species Act (ESA)?
- How would the alternatives affect migratory birds?
- How would the alternatives affect Special Management Species?
- How would the alternatives affect cultural resources?

The EA includes a description of the expected environmental consequences of the proposed activities for those issues in Chapter 3.

2. The activities included in the proposed action would not significantly affect public health or safety (40 CFR 1508.27(b)(2)). The following design features have been included in the proposed action to address any impacts to public health and safety: Public health and safety concerns are related to vehicle travel on area roads and public and worker safety. The proposed action would be completed in a manner consistent with all applicable OSHA regulations and appropriate industry standards to minimize risk of accidents. Impacts to the public would be minimized by controlling access to all work and operation areas. The County Road 6800 road crossing would be manned with flaggers and spotters during heavy construction close to the area. All roadway speed limits would be observed to reduce potential for traffic accidents. Additionally, hauling of materials or equipment would follow state regulations. Water would be applied to roads, if needed, to minimize fugitive dust. Following construction, existing roads would be rehabilitated, if needed.

3. The proposed activities would not significantly affect any unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas (40 CFR 1508.27(b)(3)). Unique characteristics are generally limited to those that have been identified through the land use planning process or other legislative, regulatory or planning processes (BLM 2008, page 71). The FFO does not contain any prime and unique farmlands, suitable or designated wild and scenic rivers, or designated caves. Table 1 discloses the distance of the proposed activities to wetlands delineated by the Army Corps of Engineers. Table 2 discloses the distance of the proposed activities to National Park Service units and Congressionally designated areas. *The proposed action and alternatives are not located within an Area of Critical Environmental Concern.* Impacts to historic or cultural resources are described in the Cultural Resources section of the EA and discussed further under item 8.

Table 1. Distance of the Proposed Activities from Wetlands

Delineated Wetlands	Distance from Proposed Activities
Bancos	58 Miles
Blanco	31 Miles
Bloomfield	25 Miles
Cutter Canyon	40 Miles
Carrizo Oxbow	42 Miles
Desert Hills	20 Miles
Valdez	28 Miles

Table 2. Distance of the Proposed Activities from Park Lands and Ecologically Critical Areas

Park Land or Ecologically Critical Area	Distance from Proposed Activities
Ah-Shi-Sle-Pah Wilderness Study Area	41 Miles
Aztec Ruins National Monument	20 Miles
Bisti De-Na-Zin Wilderness Area	49 Miles
Chaco Culture National Historical Park	24 Miles
Fossil Forest Research Natural Area	54 Miles

4. The activities described in the proposed action do not involve effects on the human environment that are likely to be highly controversial (40 CFR 1508.27(b)(4)). Controversy in this context means disagreement about the nature of the effects, not expressions of opposition to the proposed action or preference among the alternatives (BLM 2008, page 71). Oil and gas development has occurred in the San Juan Basin for more than 60 years. While there may be controversy over the appropriateness of oil and gas development, there is not a high level of controversy or substantial scientific dispute over the impacts of that activity. The impacts of the proposed activities are described in Chapter 3 of the EA.

5. The activities described in the proposed action do not involve effects that are highly uncertain or involve unique or unknown risks (40 CFR 1508.27(b)(5)). As described under Context, oil and gas development has occurred in the San Juan Basin since the late 1940s and early 1950s. The field office has permitted over 30,000 wells and 16,000 rights-of-way. Hydraulic fracturing has occurred on nearly every well in the San Juan Basin since the 1950s. As such, the FFO has decades of experience and is knowledgeable about the impacts and risks associated with the proposed activities.

6. My decision to implement these activities does not establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration (40 CFR 1508.27(b)(6)). Approval of these activities in no way assures approval of any future activities. The effects of the proposed activities would not be significant, individually or cumulatively, when considered with the effects of other actions (40 CFR 1508.27(b)(7)). Direct, indirect, and cumulative impacts are described in Chapter 3 of the EA.

7. I have determined that the activities described in the proposed action will not adversely affect or cause loss or destruction of scientific, cultural, or historical resources, including those listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8)). The proposed action would not impact any known traditional cultural properties, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act of 1978 (42 USC 1996) or EO13007.

8. The proposed activities are not likely to adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (40 CFR 1508.27(b)(9)). The proposed project area was surveyed using pedestrian transects to identify potential habitat for Mesa Verde cactus; no Mesa Verde cactus was observed in the proposed project area during the biological survey. Although suitable habitat occurs in the action area, the proposed project area is located within the floodplain of Westwater and Shumway arroyos and is previously disturbed. No suitable habitat was identified in the project area. The proposed action would have no effect on Mesa Verde cactus. Refer to page 24 of the EA.

9. The proposed activities will not threaten any violation of Federal, State, or local law or requirements imposed for the protection of the environment (40 CFR 1508.27(b)(10)). Sections 1.4 and 1.5 of the EA describe the relationship of the proposed activities to relevant laws, policies, regulations, and plans.

REFERENCES

Barnes, Frank C., 1951. History of development and production of oil and gas in the San Juan Basin. In *The south and west sides of the San Juan Basin, New Mexico and Arizona*, Smith, C.T.; Silver, C. ed(s), New Mexico Geological Society, Guidebook, 2nd Field Conference, pp. 155-160.

BLM. 2008. *National Environmental Policy Handbook. H-1790-1.* Bureau of Land Management. National Environmental Policy Act Program.

APPROVED:

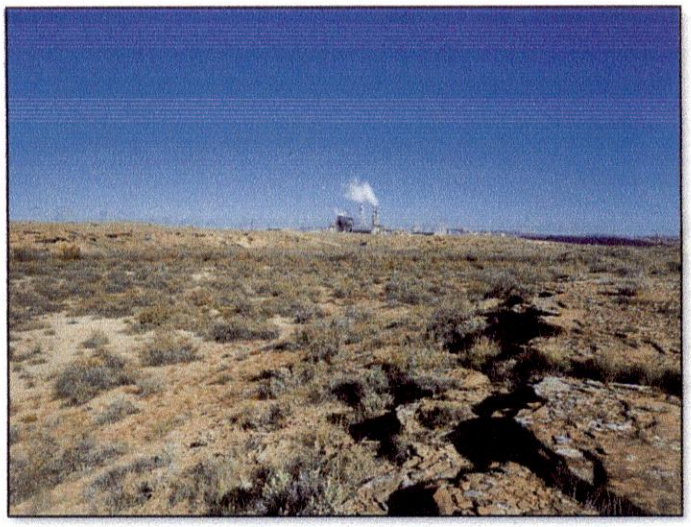
11/4/15

Victoria Barr
District Manager
BLM Farmington Field Office

Date

United States Department of the Interior
Bureau of Land Management

Environmental Assessment DOI-BLM-NM-F010-2015-0072



Public Service Company of New Mexico
San Juan Generating Station
Proposed Pumpback Pipeline

October 2015

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New Mexico • Farmington Field Office

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
AQI	Air Quality Index
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CH_4	methane
CIAA	cumulative impacts analysis area
EA	Environmental Assessment
Ecosphere	Ecosphere Environmental Services
EIS	Environmental Impact Statement
EO	Executive Order
°F	degrees Fahrenheit
FEIS	Final Environmental Impact Statement
FFO	Farmington Field Office
GHG	greenhouse gas
GIS	geographic information system
HAP	hazardous air pollutant
NAAQS	National Ambient Air Quality Standards
NATA	National-Scale Air Toxics Assessment
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMAAQS	New Mexico Ambient Air Quality Standards
NMDA	New Mexico Department of Agriculture
NMPIF	New Mexico Partners in Flight
NO_2	nitrogen dioxide
NO_x	nitrous oxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
ONGARD	State of New Mexico Oil and Natural Gas Administration and Revenue Database
O_3	ozone
Pb	lead
PL	Public Law
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PNM	Public Service Company of New Mexico
PRMP	Proposed Resource Management Plan
RFD	Reasonably Foreseeable Development
ROD	Record of Decision
ROW	right of way

SEAS	Stratified Environmental and Archeological Consultants, LLC
SJGS	Public Service Company of New Mexico's San Juan Generating Station
SO_2	sulfur dioxide
TCPs	Traditional Cultural Properties
USC	United States Code
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency
U.S.	United States
USACE	U.S. Army Corps of Engineers

1. PURPOSE AND NEED FOR ACTION

1.1 Background

The Public Service Company of New Mexico (PNM) is proposing to construct a subsurface water pipeline, the Pumpback Pipeline, as part of a groundwater recovery system at PNM's San Juan Generating Station (SJGS) in San Juan County, New Mexico. The Pumpback Pipeline would convey collected groundwater from Shumway Arroyo to PNM's SJGS south evaporation ponds for disposal. The action has been proposed to meet a United States District Court-approved Consent Decree between PNM and Sierra Club. The proposed pipeline would be approximately 8,239 feet in length with approximately 3,187 feet of the pipeline located on land administered by the Bureau of Land Management (BLM) Farmington Field Office (FFO) and approximately 5,052 feet on private land.

PNM would apply for a right-of-way (ROW) grant with the BLM/FFO to construct the pipeline across public lands within a 40-foot-wide ROW corridor. PNM would also need to obtain an agreement with the San Juan Coal Company for the portion of the pipeline that would cross the BLM coal lease held by San Juan Mine. For construction of the pipeline, no new access roads would be constructed, and the location would be temporarily accessed from existing roads.

1.2 Purpose and Need for Action

The purpose of the proposed project is to allow the applicant access to BLM-managed land to construct a subsurface water pipeline as part of PNM's groundwater recovery system at the SJGS. The need for the action is established by the BLM's authority under the Title V of the Federal Land Policy and Management Act of 1976, as amended (43 USC [United States Code] 1761-1771).

The goals and objectives of the proposed action are to meet the United States District Court-approved Consent Decree between PNM and Sierra Club requiring PNM to construct a groundwater recovery system in Shumway Arroyo.

1.3 Decision to be Made

Based on the information in this Environmental Assessment (EA), the BLM Farmington Field Office (FFO) will decide whether to issue the right-of-way (ROW) grant and if so, under what terms and conditions. Under the National Environmental Policy Act (NEPA) of 1969, as amended (Pub. L. 91-90, 42 USC 4321 et seq.), the FFO must determine if there are any significant environmental impacts associated with the proposed action that warrant further analysis in an Environmental Impact Statement (EIS). The BLM/FFO Field Manager is the responsible officer who will decide one of the following:

- To approve the proposed ROW grant with design features, as submitted
- To approve the proposed ROW grant with additional mitigations
- To analyze the effects of the proposal in an EIS
- To deny the ROW grant

An approved ROW grant issued by the BLM would authorize the applicant to construct the Pumpback Pipeline across public lands.

1.4 Conformance with Applicable Land Use Plan(s)

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this EA incorporates the information and analysis contained in the 2003 Farmington Proposed Resource Management Plan (PRMP)/Final Environmental Impact Statement (FEIS) (USDI/BLM 2003a). The proposed action would be in conformance with the development management actions in the Resource Management Plan (RMP)/Record of Decision (ROD) signed December 2003 and updated in December 2003 (USDI/BLM 2003b). The proposed action would be in conformance with the 2003 RMP/ROD that states, to the extent possible, new ROWs will be located within or parallel to existing ROWs or corridors to minimize resource impacts (USDI/BLM 2003b, pp. 2-11). The PRMP/FEIS and ROD are available for review at the FFO in Farmington, New Mexico, or electronically at http://www.nm.blm.gov/ffo/ffo_home.html. This project EA addresses site-specific resources and/or impacts that are not covered within the PRMP/FEIS, as required by the NEPA.

1.5 Relationships to Statutes, Regulations, or Other Plans

PNM would comply with all applicable federal, state, and local laws and regulations, and it would obtain the necessary permits for construction and operation of the Pumpback Pipeline Project. These laws and regulations include, but are not limited to:

- Antiquities Act of 1906, as amended (Public Law [PL] 52-209; 16 USC 431-433)
- American Indian Religious Freedom Act of 1978 (PL 95-431; 92 Stat. 469; 42 USC 1996)
- Archaeological Resources Protection Act of 1979 (PL 96-95; 93 Stat. 721; 16 USC § 470aa et seq.), as amended (PL 100-555; PL 100-588)
- Bald and Golden Eagle Protection Act of 1940, as amended (PL 86-70, PL 87-884, PL 92-535, PL 95-616; USC 668-668d)
- Clean Air Act, as amended (PL 88-206; 42 USC § 7401 et seq.)
- Clean Water Act, as amended (PL 107-303; 33 USC § 1251, et seq.)
- Colorado River Salinity Control Act, as amended (PL 93-320; 7 CFR Part 702)
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (PL 96-510; 42 USC § 9601; 40 CFR Part 307)
- Endangered Species Act of 1973 (PL 93-205; 16 USC § 1531 et seq.)
- Executive Order (EO)11988 Floodplain Management
- EO 11990 Protection of Wetlands
- EO 12898 Environmental Justice
- EO 13007 Indian Sacred Sites
- EO 13112 Invasive Species
- EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds

- Migratory Bird Treaty Act of 1918, as amended (16 USC §§ 703-712; 50 CFR Part 21)
- Native American Graves Protection and Repatriation Act of 1990 (PL 101-601; 104 Stat. 3048; 25 USC 3001; 43 CFR Part 10)
- Paleontological Resources Preservation Act as part of the Omnibus Public Land Management Act (PL 111-011, Title VI, Subtitle D)
- Safe Drinking Water Act, as amended (PL 93-523; 42 USC 300F-300-9), 40 CFR Parts 144 and 147).
- Section 106 of the National Historic Preservation Act (NHPA) of 1966 (PL 89-665; 80 Stat. 915; 16 USC 470 et seq.), as amended (implemented under regulations of the Advisory Council on Historic Preservation, 36 CFR Part 800)

1.6 Scoping, Public Involvement, and Issues

The Council on Environmental Quality (CEQ) defines scoping as "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action alternative" (40 CFR §1501.7). Scoping is the process by which the BLM solicits internal and external input on the issues, impacts, and potential alternatives that will be addressed in an EIS or EA.

The BLM/FFO Interdisciplinary Team was integrally involved in the internal scoping to identify potential issues, understand the proposal, develop the purpose and need, and develop a range of alternatives. The following issues were identified by the Interdisciplinary Team during internal scoping on March 2, 2015, as potential issues of concern:

- How would the alternatives affect air quality in the area?
- How would the alternatives affect vegetation?
- How would the alternatives affect the establishment and distribution of noxious weeds?
- How would the alternatives affect threatened and endangered species listed under the Endangered Species Act (ESA)?
- How would the alternatives affect migratory birds?
- How would the alternatives affect Special Management Species?
- How would the alternatives affect cultural resources?

As outlined in the BLM NEPA Handbook, it is optional for the BLM to conduct external scoping on actions analyzed by an EA (USDI/BLM 2008, Section 6.3.2). External scoping was conducted through posting this project on the FFO's on-line NEPA log. The log is located on the BLM New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html). The log contains a list of proposed and approved actions in the FFO. The public is encouraged to provide comments or request information on projects listed in the logs.

1.6.1 Issues Considered but Not Analyzed

CEQ regulations (40 CFR § 1501.7) state that the lead agency shall identify and eliminate from detailed study the issues that are not important or have been covered by prior environmental review, narrowing the discussion of these issues in the document to a brief presentation of why they would not have a significant effect on the human or natural environment or providing a reference to their coverage elsewhere.

During internal scoping, the following resources were identified by the Interdisciplinary Team as potential issues of concern that would not be significantly impacted or have been evaluated in previous analyses.

Native American Religious Concerns

Native American Religious Concerns were not identified as a potentially impacted resource. For the proposed action, identification efforts were limited to reviewing existing published and unpublished literature (e.g., Brugge 1993; Kelly et al 2006; Van Valkenburgh 1941, 1974), the site-specific Class III survey report prepared for the proposed action, and a review by the BLM's cultural resources program regarding the presence of traditional cultural properties identified through ongoing BLM tribal consultation efforts. There are currently no known remains that fall within the purview of the Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001) or the Archaeological Resources Protection Act (16 USC 470) within the proposed action area. The proposed action would not impact any known traditional cultural properties, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act of 1978 (42 USC 1996) or EO13007.

Public Health and Safety

Public health and safety concerns are related to vehicle travel on area roads and public and worker safety. The proposed action would be completed in a manner consistent with all applicable OSHA regulations and appropriate industry standards to minimize risk of accidents. Impacts to the public would be minimized by controlling access to all work and operation areas. The County Road 6800 road crossing would be manned with flaggers and spotters during heavy construction close to the area. All roadway speed limits would be observed to reduce potential for traffic accidents. Additionally, hauling of materials or equipment would follow state regulations. Water would be applied to roads, if needed, to minimize fugitive dust. Following construction, existing roads would be rehabilitated, if needed.

2. PROPOSED ACTION AND ALTERNATIVES

2.1 No Action

The BLM NEPA Handbook (USDI/BLM 2008) states that for EAs on externally initiated proposed actions, the no action alternative is generally to reject the proposal or deny the application. This option is provided in 43 CFR 3162.3-2 (h) (2). This alternative would deny the approval of the ROW grant, and the current land and resource uses would continue in the proposed project area. PNM and San Juan Mine would not be able to meet the terms and conditions of the United States District Court-approved Consent Decree between PNM and Sierra Club. The no action alternative provides a useful baseline for comparison of environmental effects (including cumulative effects) and demonstrates the consequences of not meeting the need for the action.

2.2 Proposed Action

PNM is proposing to construct a subsurface water pipeline as part of a groundwater recovery system at the SJGS, as shown on Figure 1. The legal description of the proposed project is the SW ¼ of Section 20, the N ½ and SE ¼ of Section 29, the SW ¼ of Section 28, the NW ¼ of Section 33, and the NE ¼ of Section 32, Township 30 North, Range 15 West, New Mexico Principal Meridian in San Juan County, New Mexico. A project area map showing the location of the proposed project on the Waterflow, New Mexico United States Geological Survey 7.5-minute topographic map is provided as Figure 2. Figure 3 displays the proposed project on a 2014 aerial photograph.

The proposed pipeline would be constructed as part of a groundwater recovery system to meet the terms and conditions of the 2012 Consent Decree between *Sierra Club* v. *San Juan Coal Company, BHP Billiton, LTD., Public Service Company of New Mexico, and PNM Resources, Inc.* Case No. 10-cv-00332-MCA-LAM (Consent Decree). The pipeline would convey groundwater collected at Shumway Arroyo for disposal at PNM's SJGS south evaporation ponds. The pipeline would be constructed using an 8 to 12-inch diameter high density polyethylene pipe. One booster station (pump station) would be constructed within the proposed ROW. Under the current design, the booster station would be located near County Road 6800 where the pipeline would bore under the roadway. The booster station would be located on private land. The pumps would be electric. An existing electric line is located at the site.

For construction, the location would be temporarily accessed by existing roads. No new access road would be required. The proposed pipeline would be approximately 8,239 feet in length and constructed within a 40-foot-wide right-of-way ROW. Table 2-1 lists the proposed ROW length and disturbance per land status. Total disturbance would be approximately 7.57 acres.

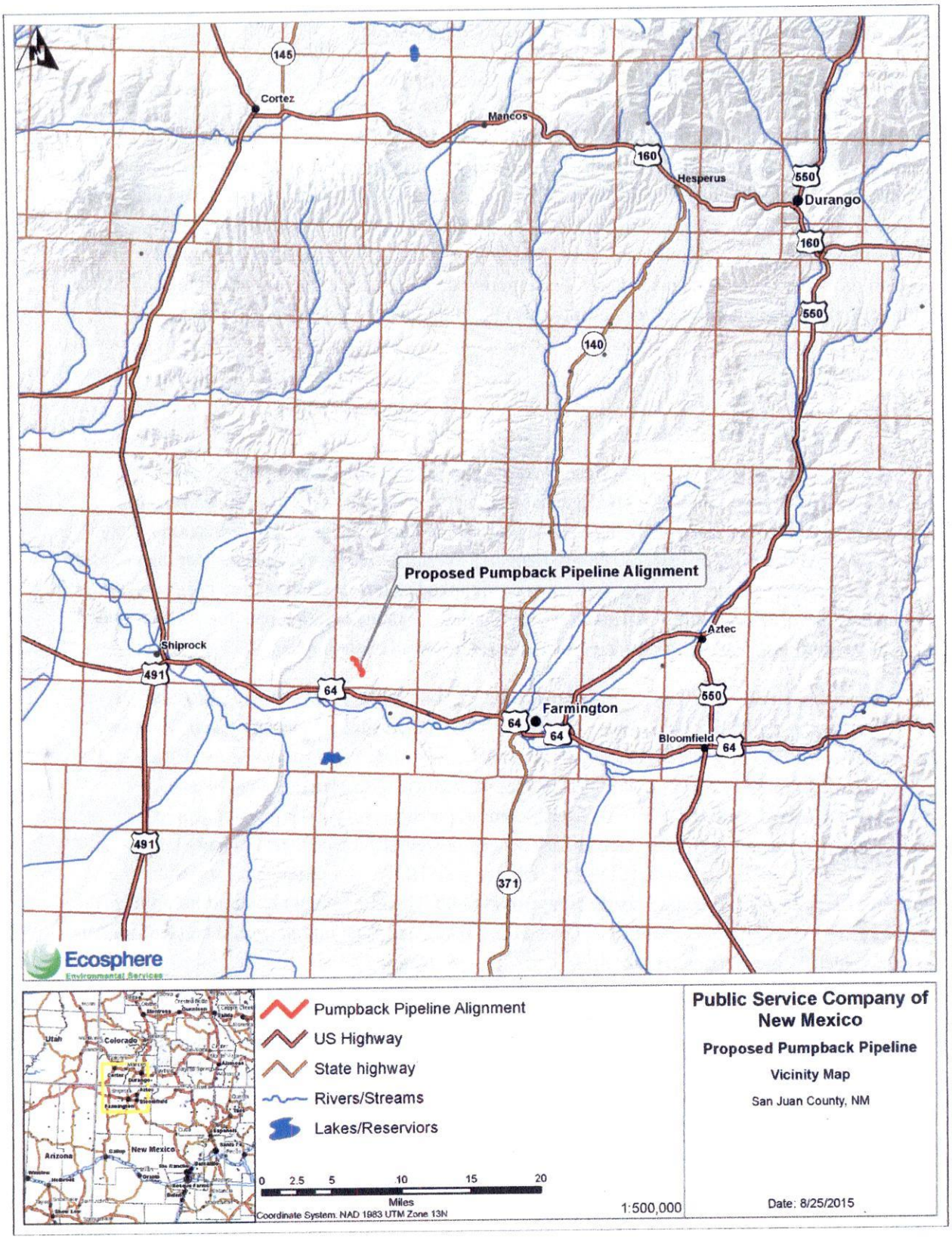

Figure 1: Proposed Pumpback Pipeline and vicinity

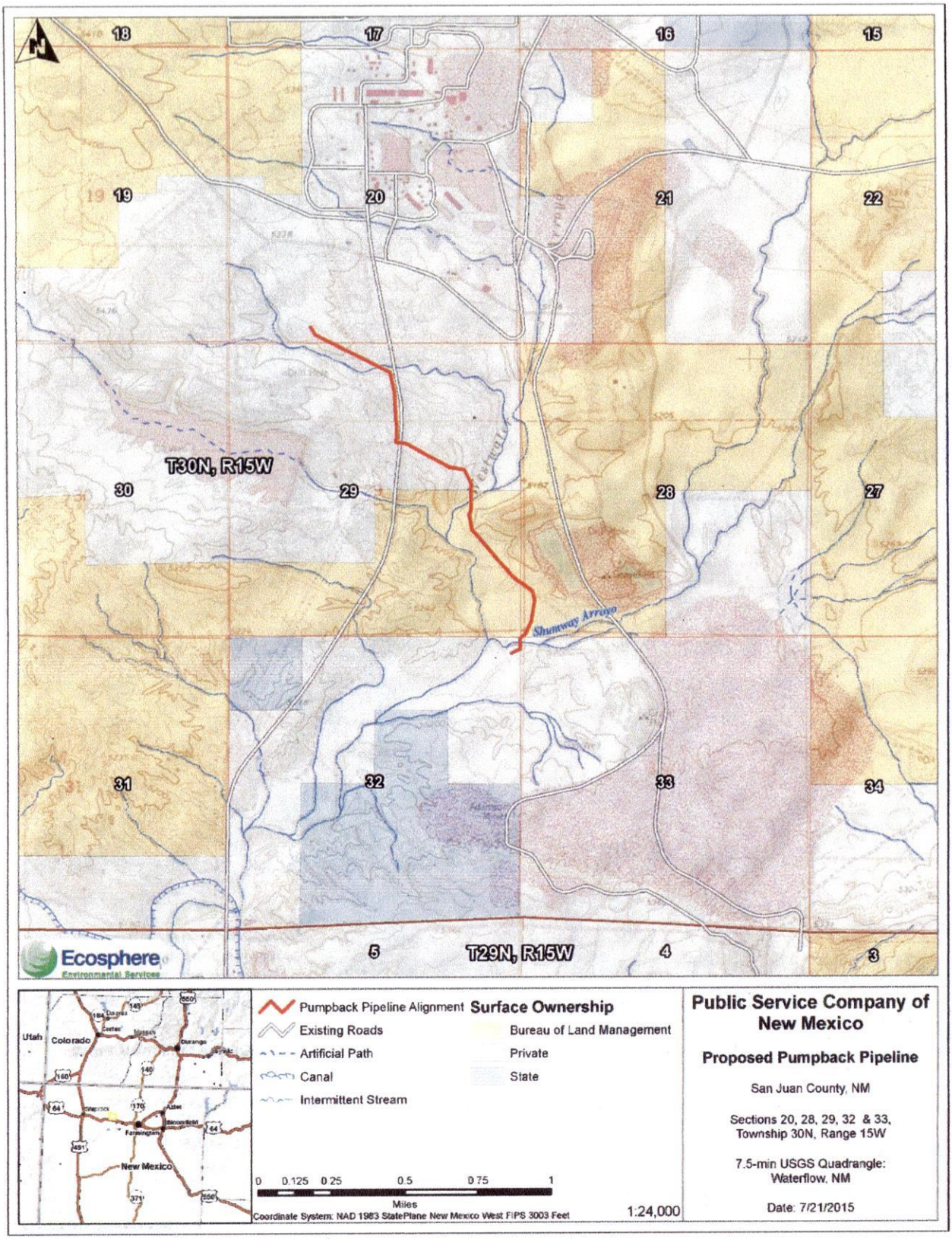

Figure 2: Proposed Pumpback Pipeline project area

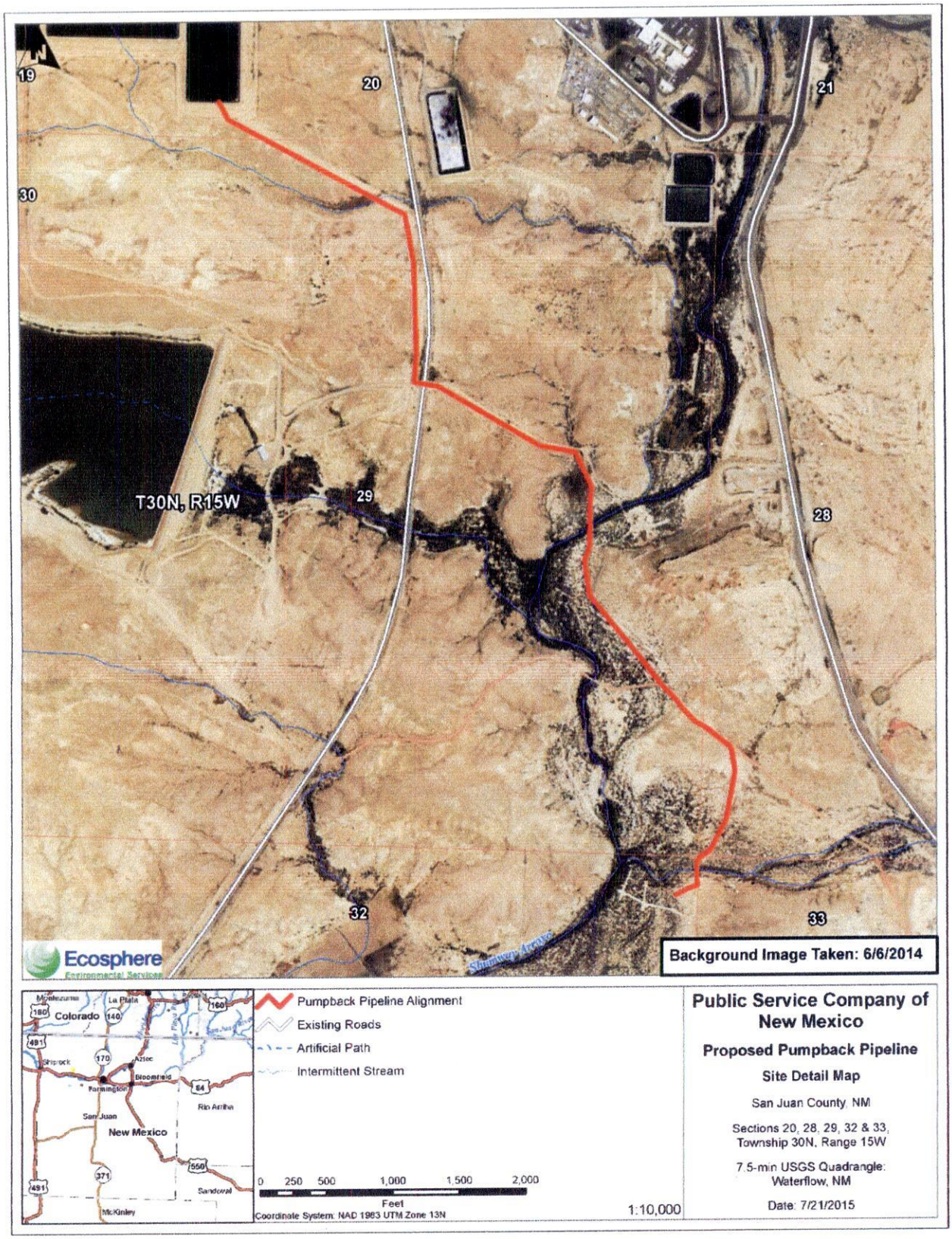

Figure 3: Proposed Pumpback Pipeline aerial view

Table 2-1. Proposed right-of-way length and disturbance

Land Status	Right-of-way Length (feet)	Disturbance (acres)
Bureau of Land Management	3,186.53	2.93
Private	5,052.47	4.64
Total	8,239.00	7.57

Approximately 6,630 feet of the proposed pipeline ROW would be located adjacent to existing roads or ROWs. Approximately 3 acres of the proposed ROW would be located on existing disturbance. The proposed project would result in approximately 4.5 acres of new disturbance. All disturbed areas, with the exception of existing roadways and the booster station, would be reclaimed following construction. Plats of the proposed pipeline alignment on BLM-managed land are included in Appendix A.

Construction of the pipeline would involve clearing, grading, trenching and backfilling activities using heavy equipment. The pipeline trench will be a minimum of 4 feet in depth. Under watercourses, the trench will be deep enough to allow for 6 feet of soil cover between the pipeline and the bottom of the watercourse. The trench will be a minimum of 16 inches in width. No more than ½ mile of open trench, or the amount of trench that can be worked in a day, will be opened at a time. Backfilling operations will be performed within a reasonable amount of time to ensure that the trench is not left open for more than 24 hours. If a trench is left open overnight, it will be fenced with a temporary fence, or a night watchman will be utilized. After the pipeline has been placed in the trench, the soils excavated from the trench will be returned and compacted to prevent subsidence.

Once constructed, the approved pipeline ROW corridor would be periodically accessed for maintenance and operation activities.

2.2.1 Design Features

The area of proposed surface disturbance was inspected in the field to ensure that potential impacts to natural resources would be minimized by implementing design features. Appendix B contains the BLM-issued pipeline stipulations for the proposed action. For the proposed action, standard and project-specific design features include, but are not limited to, the following:

- A migratory bird nest survey will be conducted if any vegetation disturbing activities occur between May 15 and July 31. The survey must be conducted by a BLM-approved biologist using a survey protocol developed and provided by the BLM/FFO. If any active nests are located within the proposed project area, project activities will not be permitted without written approval by a BLM/FFO biologist.
- Clearing, removal of topsoil, and grading will be limited to the minimum area required for safe and efficient construction.

- Topsoil will be segregated from the trench line, except for areas that require grading. In areas requiring grading, the top 6 inches of soil will be stripped from the entire portion of the workspace that requires grading.
- Topsoil will be segregated and stockpiled at the edge of the workspace. Topsoil will not be used for padding or mixed with excavated subsoil.
- Excavated material will be stockpiled at the edge of the workspace.
- Sidehill cuts of more than 3 feet are not permitted. Areas requiring cuts greater than this shall be terraced so none are greater than 3 feet.
- The amount of open trench will be minimized ahead of pipe laying and backfilling. No more than ½ mile of trench (or the amount of trench that can be worked in a day) will be open at any given time. Backfilling operations will be performed within a reasonable amount of time of the lowering operation to ensure the trench is not left open for more than 24 hours. Trenches left open overnight will be fenced with a temporary fence or other methods approved by the authorized officer. The ends of the trench will be sloped (3:1) to allow animals to escape.
- Escape ramps/crossovers will be constructed every 1,320 feet. In areas where active grazing is taking place, escape ramps/crossovers will be placed every 500 feet. The ends of the open trench will be sloped each night with a 3:1 slope.
- Established livestock and wildlife trails will be left in place as crossovers. Escape ramps/crossovers will be constructed with a minimum 3:1 slope at each end of the crossovers. Crossovers will be a minimum of 10 feet wide and not fenced.
- The end of the pipe will be plugged to prevent animals from crawling into the pipe.
- Before the trench is closed, it will be inspected for animals. Any trapped wildlife or livestock will be promptly removed and released at least 150 yards from the trench.
- Cover from top of pipe to ground level will be a minimum of 36 inches through typical soil and rock and a minimum of 48 inches at road crossing. Inspection will be conducted to verify that minimum cover is provided, the trench bottom is free of rocks and debris, external pipe coating is not damaged, and the pipe is properly fitted and installed into the trench.
- Backfilling will begin after a section of the pipe has been successfully placed in the trench and final inspection has been completed.
- After backfilling has been completed, cleanup activities will be initiated as soon as practicable. All construction-related debris will be removed and disposed at an approved disposal area. The workspace will be graded as near as possible to the preconstruction contours and natural runoff and drainage patterns will be restored.
- Rocks and limbs removed during clearing will be scattered across the workspace in a random arrangement using rubber-tired equipment.
- All existing improvements (such as fences, gates, and bar ditches) will be repaired to previous or better than pre-construction conditions. Cut fences will be tied to H-braces prior to cutting and openings will be protected as necessary during construction to prevent the escape of livestock. A temporary closure will be installed on the same day as

the fence is cut. Following reclamation, the fence will be reconstructed to BLM specifications.

- Permanent erosion control measures will be installed after the workspace has been re-contoured. PNM will construct waterbars on all disturbed areas to the spacing and cross sections specified by the authorized officer.
- The disturbed areas will then be reseeded with the sagebrush-grass seed mix as outlined in the Reclamation Plan. Seeding will be accomplished within 120 days of construction completion, weather permitting. Upon evaluation after the second growing season, seeding will be repeated if a satisfactory stand is not obtained. Cut and fill slopes will be hand seeded with hydro-mulch excelsior netting and/or mulch with netting. During construction, a trash receptacle and a chemically treated portable toilet would be on location for trash and sewer disposal.
- All wastes will be disposed in a proper manner, as required by federal and state law.
- Any spills will be promptly cleaned up in accordance with a hazardous material response contingency plan.
- Invasive plants will be monitored and controlled in accordance with BLM policy. It will be the applicant's responsibility to monitor, control, and eradicate all invasive, non-native plant species within the proposed project area throughout the life of the proposed project. The applicant will contact the BLM/FFO regarding acceptable weed-control methods. If the applicant does not hold a current Pesticide Use Proposal, a Pesticide Use Proposal will be obtained prior to pesticide application. Only pesticides authorized for use on BLM lands will be used. Pesticides would be used in compliance with federal and state laws and only in accordance with their registered use and limitations. The applicant will contact the BLM/FFO prior to using these chemicals. The applicant will use a Pesticide Use Proposal Form and spray for halogeton (*Halogeton glomeratus*) prior to construction.
- All FFO cultural resources stipulations will be followed, as indicated in the Cultural Resource Records of Review that are attached to the ROW grant. These stipulations may include, but are not limited to, temporary or permanent fencing or other physical barriers, monitoring of earth-disturbing construction, project area reduction and/or specific construction avoidance zones, and employee education. All employees, contractors, and sub-contractors of the project will be informed by the project proponent that cultural sites are to be avoided by all personnel, personal vehicles, and company equipment; that it is illegal to collect, damage, or disturb cultural resources; and that such activities are punishable by criminal and or administrative penalties under the provisions of the Archaeological Resources Protection Act (16 USC 470aa-mm). In the event of a discovery during construction, the project proponent will immediately stop all construction activities in the immediate vicinity of the discovery and immediately notify the archaeological monitor, if present, or the BLM. The BLM would then evaluate or cause the site to be evaluated. Should a discovery be evaluated as significant (e.g., National Register, Native American Graves Protection and Repatriation Act, Archaeological Resources Protection Act), it will be protected in place until mitigating measures can be developed and implemented according to guidelines set by the BLM.

2.3 Alternatives Not Analyzed in Detail

Alternatives to the proposed action are developed to explore different ways to accomplish the purpose and need of the proposed project while also responding to potentially controversial issues related to the proposed action.

Initially, PNM proposed three alternative alignments for the pipeline: A, B, and C. Alignment A was considered, but not analyzed in detail.

Alignment A was located on mostly rock substrate and was the most hydraulically unfavorable alignment due to the topographic elevation changes between the recovery system location and the disposal site. The alignment would have ascended an approximately 80-foot high ridge line within an estimated ¼ mile which would have created hydraulic issues with pumping uphill at that slope.

Alignment B was also considered, but not carried forward. Alignment B would have added approximately 2,300 feet to the total length of the pipeline and would have crossed Shumway Arroyo below the recovery system location. This would have resulted in unnecessary impacts to Shumway Arroyo, an ephemeral watercourse regulated by the United States (U.S.) Army Corps of Engineers (USACE) and classified as a Waters of the U.S. Ultimately, PNM preferred

Alignment C (proposed action) was identified as the best solution to meet the terms and conditions of the Consent Decree and result in the least environmental impact.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the existing environment that would be affected by the implementation of the proposed action, as well as the environmental impacts of implementing the proposed action. Only those resources identified by the Interdisciplinary Team are described here as being potentially impacted by the proposed action. Under the no action alternative, the proposed Pumpback Pipeline would not be constructed, and PNM would not be in compliance with the terms of the Consent Decree. The no action alternative would result in the continuation of the current land and resource uses in the project area. This alternative will not be evaluated further in this EA.

3.1 Methodology

3.1.1 Direct and Indirect Impacts

Ecosphere Environmental Services (Ecosphere) biologists conducted field resource investigations of the proposed action on October 29, 2014. Cultural resource surveys were conducted by Stratified Environmental and Archeological Consultants, LLC (SEAS) on November 7, 2014. An on-site evaluation was conducted on February 18, 2015, and attended by representatives from PNM, Ecosphere, and the BLM/FFO.

The information about the existing condition of the environment is used as a baseline by which to measure and identify potential impacts from the proposed action and alternative. The analysis considered and incorporated design features, where appropriate, before arriving at the impacts described in the following section. Impacts in this section are analyzed by quantitatively estimating impacts based on the project components of the proposed action and alternatives. When necessary, impacts are analyzed qualitatively. This analysis was developed using the best available science. The primary data sources used for the analysis were the data collected from the site investigations and existing geographic information system (GIS) data and information from the BLM/FFO.

3.1.2 Cumulative Impacts

A Reasonably Foreseeable Development scenario (RFD) was prepared for the FFO in October 2014 (Engler et al. 2014). The RFD identified high, moderate, and low potential regions for oil development of the Mancos-Gallup Formation. Within the high potential region, full development would include five wells per Section, resulting in 1,600 completions. Within the moderate potential region, full development would include one well per Section, resulting in 330 completions. Within the low potential region, full development would include one well per Township, resulting in 30 well completions. Additionally, the RFD predicted 2,000 gas wells could be development in the northeastern corner of the FFO.

The following methods and assumptions were used to predict the potential impact of the development predicted in the RFD.

Past Oil and Gas Development

Past oil and gas wells were identified using the State of New Mexico Oil and Natural Gas Administration and Revenue Database (ONGARD). Following interim reclamation, the average well pad size for past development is 0.75 acre per well pad.

Present and Future Oil Development

Based on previous development, it was assumed that development of the high potential region would involve the twinning of well pads. This is the placement of two or more wells on one well pad. The assumption for the analysis is that the development of a Section would include two twinned well pads and one single well pad, resulting in three well pads for five wells. In the moderate and low potential regions, it was assumed that development would involve single well pads. The proposed action is located in the low potential region.

The average well pad size for a twinned well pad was assumed to be 500 feet by 530 feet, or 6.08 acres. An additional 0.6 acre was added to account for any associated road or pipeline development, resulting in 6.68 acres of short-term disturbance. Following completion of the well, interim reclamation of the well pad and reclamation of any pipelines would occur, resulting in 1.5 acres of long-term disturbance.

The average well pad size for a single well pad was assumed to be 500 feet by 500 feet, or 5.74 acres. Again, an additional 0.6 acre was added to account for associated road or pipeline development, resulting in 6.34 acres of long-term disturbance. Following completion of the well, interim reclamation of the well pad and reclamation of any pipelines would occur, resulting in 1.5 acres of long-term disturbance.

The Random Point Tool in ArcMap was used to randomly assign points representing well pads and associated disturbance based on the RFD assumptions: five wells per section in the high potential region, one well per section in the moderate potential region, and one well per township in the low potential region. The allowed both long-term and short-term disturbance from oil development of the Mancos-Gallup Formation to be calculated for the analysis area used in this EA.

Present and Future Gas Development

The RFD predicted 2,000 wells could be developed in the gas prone area. The average well pad size was assumed to be 555 feet by 410 feet, or 5.22 acres. An additional 0.6 acre of disturbance was added to account for associated roads and pipelines, resulting in total disturbance of 5.82 acres. Following completion of the well, interim reclamation of the well pad and reclamation of any pipelines would occur, resulting in 1.5 acres of long-term disturbance.

The Random Point Tool in ArcMap was used to randomly assign points representing one well pad and associated disturbance. The allowed both long-term and short-term disturbance from gas

development in the northeastern corner of the FFO to be calculated for the analysis areas used in this EA.

3.2 Air Quality

3.2.1 Affected Environment

The proposed project would be located in San Juan County, New Mexico. Additional general information on air quality in the area is contained in Chapter 3 of the Farmington PRMP/FEIS (USDI/BLM 2003a). In addition, new information about greenhouse gases (GHGs) and their effects on national and global climate conditions has emerged since this document was prepared. Ongoing scientific research has identified the potential impacts of GHG emissions such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO_x), water vapor, and several trace gases on global climate. Through complex interactions on a global scale, GHG emissions may cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth into space. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), industrialization and burning of fossil carbon sources have caused GHG concentrations to increase measurably and may contribute to overall climatic changes, typically referred to as global warming.

Much of the information referenced in this section is incorporated from the Air Resources Technical Report for BLM Oil and Gas Development in New Mexico, Kansas, Oklahoma, and Texas (herein referred to as Air Resources Technical Report, USDI/BLM 2014). This document summarizes the technical information related to air resources and climate change associated with oil and gas development, and the methodology and assumptions used for analysis.

The United States Environmental Protection Agency (USEPA) has the primary responsibility for regulating air quality, including six nationally regulated ambient air pollutants (criteria pollutants). These criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) that includes a PM with a diameter between 2.5 and 10 micrometers (PM_{10}), and a PM with a diameter of 2.5 micrometers or less ($PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). The USEPA has established National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. The NAAQS are protective of human health and the environment. The USEPA has approved New Mexico's State Implementation Plan. New Mexico enforces state and federal air quality regulations on all public and private lands within the state, except for tribal lands within Bernalillo County. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology, and terrain and it includes applications of noise, smoke management, and visibility.

Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years. The USEPA has proposed or completed actions recently to implement Clean Air Act requirements for GHG emissions. Climate has the potential to influence renewable and non-renewable resource management.

Air Quality

Criteria Air Pollutants

The Air Resources Technical Report describes the types of data used for description of the existing conditions of criteria pollutants, how the criteria pollutants are related to the activities involved in oil and gas development, and provides a table of current National and State standards. The USEPA's Green Book web page (USEPA 2013a) reports that all counties in the BLM/FFO area are in attainment of all NAAQS as defined by the Clean Air Act. The area is also in attainment of all New Mexico Ambient Air Quality Standards (NMAAQS). The status of criteria pollutant levels in the BLM/FFO area are described below.

"Design Values" are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. The 2012 design values for criteria pollutants are listed below in Table 3-1. There is no monitoring for CO and Pb in San Juan County, but because the county is relatively rural, it is likely that these pollutants are not elevated. PM_{10} design concentrations are not available for San Juan County.

Table 3-1. Criteria pollutant-monitored values in San Juan County

Pollutant	Design Value	Averaging Time	NAAQS	NMAAQS
O_3	0.071 ppm	8-hour	0.075 ppm[1]	
NO_2	13 ppb	Annual	53 ppb[2]	50 ppb
NO_2	38 ppb	1-hour	100 ppb[3]	
$PM_{2.5}$	4.7 $\mu g/m^3$	Annual	12 $\mu g/m^3$ [4]	60 $\mu g/m^3$ [6]
$PM_{2.5}$	14 $\mu g/m^3$	24 hour	35 $\mu g/m^3$ [3]	150 $\mu g/m^3$ [6]
SO_2	19 ppb	1-hour	75 ppb[5]	

[1] Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years

[2] Not to be exceeded during the year

[3] 98th percentile, averaged over 3 years

[4] Annual mean, averaged over 3 years

[5] 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years

[6] The NMAAQS is for Total Suspended Particulate

Note: NAAQS = National Ambient Air Quality Standard Standards; NMAAQS = New Mexico Ambient Air Quality Standards; O_3 = ozone; NO_2 = nitrogen dioxide; $PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less; ppb = parts per billion; $\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million;

Source: USEPA 2014

In 2005, the USEPA estimated that there was less than 0.01 ton of lead per square mile emitted in the area, which is less than 2 tons total (USEPA 2012). Lead emissions are not an issue in this area and will not be discussed further.

Air quality in a given region can be measured by its Air Quality Index (AQI) value. The AQI is reported according to a 500-point scale for each of the major criteria air pollutants, with the worst denominator determining the ranking. For example, if an area has a CO value of 132 on a given day and all other pollutants are below 50, the AQI for that day would be 132. The AQI scale breaks down into six categories: good (AQI<50), moderate (50-100), unhealthy for sensitive

groups (100-150), unhealthy (151-200), very unhealthy (201-300), and hazardous (301-500). The AQI is a national index; the air quality rating and the associated level of health concern is the same everywhere in the country. The AQI is an important indicator for populations sensitive to air quality changes.

The mean AQI values for San Juan County were generally in the good range (AQI<50) in 2013, with 80 percent of the days in that range. The median AQI in 2013 was 42, which indicates "good" air quality. The maximum AQI in 2013 was 156, which is "unhealthy."

Although the AQI in the region has reached the level considered unhealthy for sensitive groups on several days almost every year in the last decade, there are no patterns or trends to the occurrences (Table 3-2). On 8 days in the past decade, air quality reached the level of "unhealthy" and on two days, air quality reached the level of "very unhealthy." In 2009 and 2012, there were no days designated as "unhealthy for sensitive groups" or worse in air quality. In 2005 and 2013, there was one day that was "unhealthy" during each year. In 2010, there were five "unhealthy" days and two "very unhealthy" days.

Table 3-2. Number of days classified as "unhealthy for sensitive groups" (AQI 101-150) or worse

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Days	3	6	9	18	1	0	12	9	0	1

Source: USEPA 2013b

Hazardous Air Pollutants

The Air Resources Technical Report discusses the relevance of hazardous air pollutants (HAPs) to oil and gas development and the particular HAPs that are regulated in relation to these activities (USDI/BLM 2014). The USEPA conducts a periodic National Air Toxics Assessment (NATA) that quantifies HAP emissions by county in the U.S. The purpose of the NATA is to identify areas where HAP emissions result in high health risk. A review of the results of the 2005 NATA shows that cancer, neurological and respiratory risks in San Juan County are generally lower than statewide and national levels as well as those for Bernalillo County where urban sources are concentrated in the Albuquerque area (USEPA 2012).

Climate

The analysis area is located in a semi-arid climate regime, typified by dry windy conditions and limited rainfall. Summer maximum temperatures generally are in the range of 80 or 90 degrees Fahrenheit (°F), and winter minimum temperatures generally are in the teens to 20s. Temperatures occasionally reach above 100°F in June and July and have dipped below 0°F in December and January. Precipitation is divided between summer thunderstorms associated with the southwest monsoon and winter snowfall as Pacific weather systems drop south into New Mexico.

Table 3-3 shows climate normals for the 30-year period from 1981 to 2010 for the Farmington, New Mexico area.

Table 3-3. Climate normals for the Farmington area, 1981-2010

Month	Average Temperature[1]	Average Maximum Temperature[1]	Average Minimum Temperature[1]	Average Precipitation (inches)
January	30.5	40.8	20.3	0.53
February	35.8	46.8	24.8	0.59
March	43.2	56.1	30.3	0.78
April	50.4	64.7	36.2	0.65
May	60.4	74.8	46.1	0.54
June	69.8	85.1	54.5	0.21
July	75.4	89.6	61.2	0.90
August	73.2	86.5	59.8	1.26
September	65.4	79.1	51.7	1.04
October	53.3	66.4	40.1	0.91
November	40.5	52.2	28.8	0.68
December	31.0	41.2	20.7	0.50

[1] Degrees Fahrenheit
Source: USDI/BLM 2014

Very recently, pioneering research using space-borne (satellite and aircraft) determination of methane concentrations have indicated anomalously large methane concentrations may occur in the Four Corners region (Kort et al. 2014). A subsequent study (Schneising et al. 2014) indicated larger anomalies over other oil and gas basins in the U.S. Methane is 34 times more potent at trapping GHG emissions than CO_2 when considering a time horizon of 100 years (Intergovernmental Panel on Climate Change 2013). While space-borne studies can determine the pollutant concentration in a column of air, these studies cannot pinpoint the specific sources of air pollution. Further study is required to determine the sources responsible for methane concentrations in the Four Corners region; however, it is known that a significant amount of methane is emitted during oil and gas well completion (Howarth et al. 2011). Methane is also emitted from process equipment, such as pneumatic controllers and liquids unloading, at oil and gas production sites. Ground-based, direct source monitoring of pneumatic controllers conducted by the Center for Energy and Environmental Resources (Allen et al. 2014a) show that methane emissions from controllers exhibit a wide range of emissions and a small subset of pneumatic controllers emitted more methane than most. Emissions measured in the study varied significantly by region of the U.S., the application of the controller, and whether the controller was continuous or intermittently venting. The Center for Energy and Environmental Resources had similar findings of variability of methane emissions from liquid unloading (Allen et al. 2014b). In October 2012, the USEPA promulgated air quality regulations controlling volatile organic compound emissions at gas wells. These rules require air pollution mitigation measures that reduce the emissions of volatile organic compounds. These same mitigation measures have a co-benefit of reducing methane emissions. Future ground-based and space-borne studies planned in the Four Corners region with emerging pollutant measurement technology may help to pinpoint significant, specific sources of methane emissions in the region.

The Air Resources Technical Report summarizes information about GHG emissions from oil and gas development and their effects on national and global climate conditions. While it is difficult to determine the spatial and temporal variability and change of climatic conditions, what is known is that increasing concentrations of GHGs are likely to accelerate the rate of climate change.

3.2.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Air Quality

Air quality would be directly, but temporarily, impacted by pollution from exhaust emissions and dust. Air pollution from motorized equipment and dust dissemination would discontinue at project completion; the booster station would utilize electric power for operation of a pump. Other factors currently affecting air quality in the area include dust from livestock-herding activities, recreational use, and vehicular traffic on dirt roads, and emissions from oil and gas production activities. Impacts to air quality attributable to this project would be temporary and minor.

Cumulative Impacts

The primary activities that contribute to levels of air pollutant and GHG emissions in the Four Corners area are electricity generation stations, fossil fuel industries, and vehicle travel. The Air Resources Technical Report includes a description of the varied sources of national and regional emissions that are incorporated here to represent the past, present, and reasonably foreseeable impacts to air resources (USDI/BLM 2014). It includes a summary of emissions on the national and regional scale by industry source.

The proposed project could result in a very small direct and indirect increase in several criteria pollutants, HAPs, and GHGs from the short-term construction activity. This very small increase in emissions from short-term construction activity would not be expected to result in exceeding the NAAQS for any criteria pollutants in the project area.

The very small increase in GHG emissions that could result from the proposed action would not produce climate change impacts differing from the no action alternative. This is because climate change is a global process that is impacted by the sum total of GHGs in Earth's atmosphere. The incremental contribution to global GHGs from the action alternative cannot be translated into effects on climate change globally or in the area of this site-specific action. It is currently not feasible to predict with certainty the net impacts from the action alternative on global or regional climate.

The Air Resources Technical Report (USDI/BLM 2014) discusses the relationship of past, present, and future predicted emissions to climate change and the limitations in predicting local and regional impacts related to emissions. It is currently not feasible to know with certainty the net impacts from particular emissions associated with activities on public lands.

3.3 Upland Vegetation

3.3.1 Affected Environment

Vegetation in the project and action area is comprised of two saltbush community types. In lowland areas associated with Westwater and Shumway arroyos, vegetation is dominated by greasewood *(Sarcobatus vermiculatus)*, four-wing saltbush *(Atriplex canescens)*, kochia (*Kochia scoparia*), and halogeton *(Halogeton glomeratus)*. Vegetative cover in the lowland areas was visually estimated at 30 percent. With slight increases in elevation, greasewood decreases in dominance, and the vegetative community is predominantly alkali sacaton (*Sporobolus airoides*), mat saltbush (*Atriplex obovata*), and shadscale saltbush (*Atriplex confertifolia*) with cover ranging from 25 to 30 percent. Within the disturbed areas of the proposed pipeline corridor on the west side of County Road 6800, vegetation is composed of halogeton, alkali sacaton, Russian thistle (*Salsola tragus*), curlycup gumweed (*Grindelia squarrosa*), broom snakeweed (*Gutierrezia sarothrae*), along with several annual species such as roseheath (*Chaetopappa ericoides*), and evening primrose (*Oenothera pallida*).

3.3.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Within the approved pipeline corridor, all vegetation would be cleared, and the top 6 inches of topsoil would be salvaged and stockpiled. Vegetation removed during construction, including trees that measure less than 3 inches in diameter (at ground level) and slash/brush, would be chipped or mulched and incorporated into topsoil as additional organic matter. Approximately 4.5 acres of undisturbed vegetation may be temporarily impacted by the proposed action. Following reclamation, there would be long-term changes in the density and composition of wooded vegetation communities. Disturbed areas would be expected to re-vegetate in 2 or more years.

Revegetation of the pipeline ROW would be initiated by PNM within 120 days of construction. The Pumpback Pipeline ROW would be reseeded with Greasewood Community seed mix. A project-specific reclamation plan was prepared for the action and is provided in Appendix C.

Cumulative Impacts

The cumulative impacts analysis area for assessing impacts to upland vegetation is the Shumway Arroyo watershed. Reasonably foreseeable development within the Shumway Arroyo watershed may include an estimated additional 5 oil and gas wells and related facilities and approximately 0.8 mile of new roads based on the assumption that 5 new well pads could be developed in the watershed. Surface-disturbing activities associated with these actions may directly affect an estimated 32 acres of upland vegetation.

The proposed action would result in the short-term loss of approximately 4.5 acres of Great Basin desert shrub vegetation. Other reasonably foreseeable actions within the watershed that could impact upland vegetation would include livestock grazing, commercial and residential development, mining, wildfire, and vegetation management. Cumulative impacts to upland

vegetation from the proposed action would result from the long-term changes in density and composition of approximately 4.5 acres of Great Basin desert shrub habitat. The proposed action would not result in significant impacts to upland vegetation when combined with past, present, and future actions.

3.4 Noxious Weeds and Invasive Species

3.4.1 Affected Environment

Management of invasive and non-native plant species is mandated under several pieces of legislation, including the Lacey Act, as amended (16 USC 3371-3378); the Federal Noxious Weed Act of 1974, as amended (7 USC 2801 et seq.); the New Mexico Noxious Weed Management Act of 1998; and EO 13112 regarding Invasive Species. Under EO 13112, Federal agencies are ordered not to authorize or carry out actions that would cause or promote the introduction of invasive species.

In the San Juan Basin, invasive plants are frequently found in areas that have been disturbed by surface activities. A mission of the BLM/FFO is to detect new invasive plant species populations, prevent the spread of these new populations, manage existing populations, and eradicate invasive populations. This is to be accomplished in a timely manner, using the safest environmental methods available. For all actions on BLM/FFO lands that involve surface disturbance or reclamation, reasonable steps are required to prevent the introduction or spread of invasive plants (USDI/BLM 2003a, 3-34).

The U.S. Department of Agriculture (USDA) has designated certain plants as federally listed noxious weeds. The New Mexico Department of Agriculture (NMDA) has designated certain plants as state-listed noxious weeds (NMDA 2010). A total of 212 invasive and poisonous weed species have been identified on BLM/FFO lands. The PRMP/FEIS lists the invasive, non-native plant species of concern in the BLM/FFO area (BLM 2003a, 3-34–3-35).

In addition to halogeton, salt cedar (*Tamarix chinensis*), another BLM-listed invasive, non-native species, occurs in the project area. No other BLM-listed invasive, non-native plant species were identified during the field survey.

3.4.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Invasive species are generally tolerant of disturbed conditions, and disturbed soils at project sites may provide an opportunity for the introduction and establishment of non-native invasive species. During construction and operation, noxious weed sources could be introduced to disturbed areas from vehicles, equipment, people, wind, water, or other mechanisms. There would be a long-term potential for non-native invasive weeds to become established in the area. PNM would be responsible for monitoring and controlling any non-native invasive weed species within the ROW

for the life of the project. PNM would submit a Pesticide Use Proposal Form to the BLM prior to construction before pre-treating the halogeton in the proposed ROW.

Cumulative Impacts

The cumulative impacts analysis area for assessing impacts to noxious weeds and invasive species is the Shumway Arroyo watershed. Reasonably foreseeable development within the Shumway Arroyo watershed may include an estimated additional 5 oil and gas wells and related facilities, and approximately 0.8 mile of new roads based on the assumption that 5 new well pads could be developed in the watershed. Surface-disturbing activities associated with these actions may directly affect an estimated 32 acres of undisturbed native vegetation.

Other reasonably foreseeable actions within the watershed that could impact noxious weeds and invasive species would include livestock grazing, commercial and residential development, mining, wildfire, and vegetation management. Cumulative impacts to noxious weeds and invasive species would result from the disturbance of 4.5 acres of Great Basin desert shrub habitat which would be more susceptible to the spread or establishment of noxious weeds managed by the BLM/FFO. The proposed action would not result in significant impacts to noxious weeds and invasive species when combined with past, present, and future actions.

3.5 Endangered Species Act – Threatened & Endangered Species

3.5.1 Affected Environment

The ESA requires all federal departments and agencies to conserve threatened, endangered, and critical and sensitive species and the habitats on which they depend, and to consult with the U.S. Fish and Wildlife Service (USFWS) on all actions authorized, funded, or carried out by the agency to ensure that the action will not likely jeopardize the continued existence of any threatened and endangered species or adversely modify critical habitat. Consultation with the USFWS, as required by Section 7 of the ESA, was conducted as part of the Farmington PRMP/FEIS (Consultation No. 2-22-01-I-389) to address cumulative effects of RMP implementation. The consultation is summarized in Appendix M of the PRMP/FEIS (USDI/BLM 2003a).

According to the USFWS, there are nine federally listed threatened, endangered, or candidate species with the potential to occur in San Juan County, New Mexico. Table 3-4 lists these species and their conservation status, habitat associations, and potential to occur in the project or action area. No federally listed species were identified during the field survey. The BLM-designated Hogback Area of Critical Environmental Concern (ACEC) is located approximately 1 mile west of the proposed project. Known populations of Mesa Verde cactus (*Sclerocactus mesae-verdae*) and Mancos milkvetch (*Astragalus humillimus*) occur within the ACEC.

Table 3-4. Threatened and Endangered Species with potential to occur in San Juan County, New Mexico

Species	Status	Habitat Associations	Potential to Occur in the Project or Action Area
Birds			
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E	Breeds in dense, shrubby riparian habitats, usually in close proximity to surface water or saturated soil.	Riparian habitat in Westwater and Shumway arroyos is primarily salt cedar, most of which is stressed or deceased. The linear nature of this habitat is not of sufficient size or structure to provide suitable habitat.
Sprague's pipit (*Anthus spragueii*)	C	Breeds in relatively large, flat expanses of native grassland with grass height between 4 and 12 inches or greater. Winters in New Mexico.	No flat grasslands occur in the project or action area.
Yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	T	Breeds in riparian woodlands with dense, understory vegetation.	The project area does not contain riparian habitat with dense understory vegetation. No cottonwood galleries are located within the project or action area.
Fishes			
Colorado pikeminnow *(Ptychocheilus lucius)*	E	Large rivers with strong currents, deep pools, and quiet backwaters.	No perennial water sources occur in the project and action areas.
Razorback sucker *(Xyrauchen texanus)*	E	Medium to large rivers with silty to rocky substrates; prefers strong currents and deep pools.	No perennial water sources occur in the project and action areas.
Zuni bluehead sucker (*Catostomus discobolus yarrowi*)	E	Most frequently occurs in stream reaches with cobble and bedrock substrates with slow- to moderate-velocity water.	No perennial water sources occur in the project and action areas.
Plants			
Knowlton's cactus *(Pediocactus knowltonii)*	E	Alluvial deposits that form rolling, gravelly hills in piñon-juniper and sagebrush communities (from 6,200 to 6,400 feet). A type locality of the Los Piños River area.	No alluvial deposits on rolling, gravelly hills are located within the proposed project or action area. No piñon-juniper woodlands occur in the project or action area.
Mancos milkvetch *(Astragalus humillimus)*	E	Cracks of Point Lookout Sandstone of the Mesa Verde series (from 5,000 to 6,000 feet).	No Point Lookout Sandstone occurs in the project or action area.
Mesa Verde cactus *(Sclerocactus mesae-verdae)*	T	Highly alkaline soils in sparse shale or adobe clay badlands of the Mancos and Fruitland Formations, and Menefee Formation soils near Sheep Springs (from 4,000 to 5,550 feet).	Some soils in the project and action area are derived from the Fruitland Formation. Species is known to occur within 1 mile of the project area.

3.5.2 Impacts from the Proposed Action

Direct and Indirect Impacts

The Hogback ACEC is located approximately 1 mile west of the proposed project area. The ACEC supports populations of Mesa Verde cactus. The proposed project area was surveyed using pedestrian transects to identify potential habitat for Mesa Verde cactus; no Mesa Verde cactus was observed in the proposed project area during the biological survey. Although suitable habitat occurs in the action area, the proposed project area is located within the floodplain of Westwater and Shumway arroyos and is previously disturbed. No suitable habitat was identified in the project area. The proposed action would have no effect on Mesa Verde cactus.

3.6 Migratory Birds

3.6.1 Affected Environment

Under the MBTA and EO 13186, federal agencies are required to consider impacts to migratory birds from management activities. The BLM migratory bird conservation policy for the planning area is detailed in Instruction Memorandum No. NM-F00-2010-001 (USDI/BLM 2010). This management policy establishes a consistent approach for addressing migratory bird populations and habitats when by making project level implementation decisions. The management policy also outlines best management practices and design features to avoid or minimize impacts.

While all migratory songbirds are protected by law, certain species have been determined to be at greater risk than others. More than 350 avian species occur in San Juan County and the surrounding area administered by the BLM/FFO. Data collected through breeding bird surveys coordinated by the U.S. Fish and Wildlife Service (USFWS) and private sector efforts have provided the basis for the New Mexico Partners in Flight (NMPIF) organization to develop bird "watch lists" and the USFWS list of Birds of Conservation Concern. The NMPIF has also identified priority species of birds by habitat type for the state of New Mexico. The FFO area lies within the Colorado Plateau physiographic region, as identified by the NMPIF. The analysis area contains the Great Basin desert shrub (sage-grass) habitat.

The Bird Conservation Plan developed for the State of New Mexico by the NMPIF lists the sage thrasher (*Oreoscoptes montanus*) and sage sparrow (*Amphispiza belli*) as a "highest priority" species for conservation in the Great Basin desert shrub habitat. Most of the priority bird species identified by the NMPIF also occur on the USFWS Division of Migratory Bird Management list of "Birds of Conservation Concern 2008" within the Bird Conservation Region 16–Southern Rockies/Colorado Plateau. Birds included on this list are those "species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the ESA of 1973" (USFWS 2008).

3.6.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Executive Order 13186 calls for increased efforts to fully implement the MBTA. In keeping with this mandate, the BLM consulted the NMPIF Bird Conservation Plan for the State of New Mexico and the USFWS list of Birds of Conservation Concern. A review of these documents—specifically as they pertain to the Colorado Plateau physiographic area—indicates there are eight avian species with a known range of distribution in the BLM/FFO planning area that utilize the sage-grass habitat that occur on the NMPIF "Highest Priority" and USFWS "Birds of Conservation Concern 2008" lists.

Various types of perturbations and/or anthropogenic activity may affect these species. These species and a brief assessment of the effects of the proposed action on their habitat are provided in Table 3-5. No nests were recorded within the project area during the biological surveys.

Table 3-5. Migratory bird species of concern potentially occurring within the analysis area and effects from the proposed action

Species	Habitat Type	Effects
Grasshopper sparrow (*Ammodramus savannarum*)	Sage-grass	No long-term effects following reclamation
Sage sparrow[1] (*Amphispiza belli*)	Sage-grass	No long-term effects following reclamation
Burrowing owl (*Athene cunicularia*)	Sage-grass	No effect; nests in abandoned prairie dog burrows
Ferruginous hawk (*Buteo regalis*)	Sage-grass/piñon-juniper interface	No effect; no suitable habitat in the project area
Mountain plover (*Charadrius montanus*)	Sage-grass	No effect; no suitable habitat in the project area
Long-billed curlew (*Numenius americanus*)	Sage-grass	No long-term effects following reclamation
Sage thrasher[1] (*Oreoscoptes montanus*)	Sage-grass	No long-term effects following reclamation
Bendire's thrasher (*Toxostoma bendirei*)	Sage-grass	No long-term effects following reclamation

[1] "High Priority" bird species that are on the NMPIF Priority Species List, but not on the USFWS Birds of Conservation Concern 2008 list. Source: NMPIF 2007.

Direct impacts to migratory birds would include the disturbance and modification of approximately 4.5 acres of undisturbed desert scrub vegetation. No trees would be removed as a result of the proposed action. The proposed action would not contribute to long-term migratory bird habitat loss in the planning area. Migratory birds would be impacted by disturbance during construction and reclamation; these impacts would be short term.

Impacts to migratory birds would be greater should construction occur during the breeding season of May 15 through July 31. Construction activities during this period could result in nest

destruction or may cause some nest abandonment in adjacent areas. Pre-construction surveys would be conducted to identify any active nests should construction occur during the breeding season. Any spills would be promptly cleaned up.

Cumulative Impacts

The cumulative impacts analysis area for assessing impacts to migratory birds is the Shumway Arroyo watershed. Reasonably foreseeable development within the Shumway Arroyo watershed may include an estimated additional 5 oil and gas wells and related facilities and approximately 0.8 mile of new roads based on the assumption that 5 new well pads could be developed in the watershed. Surface-disturbing activities associated with these actions may directly affect an estimated 32 acres of migratory bird habitat.

The proposed action would result in the short-term modification of approximately 4.5 acres of potential migratory bird habitat. Other reasonably foreseeable actions within the watershed that could impact migratory birds would include livestock grazing, commercial and residential development, mining, wildfire, and vegetation management. Cumulative impacts to migratory birds from the proposed action would result from the long-term changes in density and composition of approximately 4.5 acres of Great Basin desert shrub habitat. The proposed action would not result in significant impacts to migratory birds when combined with past, present, and future actions.

3.7 Special Status Species

3.7.1 Affected Environment

In accordance with BLM Manual 6840, the BLM manages certain sensitive species not federally listed as threatened or endangered in order to prevent or reduce the need to list the species as threatened or endangered in the future.

The proposed Pumpback Pipeline Project would be constructed across BLM managed lands and private (fee) surface approximately 1 mile east of the Hogback ACEC.

Of the 24 species warranted for special management consideration by the BLM/FFO (BLM 2008), Townsend's big-eared bat (*Corynorhinus townsendii*), Bendire's thrasher (*Toxostoma bendirei*), golden eagle (*Aquila chrysaetos*), and prairie falcon (*Falco mexicanus*) have the potential to occur within the project and action areas. Species listed by the BLM/FFO and their potential to occur in the project and action areas are summarized in Table 3-6. A Biological Survey Report for the proposed project was prepared and is provided in Appendix D. The Biological Survey Report provides the basis for the findings listed in Table 3-6.

Table 3-6. Special status species with potential to occur in the project area

Species	Conservation Status	Habitat Associations
Mammals		

Species	Conservation Status	Habitat Associations
Townsend's big-eared bat (*Corynorhinus townsendii*)	BLM Sensitive	Roosts mostly in caves or mines; can roost in abandoned buildings at night. In summer, this species occurs widely across the state and can be found over desert scrub, desert-mountains, oak-woodland, piñon-juniper, and coniferous forests.
Birds		
Bendire's thrasher (*Toxostoma bendirei*)	BLM Sensitive	Typically inhabits sparse desert shrubland and open woodland with scattered shrubs.
Golden eagle (*Aquila chrysaetos*)	BLM Sensitive	In the western U.S., mostly open habitats in mountainous, canyon terrain. Nests primarily on cliffs and in trees.
Prairie falcon (*Falco mexicanus*)	BLM Sensitive	Arid, open regions of grassland or scrub vegetation with cliff formations that are at least 30 feet high. Breeding cliffs sometimes are in semi-open regions with scattered conifer trees and occasionally dense woodlands.

3.7.2 Impacts from the Proposed Action

Direct and Indirect Impacts

The project and action areas provide potential foraging habitat for Townsend's big-eared bat. No suitable roosting habitat would be modified by the proposed project. It is possible that this bat could forage in the vicinity or fly through the area. There would be no impacts to Townsend's big-eared bat, as all construction activities would take place during daylight hours.

The vegetation in the project and action areas is suitable for Bendire's thrasher nesting and foraging needs. Approximately 4.5 acres of undisturbed habitat would be modified by the proposed project. All areas of disturbance, with the exception of existing roads and the booster station, would be reclaimed following construction. Impacts to Bendire's thrasher habitat would be short term. Bendire's thrasher may avoid the project area during construction due to increased noise and activity. These impacts would also be short term. Should construction occur during the bird-breeding season (May 15 to July 31), a pre-construction nest survey would be required to identify any nesting bird species.

No raptor nesting activities were detected within the action area during the biological survey. Given the distance to known territories and suitable nesting habitat, the presence of prey species (kangaroo rat) and the possibility of undocumented territories, it is possible that raptor species may forage or fly through the action area. There would be no removal of potential nesting habitat for sensitive raptor species as a result of the proposed project. Direct impacts would include the removal of approximately 4.5 acres of undisturbed foraging habitat. Short-term impacts may also include avoidance of the project area by raptors during construction from increased activity and associated noise.

Cumulative Impacts

The BLM/FFO would continue to manage non-federally listed species according to BLM policies and guidelines, with the goal of contributing to the conservation of these species to reduce the potential for being listed under the ESA of 1973, as amended (USDI/BLM 2003a, 4-111). For reasonably foreseeable actions on federal lands, direct impacts to nesting special status raptor species would be avoided through the BLM's siting criteria. Development on federal and private lands would result in the removal or modification of potential foraging habitat. These effects would be related to availability of undisturbed habitat and the amount of disturbance that would occur within the analysis area.

The cumulative impacts analysis area for assessing impacts to special status species is the Shumway Arroyo watershed. Reasonably foreseeable development within the Shumway Arroyo watershed may include an estimated additional 5 oil and gas wells and related facilities and approximately 0.8 mile of new roads based on the assumption that 5 new well pads could be developed in the watershed. Surface-disturbing activities associated with these actions may directly affect an estimated 32 acres of special status species habitat.

The proposed action would result in the short-term loss of approximately 4.5 acres of undisturbed habitat for Bendire's thrasher, golden eagle, and prairie falcon. Other reasonably foreseeable actions within the watershed that could impact special status species would include livestock grazing, commercial and residential development, mining, wildfire, and vegetation management. The proposed action would not contribute appreciably to a cumulative habitat loss for BLM special management species within the planning area.

3.8 Cultural Resources

3.8.1 Affected Environment

The proposed project is located within the archaeologically rich San Juan Basin of northwestern New Mexico. In general, the prehistory of the San Juan Basin can be divided into five major periods—PaleoIndian (ca. 10000 B.C. to 5500 B.C.), Archaic (ca. 5500 B.C. to A.D. 400), Basketmaker II-III and Pueblo I-IV periods (A.D. 1 to 1540), and the historic (A.D. 1540 to present) that includes Native American and later Hispanic and Euro-American settlers. A detailed description of these various periods and select phases within each period is provided in the Farmington PRMP/FEIS (USDI/BLM 2003a).

BLM Manual 8100, The Foundations for Managing Cultural Resources (USDI/BLM 2005) defines a cultural resource as "a definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups. (cf. "traditional cultural property"). Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for public

benefit described in this Manual series. They may be but are not necessarily eligible for the National Register (a.k.a. "historic property")."

In the broadest sense cultural resources include sites, buildings, structures, objects, and districts/landscapes (NPS 1997). Cultural resources (prehistoric or historic) vary considerably, and can include but are not limited to simple artifact scatters, domiciles of various types with a myriad of associated features, rock art and inscriptions, ceremonial/religious features, and roads and trails. Traditional Cultural Properties (TCPs) are cultural resources that are eligible for the National Register of Historic Places (NRHP) and have cultural values, sometimes sacred, that transcend for instance the values of scientific importance that are normally ascribed to cultural resources such as archaeological sites and may or may not coincide with archaeological sites (Parker and King 1998). Historically Native American communities are most likely to identify TCPs, although TCPs are not restricted to those associations. Some TCPs are well known while others may only be known to a small group or otherwise only vaguely known. Native American tribal perspectives on what is considered a TCP are not necessarily limited by a places National Register eligibility or lack thereof.

The NRHP (36 CFR Part 60) is the basic benchmark by which the significance of cultural resources are evaluated by a federal agency when considering what effects its actions may have on those resources. To summarize, to be considered eligible for the NRHP a cultural resource must meet one or more of the following criteria: a) are associated with events that have significantly contributed to the broad patterns of our history; or b) are associated with the lives of persons significant in our past; or c) embody distinctive characteristics of the type, period, or method of construction, or represents the work of a master, or possesses high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; or d) have yielded, or may be likely to yield, information that is important in a pre-history or history. The resource, as applicable, must possess one or more of the following aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. In the event a determination of eligibility cannot be made, the resource is treated as eligible (a historic property).

Section 106 of the NHPA and its implementing regulations (36 CFR Part 800) requires federal agencies to consider what effect their licensing, permitting, funding or otherwise authorizing an undertaking, such as an APD or R-O-W, may have on properties eligible for the National Register. Pursuant to 36 CFR 800.16 (i), "Effect means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." Effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative. Area of Potential Effect (APE) means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is typically defined as areas to be directly disturbed and areas in immediate close proximity. Cultural resources are identified and reported through a combination of literature review and pedestrian survey consistent with guidelines set forth in the Procedures for Performing Cultural Resources Fieldwork on Public Lands in the Area of New Mexico BLM Responsibilities (USDI/BLM 2005).

BLM/FFO compliance with Section 106 of the National Historic Preservation Act is adhered to by following the State Protocol Agreement between New Mexico BLM and New Mexico State Historic Preservation Officer (BLM-SHPO 2014), which is authorized by the National Programmatic Agreement among the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (NPA 2012), and other applicable BLM handbooks.

Cultural resources within the entire APE for the proposed action were identified by a literature review and an archaeological BLM Class III level (100 percent) pedestrian survey by SEAS and a report was prepared and submitted to the BLM. The cultural resources inventory identified one cultural site within the APE (SEAS Report No. 14-104; BLM Report 2015(II)015F). The site is not eligible for nomination to the National Register of Historic Places (NRHP).

3.8.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Cultural resources tend to degrade over time from natural forces; however, many survive for hundreds or thousands of years. Any land-disturbing activity can disturb, damage, or uncover cultural resources. Direct impacts normally include alterations to the physical integrity of a historic property. If a historic property is significant for other than its information potential, direct impacts may also include the introduction of audible, atmospheric, or visual elements that are out of character for the property. A potential indirect impact from the proposed action, particularly in undeveloped areas is the increase in human activity or access to the area with an increased potential of unauthorized damage to historic properties.

There are no known historic properties within the APE. The proposed action will have no direct or indirect impacts on historic properties (no historic properties affected). The proposed action is not known to physically threaten any TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere or otherwise hinder the performance of traditional ceremonies/rituals.

Cumulative Impacts

The cumulative impacts analysis area (CIAA) is the associated watershed. The United States is divided and sub-divided into successively smaller hydrologic units which are classified into six levels nested within each other, from the largest geographic area (region) to the smallest geographic area (subwatershed). The boundaries are distinguished by hydrographic and topographic criteria that delineate an area of land upstream from a specific point on a river, stream or similar surface waters (USGS 2013, NRCS 2013). Hydrologic units can be viewed as a naturally defined landscape and impacts to cultural resources in one part of that landscape could, theoretically, affect a broader understanding of the interrelationships between sites in the landscape as a whole. The smallest hydrologic unit area, typically from 10 to 40,000 acres (15 to 62 mi^2; HUC 12) or combination thereof are used as the CIAA.

The CIAA for cultural resources is the proposed project area and the Outlet Shumway Arroyo subwatershed which total 32,352acres. Based on New Mexico Cultural Resource Information System data (NMCRIS; July 2015), within the subwatershed there are 416 recorded sites and approximately 37 percent of the subwatershed (11,868 acres) have been inventoried for cultural resources by 169 unique investigations since 1974. The cultural inventory coverage for the CIAA is likely higher as not all survey data is digitally available (e.g., Navajo lands, surveys since July 2015).

- What impacts would surface disturbance for the proposed action have on historic properties in the CIAA?

There are no properties listed on the National Register of Historic Places, New Mexico State Register of Cultural Properties, Chaco Protection Sites, World Heritage Sites, or National Historic Trails within the CIAA.

There will be no negative cumulative impact on cultural resources as no historic properties are present. There will be no known negative cumulative impact on the landscape that would affect the seven aspects of integrity (location, design, setting, materials, workmanship, feeling, association) of known historic properties. A positive cumulative effect is the additional scientific information yielded by the archaeological survey in terms of the amount of the landscape inventoried for cultural resources.

- What impacts would the project have on unknown (buried, not visible) historic properties in the CIAA?

Risks of impacting unknown (i.e., buried) historic properties is normally negligible as cultural resources "discoveries" during surface-disturbing components of a proposed action are infrequent in the FFO. Since fiscal year 2000, 28 discoveries have occurred in association with 21,290 actions (e.g., road, well, pipeline, etc.), or 1:760. During that period 153,626 acres of land were inspected for cultural resources, with an average of 7.2 acres per action and one discovery per 5,472 acres per discovery. All authorizations (e.g., Applications for Permit to Drill, ROWs) have stipulations, under penalty of law, requiring the reporting of and avoidance of further disturbing cultural discoveries during a proposed action. Where the risk of discoveries can be reasonably expected (e.g., $\leq$ 100 feet of a known historic property or in environmental settings known or suspected to be conducive to buried sites), archaeological monitoring by a qualified and permitted archaeologist during initial disturbance (e.g., blading, trenching) is normally required. If buried historic properties are discovered, collaborative steps are taken to protect them in place or recover their important information.

4. SUPPORTING INFORMATION

4.1 Tribes, Individuals, Organizations, or Agencies Consulted

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Appendix A: Plats