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Chaco 2408-36O Nos. 133H and 134H
Oil and Natural Gas Wells Project

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1. PURPOSE AND NEED FOR ACTION

1.1. Background

WPX Energy Production, LLC (WPX), has submitted two Applications for Permit to Drill (APDs) to the Bureau of Land Management – Farmington Field Office (BLM-FFO; located in Farmington, New Mexico) for their Chaco 2408-36O Nos. 133H and 134H (133H/134H) oil and natural gas wells project. The proposed action is the approval of the APDs by the BLM-FFO.

The proposed project would involve the horizontal drilling, possible production, and final abandonment of the 133H and 134H wells. These wells would access BLM-FFO-managed minerals (Lease No. NMNM 14095), Navajo Allotted minerals (Lease No. NOG 02071609), and State of New Mexico (State) minerals (L29860001) from the Lybrook Gallup formation. The wells would each be permitted under an approved APD issued by the BLM-FFO with concurrence from the Bureau of Indian Affairs' (BIA's) Federal Indian Minerals Office (FIMO) and the New Mexico State Lands Office (NMSLO).

The proposed project would also involve the construction, usage, and reclamation of a 5.7-acre well pad (including construction zone), 235-foot-long access road, and 724-foot-long well-connect pipeline corridor (all of which would parallel the proposed access road and an existing access road). These proposed project features are all located on State surface and have been authorized by the State (NMSLO 2014). Two staging areas and one Temporary Use Area (TUA) would also be used. The proposed staging areas and TUA are all located within previously permitted, disturbed areas; no new permitting would be required for their usage. These surface features, which are connected actions associated with drilling the 133H and 134H wells, will be analyzed in this Environmental Assessment (EA).

Oil and natural gas, vital components of the nation's energy supply, account for approximately 36 and 25 percent of total energy consumed in the U.S., respectively. These energy sources are used in residential and commercial buildings, in transportation, and by industry (U.S. Energy Information Administration 2012). Common uses for natural gas include space heating, water heating, cooling, cooking, waste treatment and incineration, metals preheating, drying and humidification, glass melting, food processing, fueling industrial boilers, vehicle fueling, and electricity generation. Gases such as butane, ethane, and propane can be extracted from natural gas to be used for products such as fertilizers and pharmaceuticals. Natural gas can also be used to create methanol, which is utilized in the production of formaldehyde, acetic acid, fuel cell sources, and additives for cleaner burning gasoline (Natural Gas Supply Association 2010). Most oil goes into fuels, including gasoline, jet fuel, and home-heating oil. Additionally, non-fuel compounds extracted from oil are used to develop lubricants; asphalt for roads; tar for roofing; waxes for food wrapping; solvents for paints; cosmetics and dry-cleaning products; plastics; and foams (U.S. Energy Information Administration 2012).

Approximately 84 percent of natural gas and 55 percent of oil consumed in the U.S. is produced in the U.S. Additionally, U.S.-produced natural gas and oil is also exported to other countries (U.S. Department of Energy 2011). Within the U.S., oil and natural gas reserves are concentrated within distinct fields. The BLM-FFO management area is within the San Juan Basin, one of the most prolific gas-producing basins in the country. Currently, the San Juan Basin produces small amounts of oil (BLM 2003a, 3-9).

Taxes and royalties on oil, natural gas, and carbon dioxide production contribute approximately 25 percent of New Mexico's general fund, and the oil and gas industry is one of the largest private sector employers in the State (New Mexico Bureau of Geology and Mineral Resources 2012). Additionally, the Federal government receives royalties, or a share of the production income, for extracted Federal minerals. In 2011, Federal natural gas royalties totaled over 2 billion dollars (Office of Natural Resources Revenue 2012).

The proposed project area is located within the San Juan Basin in San Juan County, New Mexico. The proposed project area is approximately 36 miles south-southeast of the town of Bloomfield (see Figure A.1, Appendix A).

1.2. Purpose and Need for Action

The purpose of the proposed action is to allow WPX access to BLM managed lands to develop their BLM and Navajo Allotted mineral leases.

The need for the proposed action is established by the BLM's responsibility under the Mineral Leasing Act of 1920, as amended (MLA; 30 U.S. Code [USC] 181 et seq.), which authorizes the BLM to permit the development of mineral deposits. It is the policy of the BLM, as derived from several laws, including the MLA and Federal Land Policy and Management Act of 1976 (FLPMA; 43 USC 1701 et seq.), to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs. Per 43 Code of Federal Regulations (CFR) 3160 (Onshore Oil and Gas Operations), the BLM is required to respond to a request for an APD.

Under 25 USC 396 (Leases of Allotted Lands for Mining Purposes), Indian Allottees are authorized to lease mineral resources for mining. As described in FLPMA, BLM regulations apply to these leases. The BLM supervises the leasing of these minerals (BLM No Date).

1.3. Decision to be Made

With concurrence from FIMO and NMSLO, the BLM-FFO will decide whether or not to issue the APDs associated with the 133H and 134H wells, and, if so, under what terms and conditions. Under the National Environmental Policy Act (NEPA; Public Law 91-90, 42 USC 4321 et seq.), the BLM-FFO must determine if there are any significant environmental impacts associated with the proposed action warranting further analysis in an Environmental Impact Statement (EIS). After consulting with the BIA and NMSLO, the BLM-FFO Field Manager is the responsible officer who will decide one of the following:

- To approve the APDs with design features as submitted
- To approve the APDs with additional mitigation added
- To analyze the effects of the proposed action in an EIS
- To deny the APDs

1.4. Conformance with Applicable Land Use Plan(s)

The proposed action is in conformance with the 2003 BLM-FFO Resource Management Plan (RMP). Pursuant to 40 CFR 1508.28 and 1502.21, this site-specific EA tiers into and incorporates by reference the information and analysis contained in the BLM-FFO Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/FEIS; BLM 2003a). The RMP was approved by the September 29, 2003, Record of Decision (ROD; BLM 2003b), and updated in December 2003.

Specifically, the proposed action supports the following BLM policy:

> It is the policy of the BLM to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs, consistent with national objectives of an adequate supply of minerals at reasonable market prices. At the same time, the BLM strives to ensure that mineral development is carried out in a manner that minimizes environmental damage and provides for the rehabilitation of affected lands. (BLM 2003b, 2-2 – 2-3)

As required by NEPA, this EA addresses site-specific resources and effects of the proposed action that were not specifically covered within the PRMP/FEIS.

1.5. Relationship to Statutes, Regulations or Other Plans

WPX would comply with applicable Federal, State, and local laws and regulations. Necessary permits and approvals for the proposed project would be obtained prior to project implementation.

Many requirements regulating specific environmental elements are found in the appropriate elements sections this EA (Chapter 3). Several permits, licenses, consultations, or other requirements are discussed below.

1.5.1. Clean Water Act

The proposed action is in conformance with the Clean Water Act, as amended (CWA; 33 USC 1251 et seq.).

Section 401

Under Section 401 of the CWA, an applicant for a Federal license or permit to conduct an activity that may result in a discharge into a water of the U.S. must provide the Federal agency with a Section 401 certification declaring that the discharge would comply with the CWA. The certification would be granted by the New Mexico Environment Department (NMED).

Section 402

Under Section 402 of the CWA, the U.S. Environmental Protection Agency (EPA) regulates storm water discharges from industrial and construction activities under the National Pollution Discharge Elimination System program. Permits are required if discharge results in a reportable quantity for which notification is required (pursuant to 40 CFR 117.21, 40 CFR 302.6, or 40 CFR 110.6) or if the discharge contributes to a violation of a water quality standard.

Section 404

Under Section 404 of the CWA, the EPA regulates the discharge of dredged or fill material into waters of the U.S., including wetlands. The Section 404 program is administered by the EPA and U.S. Army Corps of Engineers (USACE). Under the CWA, the USACE has jurisdiction over waters of the U.S. Waters of the U.S. are considered jurisdictional because they have a "significant nexus" to traditional navigable waters. The BLM-FFO and USACE - Durango Regulatory Office have determined that jurisdictional waters (i.e., waters of the U.S.) within the BLM-FFO planning area may include U.S. Geological Survey (USGS) watercourses (i.e., "blue lines" on USGS 1:24,000 topographic maps) and potentially tributaries to these USGS watercourses. There are no USGS watercourses or tributaries to USGS watercourses within the proposed project area.

1.5.2. National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 (NHPA; 16 USC 470) requires Federal agencies to take into account the effects of their actions on historic properties, and allow the Advisory Council on Historic Preservation a reasonable opportunity to comment. Compliance with the requirements of the NHPA is met by following the Protocol Agreement between the New Mexico BLM and New Mexico State Historic Preservation Officer, which is authorized by the Programmatic Agreement among the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (1997).

1.5.3. Clean Air Act

The Clean Air Act of 1972, as amended (CAA; 42 USC 7401 et seq.), establishes national ambient air quality standards (NAAQS) to control air pollution. In New Mexico, the NMED has adopted most of the CAA into the New Mexico Administrative Code (NMAC). The NMED issues construction and operating permits for air quality and enforces air quality regulations and permit conditions.

1.5.4. New Mexico State Regulations

The New Mexico Oil Conservation Division (NMOCD), which is in the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD), regulates oil and gas operations in New Mexico. The NMOCD has the responsibility of gathering production data, permitting new wells, establishing pool rules and allowables, issuing discharge permits, enforcing rules and regulations, monitoring underground injection wells, ensuring that abandoned wells are properly plugged, and ensuring that the land is responsibly restored. Oil and gas regulations administered by NMOCD are contained in NMAC 19.15. These regulations include the following, with which WPX would comply:

- The EMNRD requires operators to follow "pit rule" guidelines (NMAC 19.15.17) to reduce groundwater contamination from industry-related activities.

- NMAC 19.15.15 establishes requirements for well acreage spacing, obtaining approval of unorthodox w locations, and pooling or communitizing small acreage oil lots.

- NMAC 19.15.16.19 requires the disclosure of hydraulic fracture constituents.

1.6. Scoping, Public Involvement, and Issues

1.6.1. Scoping and Public Involvement

The BLM-FFO publishes a NEPA log for public inspection. This log contains a list of proposed and approved actions within the BLM-FFO. The log is located on the BLM's New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html).

A pre-disturbance onsite meeting, which was attended by WPX, BLM-FFO representatives, an NMSLO representative, and an environmental consultant (Nelson Consulting, Inc. [NCI]), was held for the proposed project on May 28, 2014. No representatives from the BIA attended the meeting. A public invitation to the meeting was also posted online (http://www.blm.gov/nm/st/en/fo/Farmington_Field_Office/ffo_oil_and_gas/ffo_onsites.html); no private citizens or groups attended the meeting.

A BLM-FFO Interdisciplinary Team meeting was held for the proposed project on June 9, 2014.

At the aforementioned meetings, potential issues of concern were identified by the BLM-FFO, NMSLO, and NCI.

Based on the size and scale, routine nature, and potential impacts associated with the proposed action, no additional external scoping was conducted. No public comments were received for the proposed action.

1.6.2. Issues

Issues Analyzed

The following issues were identified during internal scoping as potential issues of concern for the proposed action. These issues will be addressed in this EA.

- How would dust and equipment emissions associated with the proposed project impact air resources?

- Would drilling the proposed wells impact groundwater?

- How would vegetation clearing, proposed project activities, and post-production reclamation associated with the proposed project impact upland vegetation?

- How would vegetation clearing, proposed project activities, and post-production reclamation associated with the proposed project impact the following BLM Special Status Species (SSS): American peregrine falcon (*Falco peregrinus anatum*), Bendire's thrasher (*Toxostoma bendirei*), and golden eagle (*Aquila chrysaetos*)?

- How would surface-disturbing activities associated with the construction phase of the proposed project impact cultural resources?

Issues Considered but not Analyzed

The following issues were identified during scoping as issues of concern that would not be impacted by the proposed action or that have been covered by prior environmental review. These issues will not be analyzed in this EA.

U.S. Fish and Wildlife Service (USFWS)-Listed Species

Under Section 7 of the Endangered Species Act of 1973 (ESA; 16 USC 1531-1544), all Federal agencies are required to consult with the USFWS or National Marine Fisheries Service if they are proposing an action that may affect listed species or designated habitat. Consultation with the USFWS was conducted as part of the PRMP/FEIS to address the cumulative effects of RMP implementation (Consultation No. 2-22-01-1-389, Appendix M of the PRMP/FEIS). Based on a review of species currently listed by the USFWS as occurring in San Juan County (USFWS 2014), as well as the location of the proposed project area and habitat within the proposed project area, the potential does not exist for USFWS-listed species to occur within the proposed project area. Water for drilling would be obtained from the permitted Blanco Trading Post (SJ-2105) water well; no unaccounted-for water depletions within USFWS-listed fish habitat would occur. Therefore, there is no need for additional Section 7 consultation.

Native American Religious Concerns

For the proposed action, identification efforts for Native American Religious Concerns were limited to a review of existing published and unpublished literature (e.g., Van Valkenburgh 1941, 1974; Brugge 1993; Kelly, et al. 2006), development of the site-specific Class III survey report prepared for the proposed action (La Plata Archaeological Consultants [LAC] 2014), and a review by the BLM's cultural resources program regarding the presence of Traditional Cultural Properties (TCPs) 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 (NAGPRA; 25 USC 3001) or the Archaeological Resources Protection Act (ARPA; 16 USC 470) within the proposed project area.

2. PROPOSED ACTION AND ALTERNATIVE(S)

2.1. Proposed Action

The proposed action is the BLM-FFO approval (with concurrence from the BIA and NMSLO) of two APDs associated with WPX's proposed 133H and 134H wells. The proposed project would include the drilling, production, and final abandonment of two oil and natural gas wells. The wells would access minerals managed by the BLM-FFO, FIMO, and State. The primary objective of the wells would be to produce oil; however, it is likely that natural gas would be a byproduct.

The construction, use, and reclamation of an associated well pad (with construction zone), access road, and well-connect pipeline corridor; the moving of an existing fence; and the installation of a cattleguard, all of which would be on State surface, would be connected actions. The proposed well-connect pipeline corridor would contain two 6-inch-diameter, steel, natural gas/liquids pipelines and two 4-inch-diameter, poly, natural gas/liquids pipeline. The proposed well-connect pipelines would carry natural gas and oil; WPX would seek authorization to transport water within one of the poly lines. The proposed well-connect pipelines would be in operation year-round for the lifetime of the proposed project. The volume of natural gas, oil, and water carried by the proposed well-connect pipelines is not known at this time. These portions of the proposed project have been authorized by NMSLO (2014). A Surface Use Agreement (SUA) between the State and WPX would be developed.

The use of two staging areas and one TUA would also be connected actions. The following staging areas and TUA, which would be located on State and BLM-FFO-managed surface, have already been disturbed and would not require additional permitting.

- Staging Area: Elm Ridge Exploration Company's (Elm Ridge's) active South Blanco State 36 No. 6 Well Pad (authorized by an agreement between WPX and Elm Ridge)
- Staging Area: WPX's active Chaco 2408-36P Nos. 143H/144H (143H/144H) Well Pad
- TUA: WPX's Chaco 2308-04P Nos. 149H/150H (149H/150H) Pipeline TUA

Commencement of the proposed project is proposed for 2014. The scheduled commencement of the proposed project could be delayed based on the issuance date of the approved APDs or drill rig scheduling.

Construction plats associated with the proposed project are provided in Appendix B.

2.1.1. Location of Proposed Project Area

Maps and photographs of the proposed project area are provided in Appendices A and C, respectively. The proposed project area is plotted on the Crow Mesa West and Lybrook Northwest, New Mexico, 7.5-minute, USGS quadrangles (Figure A.2) and the 2011 San Juan County National Agriculture Imagery Program aerial photograph (Figure A.3).

The proposed project area is located within the San Juan Basin in San Juan County, New Mexico. The proposed project area is located approximately 36 miles south-southeast of the town of Bloomfield, 6 miles east of Nageezi, 5 miles west-northwest of Lybrook, and 0.3 mile north of U.S. Highway 550.

The general region surrounding the proposed project area is characterized by badlands, mesas, and relatively flat lowland valleys. The proposed project area is located within Blanco Canyon; Blanco Wash is approximately 140 feet northeast of the proposed well pad. Terrain within the proposed project area is flat, and there is an extremely gentle slope to the northeast, toward Blanco Wash. The elevation of the proposed project area is approximately 6,900 feet above mean sea level (AMSL).

The legal location (New Mexico Principal Meridian) of the proposed project area is listed in the table below.

Table 1. Legal Location of Proposed Project Area

Township & Range	Section	Quarter-Quarter	Project Feature
Township 24 North, Range 8 West	36	Southwest ¼ of the Southeast ¼	Well Pad, Construction Zone, Access Road, Well-Connect Pipeline Corridor
		Southeast ¼ of the Southwest ¼	
		Northwest ¼ of the Southeast ¼	Staging Area: South Blanco State 36 No. 6 Well Pad
		Southeast ¼ of the Southeast ¼	Staging Area: 143H/144H Well Pad
Township 23 North, Range 8 West	9	Northwest ¼ of the Northeast ¼	TUA: 149H/150H Pipeline TUA

The bottom hole and surface hole (wellhead) locations are provided in the table below.

Table 2. Bottom Hole and Surface Hole Locations

Project Feature	North American Datum 1983[1]		Legal Location		
	Latitude	Longitude	Footages[2]	Section	Township & Range
133H					
Bottom Hole	36.26977° N	107.65951° W	2,261 feet FSL, 230 feet FWL	35	Township 24 North, Range 8 West
Surface Hole (Wellhead)	36.26555° N	107.63282° W	736 feet FSL, 2531 feet FEL	36	
134H					
Bottom Hole	36.26460° N	107.65947° W	380 feet FSL, 230 feet FWL	35	Township 24 North, Range 8 West
Surface Hole (Wellhead)	36.26552° N	107.63276° W	724 feet FSL, 2,513 feet FEL	36	

[1] N: North, W: West
[2] FEL: from the east line, FSL: from the south line, FWL: from the west line

Existing oil and gas lease roads, well pads, and pipeline corridors are in the general vicinity of the proposed project area. County Road (CR) 7998 travels along the northwestern edge of the proposed well pad construction zone. The existing South Blanco State 36 No.7 access road crosses through the southern corner of the proposed well pad construction zone and parallels a portion of the proposed well-connect pipeline corridor. A residence is located approximately 300 feet northwest of the proposed well pad.

2.1.2. Description of Proposed Project

For a detailed description of design features and construction practices associated with the proposed project, refer to the APDs on file at the BLM-FFO. The plats (Appendix B) provide additional details.

Design Features and Best Management Practices

WPX would comply with 43 CFR 3160, Onshore Oil and Gas Orders, and BLM guidance and standards established in *The Gold Book: Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (*The Gold Book*; BLM and U.S. Forest Service [USFS] 2007).

WPX would adhere to the Conditions of Approval (COAs) attached to the approved APDs.

Vehicles would be restricted to proposed disturbance areas and existing areas of surface disturbance, such as existing roads and well pads. Construction and maintenance activities would cease when soil or road surfaces become saturated to the extent that construction equipment is unable to stay within the proposed project area and/or when activities would cause irreparable harm to roads, soils, or streams. If equipment creates ruts deeper

than six inches, the soil would be deemed too wet for construction or maintenance. No frozen soils would be used for construction purposes or trench backfilling.

The well location would have an informational sign, as required by Onshore Oil and Gas Operations regulations (43 CFR 3160).

The following general design features and best management practices (BMPs) would occur. Additional design features or BMPs could be specified in the SUA.

Control of Waste

Liquid and solid wastes would be disposed of at an appropriate waste-disposal site. The proposed project area would be maintained in a sanitary condition. Hazardous substances would be handled and disposed of according to Federal law. Waste resulting from construction activities would be removed from the proposed project area and disposed of in an authorized area, such as an approved landfill.

Drilling operations would utilize a closed-loop system. Drilling of the horizontal lateral would be accomplished with water-based mud. All cuttings would be hauled to a commercial disposal facility or land farm. WPX would follow NMOCD "Pit Rule" guidelines and Onshore Order No. 1 (issued under Onshore Oil and Gas Operations [43 CFR 3160]) regarding the placement, operation, and removal of closed-loop systems. No blow pit would be used. All cuttings would be hauled to a commercial disposal facility or land farm.

Protection of Paleontological Resources

If a paleontological site is discovered, the NMSLO would be notified and the site would be avoided by personnel, personal vehicles, and company equipment. Workers would be informed that it is illegal to collect, damage, or disturb some such resources, and that such activities are punishable by criminal and/or administrative penalties.

Protection of Cultural Resources

All cultural resource stipulations would be followed as indicated in the Cultural Resource Records of Review, attached to the COAs in the approved APDs. These cultural resource stipulations could include, but would not be limited to, temporary or permanent fencing or other physical barriers, monitoring of earth-disturbing construction, reduction of the proposed project area and/or establishment of specific construction avoidance zones, and employee education.

Employees, contractors, and sub-contractors associated with the proposed project would be informed by WPX that cultural sites are to be avoided by personnel, personal vehicles, and company equipment. These individuals would be informed 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 ARPA.

In the event of a cultural discovery during construction, WPX would immediately stop all construction activities in the immediate vicinity of the discovery and immediately notify the archaeological monitor, if present, or the NMSLO. The NMSLO would then evaluate or cause the site to be evaluated. Should a discovery be evaluated as significant (e.g., eligible for the National Register of Historic Places [NRHP] or protected under NAGPRA or ARPA), it would be protected in place until mitigating measures could be developed and implemented according to guidelines set by the State.

Protection of Flora and Fauna, including SSS and Livestock

Should any active raptor nests be observed within one-third mile of the proposed project area or should any SSS (listed by the USFWS or BLM) be observed within the proposed project area prior to or during project implementation, construction would cease and the NMSLO or BLM-FFO (depending on the status of the species) would be immediately contacted. The NMSLO or BLM-FFO would then ensure evaluation of the resource. Should a discovery be evaluated as significant (protected under the ESA, etc.), it would be protected in place until mitigation could be developed and implemented according to guidelines set by the State or BLM-FFO.

Wildlife hazards associated with the proposed project would be fenced, covered, and/or contained in storage tanks, as necessary.

A closed-loop system would be used. As stated above (Control of Waste), WPX would follow "Pit Rule" guidelines and Onshore Order No. 1.

WPX would notify the USFWS upon discovery of a dead or injured migratory bird, bald or golden eagle, or USFWS-listed species within or adjacent to the proposed project area. If the BLM becomes aware of such mortality or injury, the BLM would inform WPX. If WPX fails to notify the USFWS of the mortality or injury, the BLM would notify the USFWS. The BLM and the USFWS would then attempt to determine the cause of mortality and evaluate and identify appropriate mitigation measures to avoid future occurrences.

To protect livestock, proposed areas of disturbance would be fenced during construction. Following construction, a permanent fence would be constructed around the proposed well pad.

Protection of Water Resources

Drilling operations would utilize a closed-loop system. As stated above (Control of Waste), WPX would follow "Pit Rule" guidelines and Onshore Order No. 1.Drilling of the horizontal lateral would be accomplished with water-based mud. All cuttings would be hauled to a commercial disposal facility or land farm.

Protection of Topsoil

Topsoil, which would be stripped from the surface of the proposed project area during the construction phase, would be stored and protected until it is redistributed during reclamation. Topsoil would be stored separately from subsoil within the proposed well pad construction zone and well-connect pipeline corridors. Topsoil would be free of brush, tree limbs, trunks, and roots. Vehicle/equipment traffic would not be allowed to cross topsoil stockpiles.

The topsoil would be protected using wattles or other BMPs so that erosion is minimized. If topsoil is stored for a length of time such that nutrients are depleted from the topsoil, amendments would be added to the topsoil as advised by the WPX environmental scientist or appropriate agent/contractor.

Protection of the Public and Workers

The hauling of equipment and materials on public roads would comply with Department of Transportation regulations. Any accidents involving persons or property would immediately be reported to the BLM-FFO. WPX would notify the public of potential hazards by posting signage (e.g., trucks turning or construction ahead), having flaggers, or using lighted signs, as necessary.

Worker safety incidents would be reported to the BLM-FFO as required under Notice to Lessees (NTL) -3A (USGS 1979). WPX would adhere to company safety policies and Occupational Safety and Health Administration regulations. WPX would comply with pipeline safety regulations (49 CFR 190 and 192). The proposed well-connect pipeline trenches would be excavated and sloped in accordance with OSHA specifications.

Inspectors would be present during pipeline construction.

Prevention and Control of Weeds

It would be the operator's responsibility to monitor, control, and eradicate all invasive, non-native plant species within the proposed project areas throughout the life of the proposed projects.

Protection of Air Resources

The BLM's regulatory jurisdiction over field production operations has resulted in the development of BMPs designed to reduce impacts to air quality by reducing all emissions from field production and operations. Typical measures could include flaring hydrocarbons and gases at high temperatures in order to reduce emissions of incomplete combustion, requiring that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored, ensuring that compressor engines 300 horsepower or less have nitrogen oxide (NO_x) emissions limited to 2 grams per horsepower hour, revegetating areas not required for production facilities to

reduce the amount of dust, and watering dirt roads during periods of high use in order to reduce fugitive dust emissions. Magnesium chloride, organic-based compounds, or polymer compounds could be also be applied to roads or other surfaces to reduce fugitive dust. Neither petroleum-based products nor produced water would be used.

BMPs for dust suppression would be utilized to reduce fugitive dust during the construction phase of the proposed project. Water application, using a rear-spraying truck or other suitable means, would be the primary method of dust suppression. Any additional dust-suppression practices would include the BLM-standard BMPs found in *The Gold Book* (BLM and USFS 2007) and the BMPs outlined in the COAs attached to the approved APDs.

Noise

Production would comply with noise standards outlined in NTL 04-2 FFO (BLM 2004). Due to the residence located approximately 300 feet northwest of the proposed well pad, the BLM-FFO could require additional noise-control stipulations, which would be included in the COAs attached to the approved APDs.

Erosion Control

The placement of water- and erosion-control features within the proposed project area would be determined during reclamation.

Proposed Project Phases

During all project phases, vehicles would use the proposed access road and developed roads and highways in the region. Traffic would include light vehicles (such as cars and pick-up trucks) and heavy vehicles (such as water trucks and large tractor-trailers hauling equipment).

Refer to the section above (Design Features and Best Management Practices) for resource-protection details associated with all proposed project phases.

Under the proposed action, the following phases would occur.

Upgrade of Existing Road and Movement of Fence

The existing South Blanco State 36 No.7 access road would be upgraded to *The Gold Book* standards, from CR 7998 to the start of the proposed access road. The existing fence, which currently travels parallel and adjacent to the eastern side of CR 7998, would be moved eastward approximately 15 feet in the vicinity of the existing South Blanco State 36 No.7 access road to allow for a wider turning radius at the intersection. Where the existing access road crosses the new fence, a cattleguard would be installed.

Construction of Access Road and Well Pad

Construction of the proposed well pad and access road would take less than two weeks. The proposed staging areas and TUA could be used during this phase.

The proposed access road and well pad would be cleared of vegetation and leveled. Vegetation removed during construction, including trees that measure less than 3 inches in diameter (at ground level) and slash/brush, would be chipped, shredded, or mulched and incorporated into the topsoil. When chipping slash and brush, the "chips" would be distributed in a manner that would not impede seeding with machinery or the establishment of successful revegetation. If any trees 3 inches in diameter or greater (at ground level) are present, they would be cut to ground level and delimbed. Tree trunks (left whole) and cut limbs would be placed in a manner that would not create additional disturbance or degrade reclamation. The subsurface portion of trees (tree stumps) would be placed in adjacent areas needing soil stabilization or would be hauled to an approved facility.

The top 6 inches of topsoil would be salvaged and stockpiled along the proposed access road and within the proposed well pad construction zone.

The proposed access road and well pad would be constructed from the native borrow soil and subsoil accumulated during construction activities. If additional fill or surfacing material, such as sandstone for road surfacing, would be needed, the material would be obtained from an existing permitted or private source and hauled to the location.

Proposed Access Road

The proposed access road would be constructed to meet the standards for anticipated traffic flow and all-weather requirements. The proposed access road would be designed (in terms of drainage design, culvert sizing, culvert installation, etc.) and constructed as a resource road in accordance with *The Gold Book* (BLM and USFS 2007) and BLM Manual 9113, Sections 1 and 2 (BLM 2011d and BLM 2011e).

The proposed access road workspace would be 30 feet wide. This width would include a 14-foot-wide running surface with adequate crowning. The proposed access road would be built up 18 to 24 inches. The maximum road grade would be 6 percent.

Proposed Well Pad

The proposed well pad would be leveled using cut-and-fill techniques; excavated materials from cuts would be used on fill portions to create a level working surface. The maximum well pad cut would be 8 feet on the southern and eastern corners (corners 2 and 6, respectively). The maximum well pad fill would be 6 feet on the western (corner 3). A construction zone would surround the proposed well pad.

The size of the proposed well pad is slightly larger than typical well pads in the BLM-FFO area because the equipment (such as tanks) associated with the new hydraulic fracturing design requires a larger area.

Drilling and Completion

Once construction is complete, a drilling rig would be transported to the proposed well pad and assembled. Horizontal drilling typically takes approximately 30 days per well. Once drilling is complete, the well would be completed (the process in which the well is enabled to produce oil and natural gas). Completion typically takes 30 days per well.

Facilities and equipment on the proposed well pad during this time could include the following:

- Drilling rig
- Generator(s)
- Water tanks
- Pumps
- Safety stations
- Equipment and material storage units
- Fuel storage equipment
- Dog House (equipment-control room)
- Construction trailers
- Various service company equipment (cement trucks, fracturing trucks and equipment, wireline trucks, etc.)

Approximately 10 to 40 personnel would be on the proposed site at any time during drilling and completion.

It is estimated that 23,000 barrels of useable water would be required to drill the well. Of this, approximately 10,000 to 11,000 barrels would be recovered for reuse. Water for drilling would be obtained from the San Juan Basin Water Haulers Association, who would obtain and truck their water from a permitted water well (the Blanco Trading Post water well [SJ-2105]). WPX would ensure that water would be obtained legally and that all required permits would be obtained prior to obtaining water.

Surface casing would be installed to a depth necessary to penetrate past freshwater zones. The casing would be pressure-tested to ensure that a seal has been created.

A closed-loop system would be used. As stated previously, WPX would follow NMOCD "Pit Rule" guidelines and Onshore Order No. 1 regarding the placement and operation of closed-loop systems. No blow pits would be used for the proposed project.

Construction of Well-Connect Pipelines

Construction of the proposed well-connect pipelines is anticipated to take two to three weeks.

Prior to construction commencement, WPX would notify the BLM-FFO of additional types of construction equipment (aside from equipment previously discussed) that would be used.

Two trenches, off-set from one another by 5 feet, would be excavated by a trencher or backhoe within the proposed 40-foot-wide well-connect pipeline corridor. Each trench would generally be 4 to 5 feet in depth; where the proposed well-connect pipeline corridor crosses a watercourse, the trenches would be deep enough to allow 6 feet of soil cover between the pipelines and the bottom of the watercourse. The trenches would be 16 inches in width if a trencher is used or 24 inches in width if a backhoe is used.

Soft plugs would be placed within the trenches every quarter mile. A 6-inch-diameter, steel, natural gas/liquids pipeline and a 4-inch-diameter, poly, natural gas/liquids pipeline would be installed within each trench. When stringing pipeline, one joint of pipeline would be set back every quarter mile. After a pipeline has been welded and coated, a side-boom tractor would be used to place the pipeline into one of the trenches.

After the proposed well-connect pipelines have been installed, the soils excavated from the trenches would be returned and compacted to prevent subsidence. The trenches would be compacted after approximately 2 feet of fill is placed within the trenches and after the ground surface has been leveled.

Prior to the proposed well-connect pipelines being placed in service, the pipes would be pressure tested.

Pipeline markers would be installed along the proposed well-connect pipeline corridor within the line of sight, without voiding safety measures. Within 90 days of installation, aboveground structures not subject to safety requirements would be painted Juniper Green to blend with the surrounding landscape and reduce visual resource impacts.

Post-Construction Reclamation

If the proposed wells prove to be productive, portions of the proposed project area that would not be required for production would be reclaimed following the drilling and completion phases. This phase, referred to as "post-construction reclamation" would be initiated within 120 days of construction. Post-construction reclamation could occur simultaneously with production.

Post-construction reclamation would include the following:

- Post-construction reclamation (reseeding or full reclamation) of the proposed well pad construction zone and portions of the proposed access road and well pad
- Post-production reclamation of the proposed well-connect pipeline corridor
- Reclamation of staging areas and TUA, if requested by the operators associated with these previously disturbed areas

A bulldozer and a tractor with seeding capabilities would be used. Approximately four personnel would be required.

Areas that would be fully reclaimed or just reseeded during this phase are described in Section 2.1.3 (Proposed Surface Disturbance). Areas that would be fully reclaimed would be recontoured to their original shape prior to seeding. The BLM-FFO Sagebrush-Grass seed mixture would be used.

Production

The production phase of the proposed wells varies; the lifetime is anticipated to be 30 to 50 years. Production equipment that would remain on the well pad could include the following:

- Wellhead

- Production unit
- Meter run
- Compressor
- Flare stack
- Water tanks
- Oil tanks

Production facilities would be located within a 300-by-100-foot facility area on the southeastern portion of the proposed well pad. The teardrop, which would be used to access the proposed wellheads and other facilities, would consist of a looped, 35-foot-wide driving surface within the central portion of the proposed well pad.

During production, normal upkeep would be required to monitor production and resolve any problems. It is anticipated that one pick-up truck would visit the proposed well pads daily during the normal work week.

Occasionally, workover or recompletion of the proposed wells would be necessary to ensure that efficient production is maintained. Workovers and recompletions would be scheduled as needed to improve and maintain production of the proposed wells. Workover activities could include repairs to the wellbore equipment (e.g., casing, tubing, rods, and pump), wellheads, or production facilities. A 210-by-180 foot workover area would surround each of the proposed wellheads. This workover area could be used for future activities (such as workovers or recompletions) but would not be used for daily activities.

Final Abandonment and Post-Production Reclamation

If the wells prove to be unproductive, or when the wells are no longer commercially viable, the wells would be abandoned and reclamation would take place.

Downhole well abandonment would be carried out under current BLM-FFO and State regulations. The bore holes would be plugged with cement and production facilities would be removed. An aboveground marker would be placed over the plugged holes. The markers would contain individual well identification information.

The underground well-connect pipelines would typically be plugged and left in place.

If the State does not consider the retention of the proposed well pad and/or access road, as well as existing access road(s) to the location, necessary for the management and multiple uses of natural resources, these features would be reclaimed.

Post-production reclamation would include the following:

- Post-production reclamation of all portions of the proposed project area that weren't fully reclaimed during post-construction reclamation
- Post-production reclamation of any other areas that are disturbed to bare soil during the final abandonment process

A bulldozer and a tractor with seeding capabilities would be used. Approximately four personnel would be required. Reclamation would include recontouring the proposed project area to its original shape and reseeding the location with the BLM-FFO Sagebrush-Grass seed mixture.

2.1.3. Proposed Surface Disturbance

New surface disturbance associated with the proposed project would total 5.9 acres. Of this, 1.2 acre would be reseeded (but not recontoured) and 3.5 acres would be fully reclaimed (reseeded and recontoured) during post-construction reclamation. The remainder (1.2 acres) would remain disturbed (unvegetated) throughout the life of the proposed project. All portions of the proposed project area that are not fully reclaimed during post-construction reclamation would be reclaimed when the wells are finally abandoned.

Disturbances are summarized in the below table, and individual feature disturbances are detailed in the sub-sections below.

Table 3. Surface Disturbance Associated with Proposed Project

Feature	Total Acreage	New Surface Disturbance (acres)	Portion of New Surface Disturbance Fully Reclaimed during Post-Construction Reclamation (acres)	Portion of New Surface Disturbance Only Reseeded during Post-Construction Reclamation (acres)	New Surface Disturbance Remaining Disturbed (Barren and Level) for the Life of Proposed Project (acres)
Access Road	0.2	0.2	-	0.1	0.1
Well Pad	3.6	3.6	1.4	1.1	1.1
Well Pad Construction Zone	2.1	2.0	2.0	-	-
Well-connect Pipeline Corridor	0.7	0.1	0.1	-	-
Staging Areas/TUA	7.1	-	-	-	-
Total	**13.7**	**5.9**	**3.5**	**1.2**	**1.2**

Access Road

The proposed access road would be 30 feet wide and 235 feet long (0.2 acre).

- The 14-foot-wide running surface of the proposed access road and the bottoms of the bar ditches alongside the road (0.1 acre) would remain disturbed for the lifetime of the proposed project.
- The remainder of the proposed access road corridor (0.1 acre) would be reseeded during post-construction reclamation and fully reclaimed during post-production reclamation.

Well Pad

The proposed well pad would measure 522 by 300 feet (3.6 acres).

- Non-reseed area: Approximately 1.1 acres within the proposed well pad would be used for facilities and daily activities; within this area, no reclamation would occur during post-construction reclamation.
- Reseed area: Approximately 1.1 acres within the proposed well pad would be used for occasional workover activities; this area would be reseeded but not recontoured during post-construction reclamation.
- The remainder of the proposed well pad (1.4 acres) would be fully reclaimed during post-construction reclamation.

Construction Zone

A 50-foot-wide (2.1-acre) construction zone would surround the proposed well pad. Approximately 0.1 acre of the construction zone would overlap the proposed access road and the existing South Blanco State 36 No. 7 access road . Therefore, the proposed construction zone would result in 2.0 acres of new disturbance. The proposed construction zone would be fully reclaimed during post-construction reclamation.

Well-connect Pipeline Corridor

The proposed well-connect pipeline corridor would be 724 feet long and 40 feet wide (0.7 acre). Approximately 464 feet of the proposed well-connect pipeline corridor length would overlap the proposed well pad. The remainder of the proposed well-connect pipeline corridor (260 feet) would travel parallel to the proposed access road and the existing South Blanco State 36 No.7 access road; within this portion of the proposed well-connect pipeline corridor, half of the corridor width (0.1 acre) would overlap the roads; therefore, new disturbance would be approximately 0.1 acre. All of this disturbance would be fully reclaimed during post-construction reclamation.

Staging Areas/TUA

There would be two staging areas and 1 TUA (totaling 7.1 acres) used for the proposed project. The staging areas and TUA would be located within previously disturbed areas. These locations would be reclaimed during post-construction reclamation only if desired by the operators associated with the previously disturbed locations. The staging areas and TUA are described below.

- Elm Ridge's active South Blanco State 36 No. 6 well pad: approximately 0.3 acre (based on aerial photos)
- WPX's active 143H/144H well pad: approximately 4.9 acres (based on the Biological Survey Report for the 143H/144H project)
- WPX's 149H/150H pipeline TUA: approximately 1.9 acres (based on the Environmental Assessment for the 149H/150H pipeline)

2.2. No Action

Under the No Action Alternative, the APDs would not be approved. The proposed wells would not be drilled and the proposed well pad, access road, and well-connect pipeline corridor would not be constructed. Current land and resource uses would continue to occur in the proposed project area.

2.3. Alternatives Considered but Eliminated from Detailed Study

Natural gas and oil wells can be drilled vertically or directionally/horizontally. Vertical drilling places a well pad directly above the bottom hole, while directional/horizontal drilling allows for flexibility in the placement of the well pad and associated surface facilities. Directional/horizontal drilling often allows for "twinning," or drilling two or more wells from one shared well pad. Directional/horizontal drilling applications throughout the San Juan Basin have become relatively routine. Generally, the use of this technology is applied when it is necessary to avoid or minimize impacts to surface resources.

Factors such as reservoir depth, angle of deviation, lateral displacement, completion technique, and risk are considered before deciding on the use of directional drilling applications. In addition, operating factors such as production efficiency; rod, pump, and tubing wear; and workover frequency is also a consideration. Generally, directional well completion and operating costs are 20 to 25 percent higher than vertical well drilling costs. The primary economic factors that determine the feasibility of directional applications include, but are not limited to, incremental drilling, completion, and operating costs; oil and gas reserves; rates of production; oil and gas prices; royalties and taxes; and return on investment.

The proposed well pad was placed to successfully reach the 133H and 134H bottom holes. The proposed well pad is located adjacent to CR 7998 and an existing access road. No alternative surface locations were identified that would result in less surface disturbance than the proposed location.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Under the No Action alternative, current land and resource issues within the proposed project area would continue; there would be no new impacts from oil and gas development. The No Action alternative will serve as the baseline for comparing the environmental impacts of the analyzed alternatives, and will not be further evaluated in this EA (BLM 2008b).

3.1. Air Resources

3.1.1. Affected Environment

The proposed project area is located in San Juan County, New Mexico. Additional general information on air quality in the area is contained in Chapter 3 of the BLM-FFO PRMP/FEIS (BLM 2003a, 3-48 – 3-53). In addition, new information about greenhouse gases (GHGs), and their effects on national and global climate conditions has emerged since this document was prepared. On-going scientific research has identified the potential impacts of GHG emissions such as carbon dioxide (CO_2) methane (CH_4); nitrous oxide (N_2O); 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 back 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; 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 EPA 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_{10} and $PM_{2.5}$), sulfur dioxide (SO_2) and lead (Pb). EPA has established NAAQS for criteria air pollutants. The NAAQS are protective of human health and the environment. EPA has approved New Mexico's State Implementation Plan and the state enforces state and federal air quality regulations on all public and private lands within the state, except for tribal lands and within Bernalillo County. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology and terrain, and also 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. EPA has proposed or completed actions recently to implement CAA 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. EPA's Green Book web page (EPA 2013b) reports that all counties in the Farmington Field Office area are in attainment of all NAAQS as defined by the CAA. The area is also in attainment of all New Mexico Ambient Air Quality Standards (NMAAQS). The current status of criteria pollutant levels in the BLM-FFO are described below. Total emissions of criteria pollutants from each source sector were calculated by adding together the emissions from the four counties that are located in BLM-FFO: San Juan, McKinley, Rio Arriba, and Sandoval.

"Design Concentrations" are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. The 2012 design concentrations of criteria pollutants are listed below in Table 4~~Table 4~~. There is n

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. PM10 design concentrations are not available for San Juan County.

Table 4. 2012 Criteria Pollutant Monitored Values in San Juan County (EPA 2014a)

Pollutant	2012 Design Concentration	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 μg/m^3	Annual	12 μg/m^3[3,4]	60 μg/m^3[3,6]
$PM_{2.5}$	14 μg/m^3	24 hour	35 μg/m^3[3,3]	150 μg/m^3[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

In 2005, the EPA estimates that there was less than 0.01 ton per square mile of Pb emitted in BLM-FFO counties, which is less than 2 tons total (EPA 2012). Pb 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 (>150), very unhealthy and hazardous. 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.

Mean AQI values for San Juan County were generally in the good range (AQI<50) in 2013 with 80% 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 5~~Table 5~~). On 8 days in the past decade, air quality has 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 that were "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 5. Number of days classified as "unhealthy for sensitive groups" (AQI 101-150) or worse (EPA 2013a)

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

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 (BLM 2014). The EPA 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 risks and further emissions reduction strategies are necessary. 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 (EPA 2012).

Climate

The analysis area is located in a semiarid climate regime typified by dry windy conditions and limited rainfall. Summer maximum temperatures are generally in the range of 80 or 90 degrees Fahrenheit (°F), and winter minimum temperatures are generally in the teens to 20s. Temperatures occasionally reach above 100°F in June and July and have dipped below zero 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 6~~Table 6~~ shows climate normals for the 30-year period from 1981 to 2010 for the Farmington, New Mexico, area.

Table 6. Climate Normals for the Farmington Area, 1981-2010

Month	Average Temperature (°F)	Average Maximum Temperature (°F)	Average Minimum Temperature (°F)	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

Source: data collected at New Mexico State Agricultural Science Center – Farmington

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 tempo variability and change of climatic conditions, increasing concentrations of GHGs are likely to accelerate the rate climate change.

3.1.2. Impacts from the Proposed Action

Methodology and assumptions for calculating air pollutant and GHG emissions are described in the Air Resources Technical Report (BLM 2014). This document incorporates the sections discussing the modification of calculators developed by the BLM to address emissions for one horizontal oil well. The calculators give an approximation of criteria pollutant, HAP, and GHG emissions to be compared to regional and national emissions levels. Also incorporated into this document are the sections describing the assumptions used in developing the inputs for the calculator (BLM 2014).

Direct and Indirect Impacts

Criteria Pollutants

Table 7~~Table 7~~ shows estimated emissions from one proposed horizontal oil well for criteria pollutants, volatile organic compounds (VOCs) and GHGs. For comparison, Table 8~~Table 8~~ shows total human-caused emissions for each of the counties in the BLM-FFO and La Plata County, Colorado, based on the EPA's 2011 emissions inventory (EPA 2014b).

Table 7. Criteria Pollutant and VOC Emissions Estimated for Construction of One Horizontal Oil Well; Average 25 Days to Drill and Complete

Activity	NOx	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2	CH_4	CO_2
One time operations (tons)								
Construction	5.5	1.5	0.5	2.5	0.25	0.1	0.007	598.85
Completion	0.5	0.1	0.03	0.025	0.025	-	-	55.00
Post-conatruction Reclamation	0.006	0.006	0.006	0.001	-	0.003	-	1.24
Post-production Reclamation	0.006	0.006	0.006	0.001	-	0.004	-	1.66
Ancillary Operations (tons)								
Workover	0.129	0.04	0.01	0.01	0.01	-	-	10.59
Road Maintenance	-	-	-	-	-	-	-	0.26
Road Traffic	-	-	-	-	-	-	-	0.06
Annual operations (tons per year)								
Oil Haul Truck and Small Truck (100 barrels per day)	0.009	0.006	0.0012	0.0009	0.0008	-	0.0001	3.88
Total	**6.13**	**1.64**	**0.55**	**2.54**	**0.29**	**0.11**	**0.01**	**671.54**

Oil storage tanks on the well location may result in venting of VOC. Oil well production is generally presented as barrels per day produced. The emissions calculator estimated that for every barrel per day produced there may be 0.12 tons of VOC vented per year.

The average horizontal oil well in the planning area produces approximately 100 barrels per day. One hundred barrels per day is estimated to result in 12 tons of VOC emissions per year. Oil storage tanks would be subject to current EPA regulations regarding the capture or flaring of VOC emissions.

Table 8. Analysis Area Emissions in Tons per Year, 2011

County	NO_X	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2
McKinley	11,952.9	17,007.8	3,891.2	70,096.4	7,645.2	1,381.1
Rio Arriba	12,012.3	27,344.6	19,149.8	33,761.2	4,130.6	60.4
San Juan	42,231.5	63,568.9	26,110.8	76,638.3	9,201.0	5,559.3
Sandoval	4,143.8	19,513.9	4,373.1	39,343.0	4,510.8	109.3
Total	**70,340.5**	**127,435.2**	**53,525.0**	**219,838.9**	**25,487.6**	**7,110.0**

Table 9~~Table 9~~ displays the percent increase in total emissions in the analysis area from the proposed action to construct and operate one horizontal oil well.

Table 9. Percent Increase in Analysis Area Emissions from the Proposed Action

	NO_X	CO	VOC	PM_{10}*	$PM_{2.5}$*	SO_2*
Total Emissions	70,340.5	127,435.2	53,525.0	219,838.9	25,487.6	7,110.0
Conventional Gas Well Emissions	6.13	1.64	12.55[8]	2.54	0.29	0.11
Percent Increase	**0.009**	**0.001**	**0.02**	**0.001**	**0.001**	**0.002**

*Values derived from average emissions for any well drilling in the analysis area. Calculated results available upon request.

Hazardous Air Pollutants

The formulas used for calculating HAPs in the calculators are very imprecise. For many processes it is assumed that emission of HAPs will be equivalent to 10 percent of VOC emissions. Therefore, the estimated HAP emissions of 1.25 tons/year should be considered a very gross estimate. Most of the VOC emissions estimated for one

horizontal oil well result from venting from oil storage tanks. Current EPA regulations require operators to reduce VOC emissions by 95% if their oil storage tanks emit over 6 tons of VOC emissions per year. A reduction of 95% oil storage tank VOC emissions would reduce the estimated HAP emissions to 0.12 tons/year.

Total Greenhouse Gases

The available statewide GHG summary combines GHG emissions from CO_2 and CH_4. To compare the GHG emissions from the Proposed Action estimated by the calculator with statewide GHG emissions, CO_2e emissions for both CH_4 and CO_2 were summed. The total statewide GHG emission estimate for 2007 was 76,200,000 metric tons CO_2e (76.2 million metric tons (NMED 2010). The estimated CO_2e metric tons emissions from one horizontal oil well (609.2 metric tons) would represent a 0.0008 percent increase in New Mexico CO_2 emissions.

Cumulative Impacts

The BLM-FFO manages federal hydrocarbon resources in San Juan, Sandoval, Rio Arriba, and McKinley Counties. There are approximately 21,150 active oil and gas wells in the San Juan Basin. About 14,843 of the wells in these counties are federal wells. Analysis of cumulative impacts for reasonable development scenarios and reasonably foreseeable development scenarios of oil and gas wells on public lands in the BLM-FFO was presented in the 2003 RMP. This included modeling of impacts on air quality. A more detailed discussion of cumulative effects can be found in the Air Resources Technical Report (BLM 2014).

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 Quality 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 (BLM 2014). It includes a summary of emissions on the national and regional scale by industry source. Sources that are considered to have notable contributions to air quality impacts and GHG emissions include electrical generating units, fossil fuel production (nationally and regionally), and transportation.

The emissions calculator estimated that there could be very small direct and indirect increases in several criteria pollutants, HAPs, and GHGs as a result of implementing the proposed alternative. The very small increase in emissions that could result would not be expected to result in exceeding the NAAQS for any criteria pollutants in the analysis area.

The very small increase in GHG emissions that could result from implementing the proposed alternative would not produce climate change impacts that differ from the No Action Alternative. This is because climate change is a global process that is impacted by the sum total of GHGs in the Earth's atmosphere. The incremental contribution to global GHGs from the action alternatives 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 alternatives on global or regional climate.

The Air Resources Technical Report (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.

3.2. Groundwater Resources

3.2.1. Affected Environment

Within a 1-mile radius of the proposed well pad, there are seven recorded water wells. There is no depth-to-groundwater data available for six of these wells; water well SJ-01334, located approximately 0.4 mile southeast of the proposed well pad, has a depth-to-groundwater of 40 feet (New Mexico Office of the State Engineer 2011).

3.2.2. *Impacts from the Proposed Action*

Direct and Indirect Impacts

Stimulation (i.e., hydraulic fracturing or "fracking") is a process used to maximize the extraction of underground resources by allowing oil or natural gas to move more freely from the rock pores to production wells that bring the oil or gas to the surface. Fluids, commonly made up of water (99 percent) and chemical additives (1 percent), are pumped into a geologic formation at high pressure during fracking (EPA 2004). Chemicals added to stimulation fluids may include friction reducers, surfactants, gelling agents, scale inhibitors, acids, corrosion inhibitors, antibacterial agents, and clay stabilizers. When the fracking pressure exceeds the rock strength, the fluids open or enlarge fractures that typically extend several hundred feet away from the well bore, and may occasionally extend up to 1,000 feet from the well bore. After the fractures are created, a propping agent (usually sand) is pumped into the fractures to keep them from closing when the pumping pressure is released. After fracking is completed, a portion of the injected fracking fluids returns to the wellbore and is recovered for future fracking operations (EPA 2004) or disposal. Stimulation techniques have been used in the U.S. since 1949 and in the San Juan Basin since the 1950s. Over the last 10 years, advances in multi-stage and multi-zone fracking have allowed for the development of gas fields that previously were uneconomic, including the San Juan Basin.

Fracking is a common process in the San Juan Basin and applied to nearly all wells drilled. The producing zone targeted by the proposed project is well below any underground sources of drinking water. The Mancos Shale formation is also overlain by a continuous confining layer. The geological confining layer is the Lewis Shale formation, which is located above both the Mancos Shale and Mesaverde formations. The Lewis Shale formation provides an impermeable layer that isolates the Mancos Shale and Mesaverde formations from both identified sources of drinking water and surface water. On average, the total depth of the proposed well bores would be about 5,000 feet below the ground surface. Fracking in the Basin Mancos formation is not expected to occur above depths of 4,000 feet below the ground surface. Fracking could possibly extend into the Mesaverde formation overlying the Basin Mancos; however, the formation has not been identified as an underground source of drinking water based on its depth and relatively high levels of total dissolved solids. No impacts to surface water or freshwater-bearing groundwater aquifers are expected to occur from fracking of the proposed wells.

Cumulative Impacts

As no direct or indirect impacts to groundwater are anticipated as a result of the proposed project, there would be no cumulative impacts.

3.3. Upland Vegetation

3.3.1. *Affected Environment*

The proposed project area is located within the Arizona/New Mexico Plateau ecological region. This ecological region occurs primarily in Arizona, Colorado, and New Mexico; a small portion of the region is located within Nevada. This region encompasses approximately 45,870,500 acres (185,632 square kilometers), and the elevation ranges from 2165 to 11,949 feet (660 to 3642 meters) AMSL. The ecological region's landscapes include low mountains, hills, mesas, foothills, irregular plains, alkaline basins, wetlands, and some sand dunes. The Arizona/New Mexico Plateau ecological region is a large transitional area located between the semiarid grasslands to the east; the drier shrublands and woodlands to the north; and the lower, hotter, less-vegetated areas to the west and south. Vegetation communities within this region include shrublands of big sagebrush (*Artemisia tridentata*), rabbitbrush (*Ericameria* spp.), winterfat (*Krascheninnikovia lanata*), shadscale saltbush (*Atriplex confertifolia*), and greasewood (*Sarcobatus vermiculatus*); and grasslands of blue grama (*Bouteloua gracilis*), western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Nassella viridula*), and needle-and-thread grass (*Hesperostipa comata*). Higher elevations within the Arizona/New Mexico Plateau ecological region may support piñon pine (*Pinus edulis*) and juniper (*Juniperus* spp.) woodlands. This ecological region includes the urban areas of Santa Fe and Albuquerque, New Mexico. Important land uses within the region include irrigated farming, recreation, rangeland, wildlife habitat, and some natural gas production (Griffith, et al. 2006).

The general region surrounding the proposed project area is characterized by a sagebrush shrubland vegetation community. Some badlands are present in the region, and piñon-juniper woodlands are present on mesa tops in the vicinity.

The proposed project area is characterized by a sagebrush shrubland vegetation community. The vegetative cover is approximately 15 percent. The dominant plant species include big sagebrush and broom snakeweed (*Gutierrezia sarothrae).* Other species present include greasewood, Russian thistle (*Salsola tragus*), James's galleta (*Pleuraphis jamesii*), cheatgrass (*Bromus tectorum*), and pricklypear (*Opuntia* sp.). In addition, there are approximately 2 juniper trees (both mature) within the proposed project area. Saltcedar (*Tamarix* sp.) was observed within the construction zone near corner 3 and midpoint 4.

3.3.2. Impacts from the Proposed Action

Direct and Indirect Impacts

During the construction phase of the proposed project, 5.9 acres of sagebrush shrubland vegetation would be cleared. During post-construction reclamation, approximately 3.5 acres of this disturbance would be fully reclaimed and 1.2 acres would only be reseeded. The remaining 1.2 acres would remain as compacted, barren surface for the life of the proposed wells. During post-production reclamation, WPX would reclaim all portions of the proposed project area that were not fully reclaimed during post-construction reclamation.

During post-construction and post-production reclamation, the BLM-FFO Sagebrush/Grass Community Seed Mixture would be utilized. Re-established vegetation would consist of native grass, forb, and shrub species included in the seed mixture, as well as native species that are not deliberately planted. It is also possible that invasive, non-native species could become established within the proposed project area, as such species could be transported by project equipment and tend to thrive in disturbed areas. Following the reclamation process, the resulting vegetation community could differ from the native plant community surrounding the proposed project area. Within reclaimed areas, it is not expected that the vegetation community would return to native conditions within 20 years (BLM 2003a, 4-18).

The deposition of fugitive dust generated during vegetation-clearing activities, during the use of the proposed w pad and access roads, and during wind events could reduce photosynthesis and productivity of the surrounding vegetation (Thompson, et al. 1984; Hirano, et al. 1995), increase water loss in plants near the proposed project area (Eveling and Bataille 1984), and result in injury to leaves of surrounding vegetation.

Cumulative Impacts

The spatial analysis area includes the proposed project area and immediately adjacent lands. CR 7998 is located to the immediate northwest of the proposed well pad, and the existing South Blanco State 36 No.7 access road crosses through the southern portion of the proposed well pad construction zone. Llamas were observed grazing throughout the proposed project area, and currently have access to the location.

Aside from the proposed project, no reasonably foreseeable disturbances are anticipated within the spatial analysis area.

Indirectly, fugitive dust or deposition associated with existing and proposed roads and well pads in the immediate area could impact the vegetation within the spatial analysis area, and could continue to do so throughout the life of the proposed project. The proposed project would contribute to direct vegetation disturbance and fugitive dust and/or deposition within the spatial analysis area.

3.4. Special Status Species

3.4.1. Affected Environment

The BLM manages certain species which are not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered in the future. BLM SSS include BLM Sensitive Species and BLM-FFO Special Management Species (SMS).

New Mexico BLM State Directors have developed a list of BLM Sensitive Species for the State of New Mexico (BLM 2011a, BLM 2011b, BLM 2011c, BLM 2012a). In accordance with BLM Manual 6840, the BLM-FFO has prepared a list of BLM-FFO SMS to focus species management efforts toward maintaining habitats under a multiple-use mandate (BLM 2008a, BLM 2008c). BLM-FFO SMS include some BLM Sensitive Species and other species for which the BLM-FFO has determined special management is appropriate (BLM 2008c). The authority for this policy and guidance is established by the ESA; Title II of the Sikes Act, as amended (16 USC 670a-670o, 74 Stat. 1052); FLPMA; and Department of Interior Manual 235.1.1A.

Based on known range and habitat, several BLM SSS have the potential to occur within the proposed project area. These species, their habitat descriptions, and their potential to occur within the proposed project area are listed in the table below.

Table 10. BLM SSS with Potential to Occur within Proposed Project Area

Species	Status	Documented Occurrence Within BLM-FFO Region	Habitat	Potential to Occur in Proposed Project Area
American peregrine falcon (*Falco peregrinus anatum*)	SMS	Summer/ breeding range (Sibley 2000). Known to nest in BLM-FFO (BLM 2003a).	Rugged, semi-open to wooded areas in montane regions. Areas with rocky cliffs, outcrops, and canyons that are at least 30 feet high and often near water. In New Mexico, typically nests on cliff ledges (New Mexico Partners in Flight [NMPIF] 2007, Wheeler 2003).	POSSIBLE: The walls of Blanco Canyon (approximately 0.5 mile to the southwest and 1.5 miles to the northeast) are more than 30 feet high and could potentially be used for nesting by peregrine falcons. The vegetation community within the canyon is semi-open. The proposed project area could be used for foraging. The nearest recorded peregrine falcon nest is approximately 5 miles to the east-northeast.
Bendire's thrasher (*Toxostoma bendirei*)	Sensitive	Summer range (Sibley 2000). Known to occur within BLM-FFO (BLM 2011a).	Sparse desert shrublands, degraded grasslands, and open woodlands with scattered shrubs. On the Colorado Plateau, open sagebrush shrublands with scattered junipers. Avoids riparian areas and arroyos with dense shrub cover (NMPIF 2007).	POSSIBLE: The vegetation community within the proposed project area is open sagebrush shrublands with few junipers. This species could potentially use the proposed project area for foraging and nesting.
Golden eagle (*Aquila chrysaetos*)	SMS	Year-round range (Sibley 2000). Known to nest in BLM-FFO (BLM 2012b).	Open to semi-open country with elevated perches, including grasslands, prairies, open woodlands, shrublands, and barren areas. Prefers hilly or montane regions. Nests on rock ledges on cliffs or in large trees (NatureServe 2012, NMPIF 2007, Wheeler 2003).	POSSIBLE: The walls of Blanco Canyon (approximately 0.5 mile to the southwest and 1.5 miles to the northeast) could potentially be used for nesting by golden eagles. The vegetation community within the canyon is semi-open. The proposed project area could be used for foraging. The nearest recorded golden eagle nest is approximately 9 miles to the east-northeast.

Although the proposed project area is within the BLM-FFO-designated potential habitat "zone" (BLM 2013) for Aztec gilia (*Aliciella formosa*) and Brack's fishhook cactus (*Sclerocactus cloveriae* var. *brackii*), preferred habitat

(desert scrub) is not available at the location. Therefore, the BLM-FFO determined that it would be unlikely for these species to occur within the proposed project area (Kendall 2014).

No sign of BLM SSS was observed during the survey of the proposed project area. There are no recorded raptor SSS nests within 4.9 mile of the proposed project area (BLM 2012b).

3.4.2. Impacts from the Proposed Action

Direct and Indirect Impacts

Bendire's Thrasher

Due to the mobility of adult birds, it is not anticipated that any adult Bendire's thrashers would be directly injured or killed by the proposed project. It is possible that bird nests, eggs, or young could be directly injured or killed if the vegetation-clearing portion of the proposed project occurs during migratory bird breeding season.

Approximately 5.9 acres of vegetation would be cleared as a result of the proposed project; approximately 1.2 acres would remain unvegetated for the long term. This vegetation disturbance would result in a reduction of foraging and breeding habitat for the Bendire's thrasher. Indirectly, the audial and visual disturbances associated with the proposed project could also potentially deter this species from using the immediate area.

American Peregrine Falcon and Golden Eagle

Due to the mobility of adult raptors and the lack of appropriate nesting sites for these raptors in the immediate vicinity of the proposed project area, it is unlikely that these raptors would be directly harmed by activities associated with the proposed project.

The clearing of vegetation would result in the removal of foraging habitat for raptors. In addition, audial and visual disturbances associated with the proposed project could cause indirect habitat loss.

Cumulative Impacts

The spatial analysis area for SSS includes the proposed project area and an approximately 1-mile radius around the proposed project area. Within the spatial analysis area, there is existing disturbance and reasonably foreseeable future disturbance is anticipated. These disturbances are listed below:

- 15 new or active oil and/or gas wells and associated well pads
- 19 inactive oil and/or gas wells and associated well pads (some reclaimed)
- 1 proposed oil and/or gas well pad and an associated road and utility corridor
- Approximately 11 miles of existing roads (including U.S. Highway 550)
- Numerous existing and proposed utility ROWs
- Active wildlife and livestock grazing
- Scattered rural residences

Habitat disturbance and fragmentation in the spatial analysis area is primarily the result of oil and gas development (including well pads, access roads, and pipeline corridors). The direct and indirect habitat disturbance, fragmentation, and human activities associated with these disturbances could deter SSS wildlife from utilizing portions of the spatial analysis area. The proposed action would contribute to direct and indirect habitat disturbance in the spatial analysis area.

3.5. Cultural Resources

3.5.1. *Affected Environment*

The proposed project area is located within the archaeologically rich San Juan Basin of northwestern New Mexico. In general, the history of the San Juan Basin can be divided into five major periods: PaleoIndian (circa [ca.] 10000 B.C. to 5500 B.C.); Archaic (ca. 5500 B.C. to A.D. 400); Basketmaker II-III and Pueblo I-IV (aka Anasazi; A.D. 1-1540); and historic (A.D. 1540 to present), which includes Native American as well as later Hispanic and Euro-American settlers. Detailed descriptions of these various periods are provided in the BLM-FFO PRMP/FEIS (BLM 2003a, pp. 3-65 – 3-84) and will not be reiterated here. Additional information can also be found in an associated documented, the Cultural Resources Technical Report (Science Applications International Corporation 2002).

Cultural sites 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.

The entire Area of Potential Effect (APE) for the proposed action was archaeologically surveyed by LAC at a BLM Class III (100-percent) level. The archaeological report, LAC Report 2013-5d (LAC 2014; BLM 2014(IV)029F), was prepared and submitted to the BLM in accordance with the *Procedures for Performing Cultural Resources Fieldwork on Public Lands in the Area of New Mexico BLM Responsibilities* (BLM 2005).

The Class III inventory identified one cultural site was identified within the APE (LAC 2014). It has not been determined whether or not the site is eligible for listing in the NRHP. No TCPs are known to exist in the APE.

3.5.2. *Impacts from the Proposed Action*

Direct and Indirect Impacts

Direct impacts normally include alterations to the physical integrity of a cultural site. If a cultural site is significant for other than its scientific information, direct impacts may also include the introduction of audible, atmospheric, or visual elements that are out of character for the cultural site. A potential indirect impact from the proposed action is the increase in human activity or access to the area with the increased potential of unauthorized removal of or other alteration to cultural sites in the area.

Significant cultural sites (e.g., sites eligible for the NRHP) would be avoided with the implementation of design features such as, but not limited to, reduction of construction areas, installation of temporary barriers, and site monitoring. These design features are detailed in the Cultural Resource Record of Review, attached to the COAs in the approved APDs. The proposed action would not be expected to physically threaten any TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or otherwise hinder the performance of traditional ceremonies/rituals pursuant to the AIRFA (42 USC 1996), EO 13007, or the NAGPRA (25 USC 3001). The proposed action would have no direct or indirect impact on significant cultural sites.

Cumulative Impacts

There would be no negative cumulative impact on cultural resources as significant cultural sites would be avoided. A positive cumulative effect is the additional scientific information yielded by the archaeological survey.

4. SUPPORTING INFORMATION

4.1. Tribes, Individuals, Organizations, or Agencies Consulted

The following tribes, individuals, organizations, and/or agencies were consulted during the development of this EA:

- Heather Reilly, WPX
- Larry Higgins, WPX
- Andrea Felix, WPX
- Lacey Granillo, WPX
- Mark Heil, WPX
- Mark Lepich, WPX
- Steven Fuller, LAC
- Brandon Foley, NMSLO

4.2. List of Preparers

This EA was prepared by NCI in conformance with the standards of and under the direction of the BLM-FFO. The following individuals assisted in the preparation of this EA:

- Jenny Holmen, Senior Environmental Scientist, NCI
- John Leonhart, Environmental Scientist, NCI
- Amanda Nisula, Planning and Environmental Specialist, BLM-FFO
- Dale Wirth, Natural Resources Specialist, BLM-FFO
- Sheila Williams, District Botanist, BLM-FFO
- John Kendall, Wildlife Management Biologist, BLM-FFO
- Jim Copeland, Archaeologist, BLM-FFO
- Esther Willetto, Tribal Program Coordinator, BLM-FFO
- Roger Herrera, Environmental Protection Specialist, BLM-FFO

4.3. References

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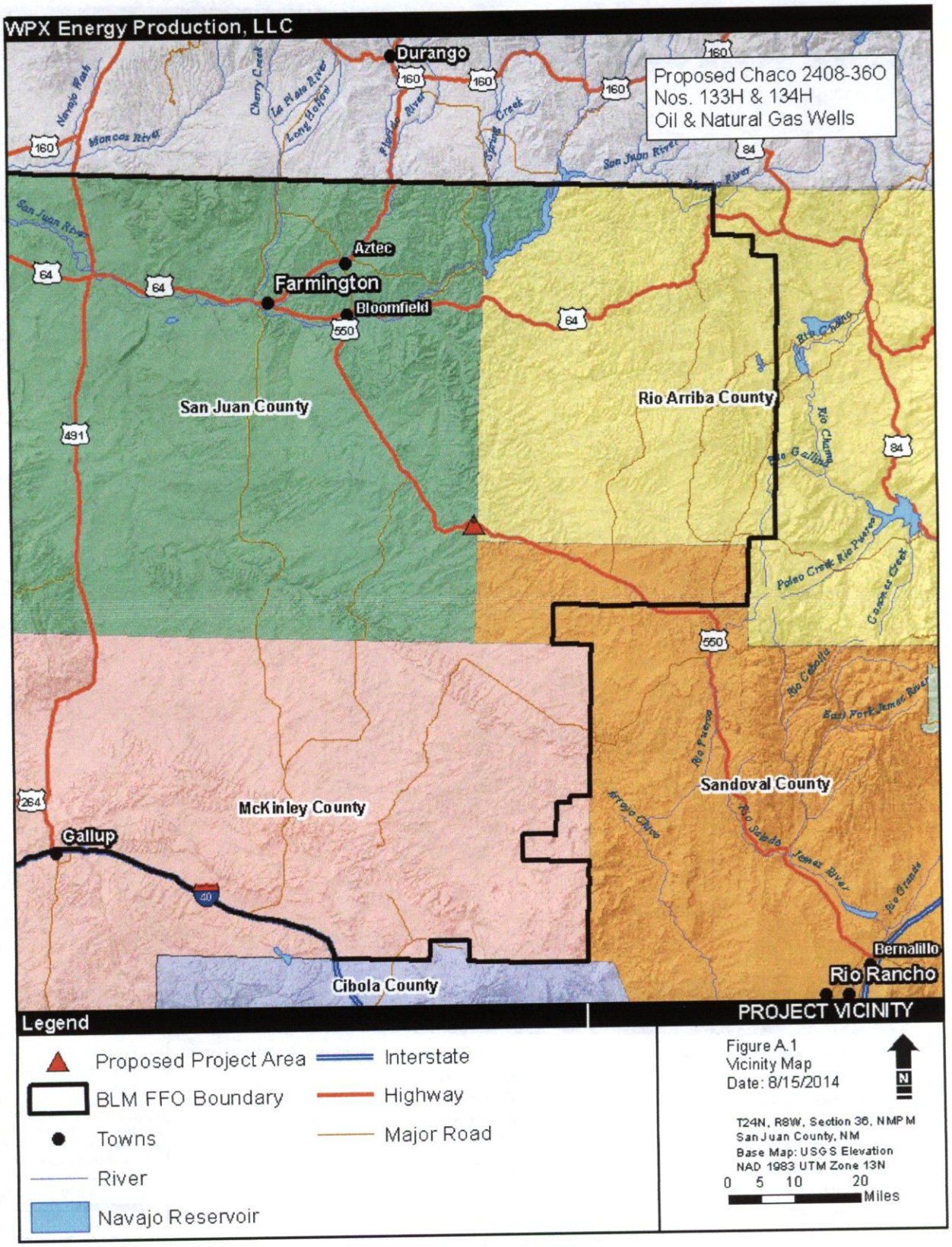
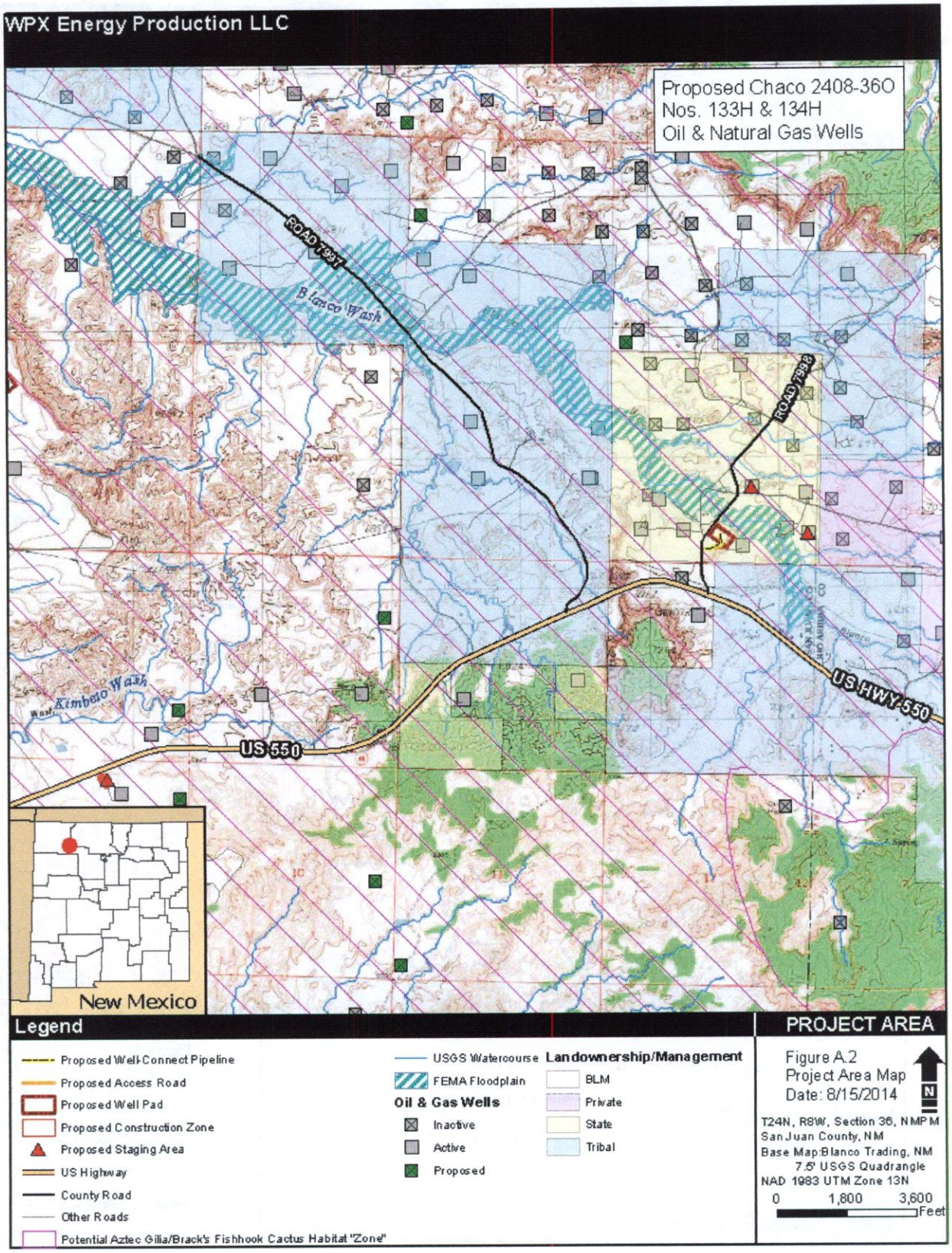
APPENDIX A. MAPS

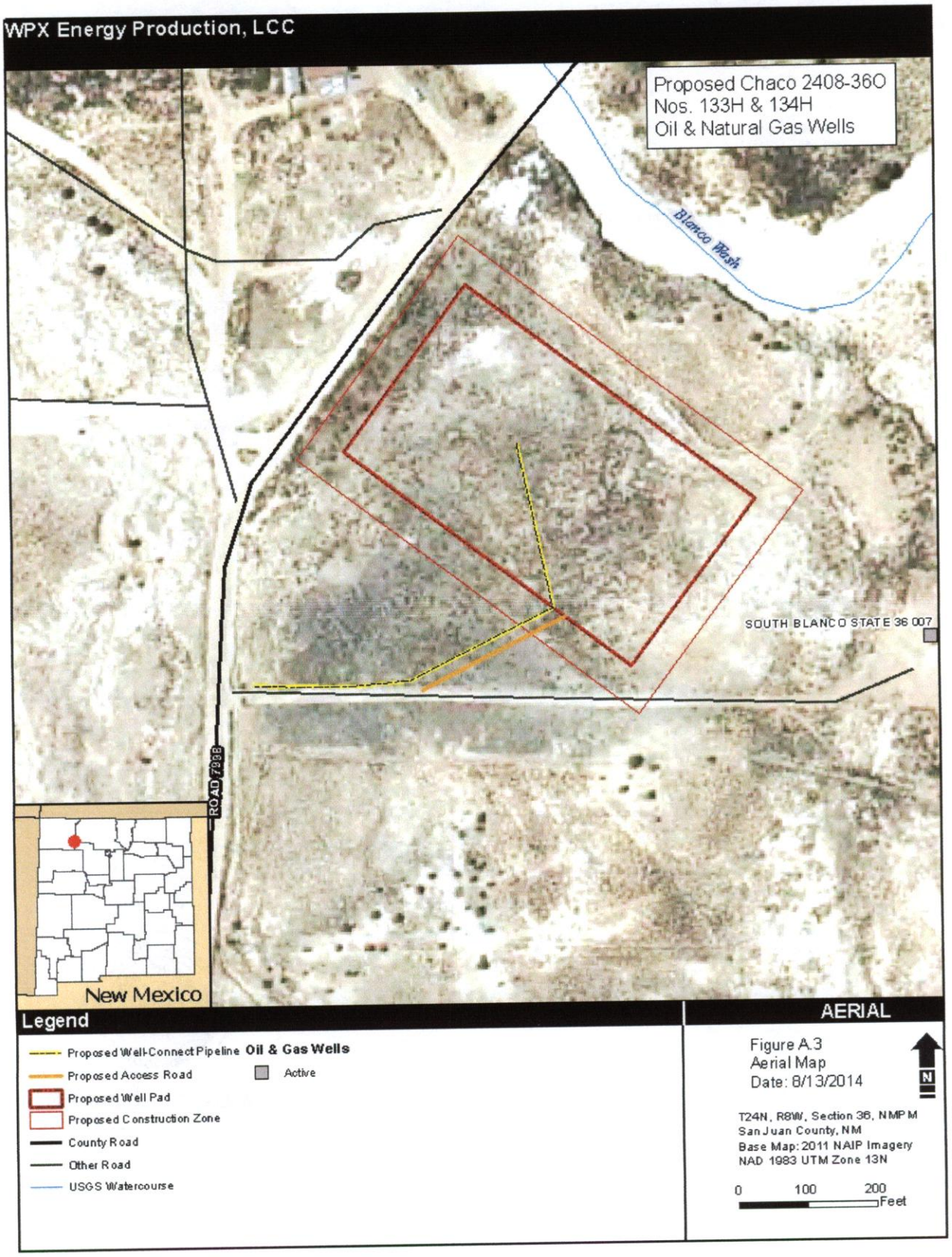
A.1. Vicinity Map



A.2. Project Area Map



A.3. Aerial Map



APPENDIX B. PLATS

District I
1625 N. French Drive, Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First Street, Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone:(505) 476-3460 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Drive
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1]API Number	[2]Pool Code	[3]Pool Name
	42289	LYBROOK GALLUP

[4]Property Code	[5]Property Name	[6]Well Number
	CHACO 2408-36O	133H

[7]OGRID No.	[8]Operator Name	[9]Elevation
120782	WPX ENERGY PRODUCTION, LLC	6893'

[10] Surface Location

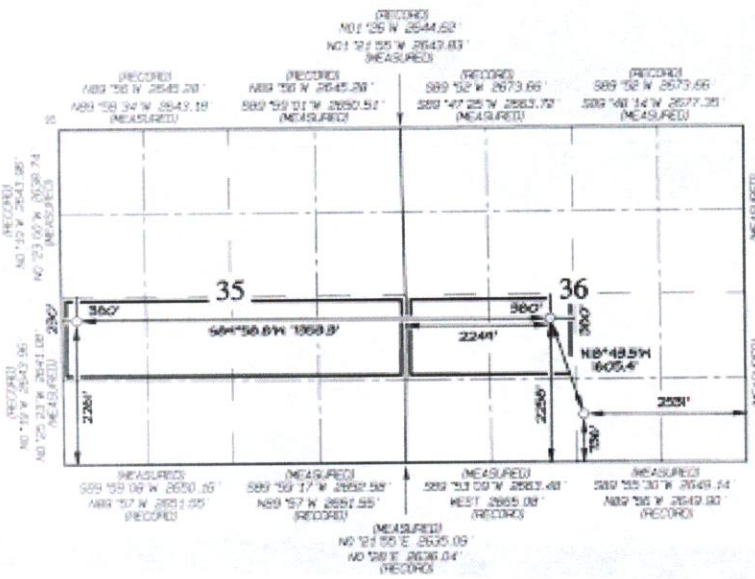
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	36	24N	8W		736	SOUTH	2531	EAST	SAN JUAN

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	35	24N	8W		2251	SOUTH	230	WEST	SAN JUAN

[12]Dedicated Acres	[13]Joint or Infill	[14]Consolidation Code	[15]Order No.
240.0 Acres N/2 S/2 - Section 35 N/2 SW/4 - Section 36			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



END-OF-LATERAL
2267' FSL 230' FWL
SECTION 35, T24N, R8W
LAT: 36.26975 °N
LONG: 107.65890 °W
DATUM: NAD1927

LAT: 36.26977 °N
LONG: 107.65951 °W
DATUM: NAD1983

POINT-OF-ENTRY
2256' FSL 2249' FWL
SECTION 36, T24N, R8W
LAT: 36.26972 °N
LONG: 107.63395 °W
DATUM: NAD1927

LAT: 36.26973 °N
LONG: 107.63456 °W
DATUM: NAD1983

SURFACE LOCATION
735' FSL 2531' FEL
SECTION 36, T24N, R8W
LAT: 36.26654 °N
LONG: 107.63282 °W
DATUM: NAD1927

LAT: 36.26656 °N
LONG: 107.63342 °W
DATUM: NAD1983

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date

Printed Name

E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date Revised: JULY 24, 2014
Date of Survey: APRIL 11, 2014

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Drive
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
	42289	LYBROOK GALLUP

[4] Property Code	[5] Property Name	[6] Well Number
	CHACO 2408-36O	134H

[7] OGRID No.	[8] Operator Name	[9] Elevation
120782	WPX ENERGY PRODUCTION, LLC	6893'

[10] Surface Location

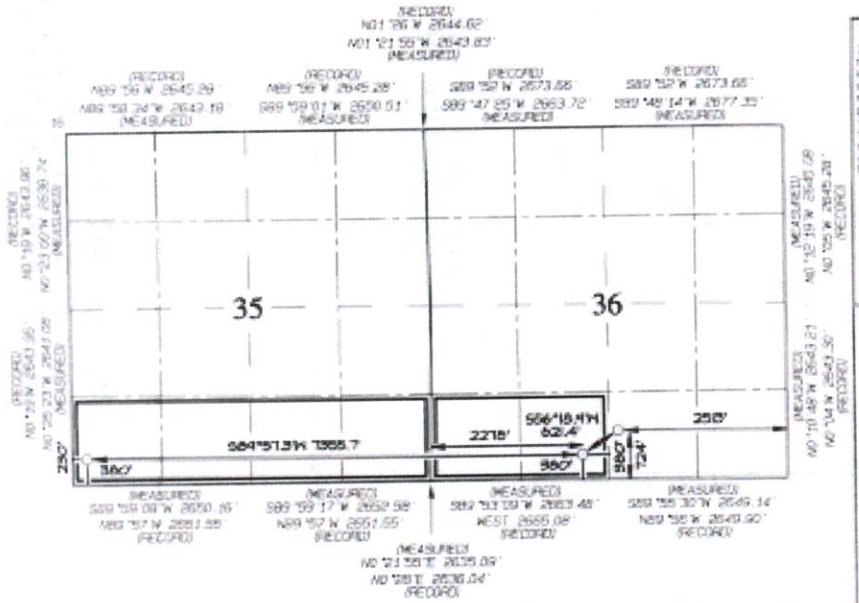
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	36	24N	8W		724	SOUTH	2513	EAST	SAN JUAN

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	35	24N	8W		380	SOUTH	230	WEST	SAN JUAN

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
240.0 Acres S/2 S/2 - Section 35 S/2 SW/4 - Section 36			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



END-OF-LATERAL
380' FSL 230' FWL
SECTION 35, T24N, R8W
LAT: 36.26459°N
LONG: 107.60886°W
DATUM: NAD1927

LAT: 36.26480°N
LONG: 107.65947°W
DATUM: NAD1983

POINT-OF-ENTRY
380' FSL 2278' FWL
SECTION 35, T24N, R8W
LAT: 36.26456°N
LONG: 107.63361°W
DATUM: NAD1927

LAT: 36.26458°N
LONG: 107.63452°W
DATUM: NAD1983

SURFACE LOCATION
724' FSL 2513' FEL
SECTION 36, T24N, R8W
LAT: 36.26551°N
LONG: 107.63235°W
DATUM: NAD1927

LAT: 36.26552°N
LONG: 107.63276°W
DATUM: NAD1983

[17] OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date

Printed Name

E-mail Address

[18] SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

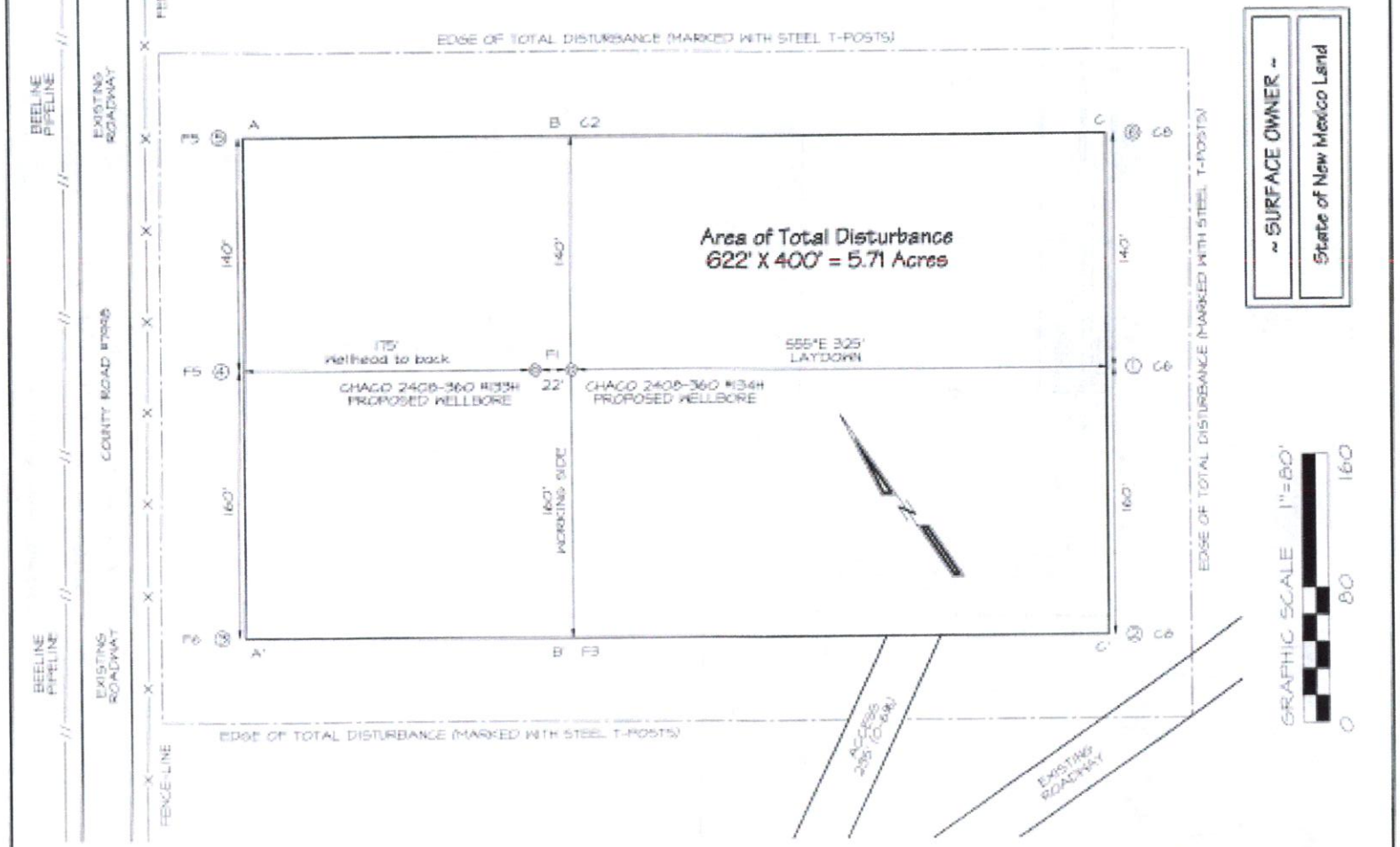
Date Revised: JULY 23, 2014
Date of Survey: APRIL 11, 2014

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

WPX ENERGY PRODUCTION, LLC CHACO 2408-36O #134H
724' FSL & 2513' FEL, SECTION 36, T24N, R8W, NMPM
SAN JUAN COUNTY, NEW MEXICO ELEVATION: 6893'
LAT: 36.26552°N LONG: 107.63276°W DATUM: NAD1983



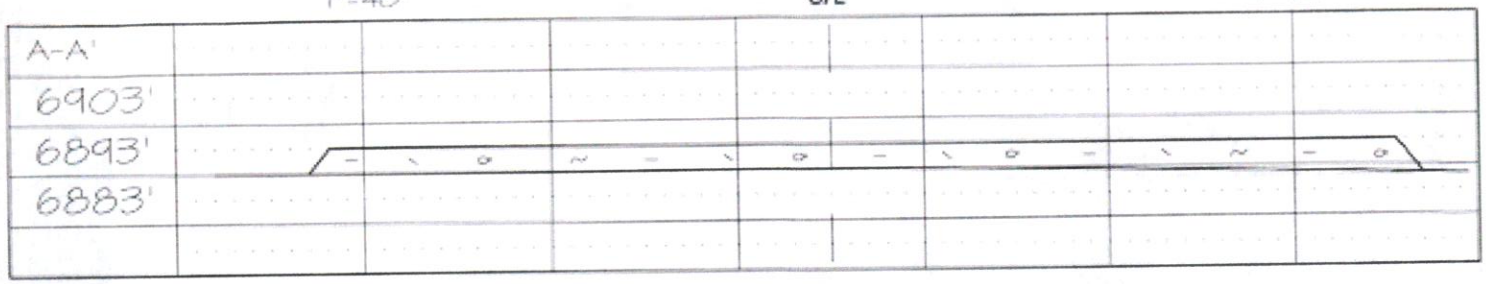
Steel T-Posts have been set to define the Edge of Disturbance limits which are 50' offset from the edge of the staked wellpad.

WPX ENERGY PRODUCTION, LLC CHACO 2408–36O #134H
724' FSL & 2513' FEL, SECTION 36, T24N, R8W, NMPM
SAN JUAN COUNTY, NEW MEXICO ELEVATION: 6893'

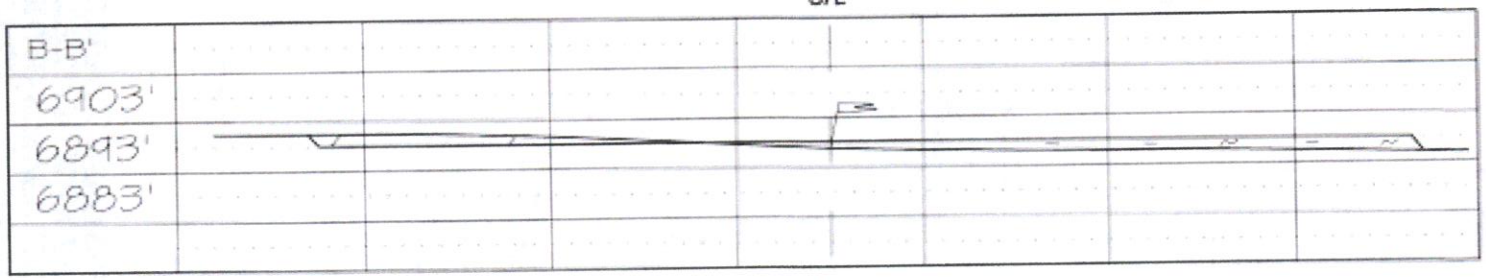
HORIZONTAL SCALE
1"=40'

VERTICAL SCALE
1"=30'

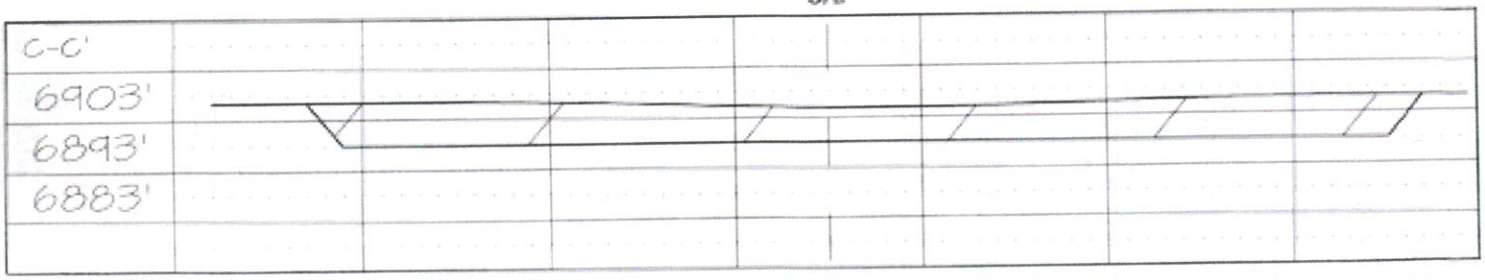
C/L



C/L



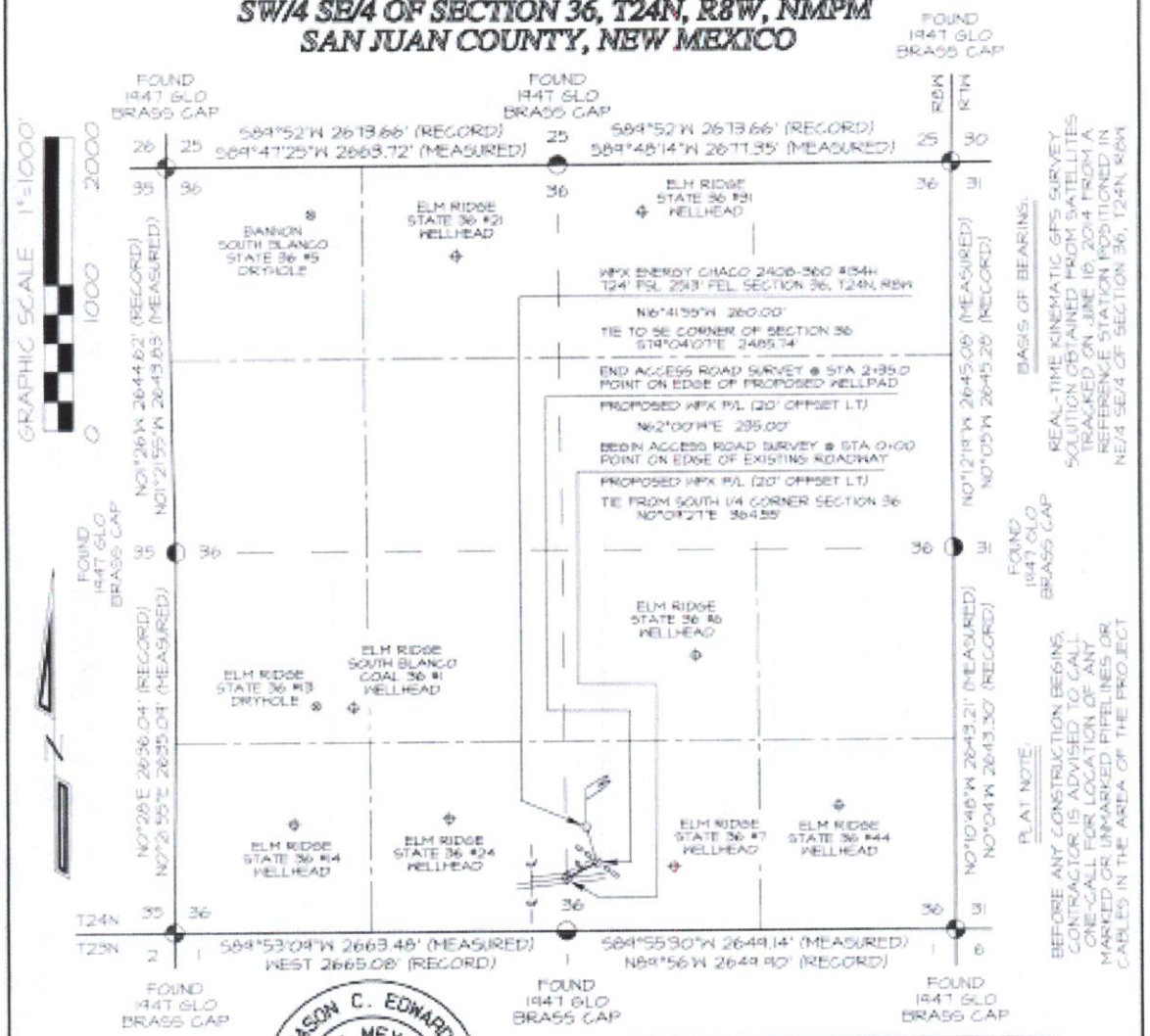
C/L



NCE SURVEYS IS NOT LIABLE FOR LOCATION OF UNDERGROUND UTILITIES OR PIPELINES.

CONTRACTOR SHOULD CONTACT ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED UNDERGROUND UTILITIES OR PIPELINES ON WELLPAD AND/OR ACCESS ROAD AT LEAST TWO WORKING DAYS PRIOR TO CONSTRUCTION.

WPX ENERGY PRODUCTION, LLC CHACO 2408-36O #134H
PROPOSED ACCESS ROAD SURVEY LOCATED IN THE
SW/4 SE/4 OF SECTION 36, T24N, R8W, NMPM
SAN JUAN COUNTY, NEW MEXICO



JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

~ SURFACE OWNERSHIP ~ State of New Mexico Land	
0+00 TO 2+35.0	235.0 FT / 14.2 RODS

I, Jason C. Edwards, a registered Professional Surveyor under the laws of the State of New Mexico, hereby certify that this plat was prepared from field notes of an actual survey meeting the minimum requirements of the standards for easement surveys and is true and correct to the best of my knowledge and belief.

JASON C. EDWARDS Date: July 23, 2014

Jason C. Edwards, P.L.S.
New Mexico L.S. #15269

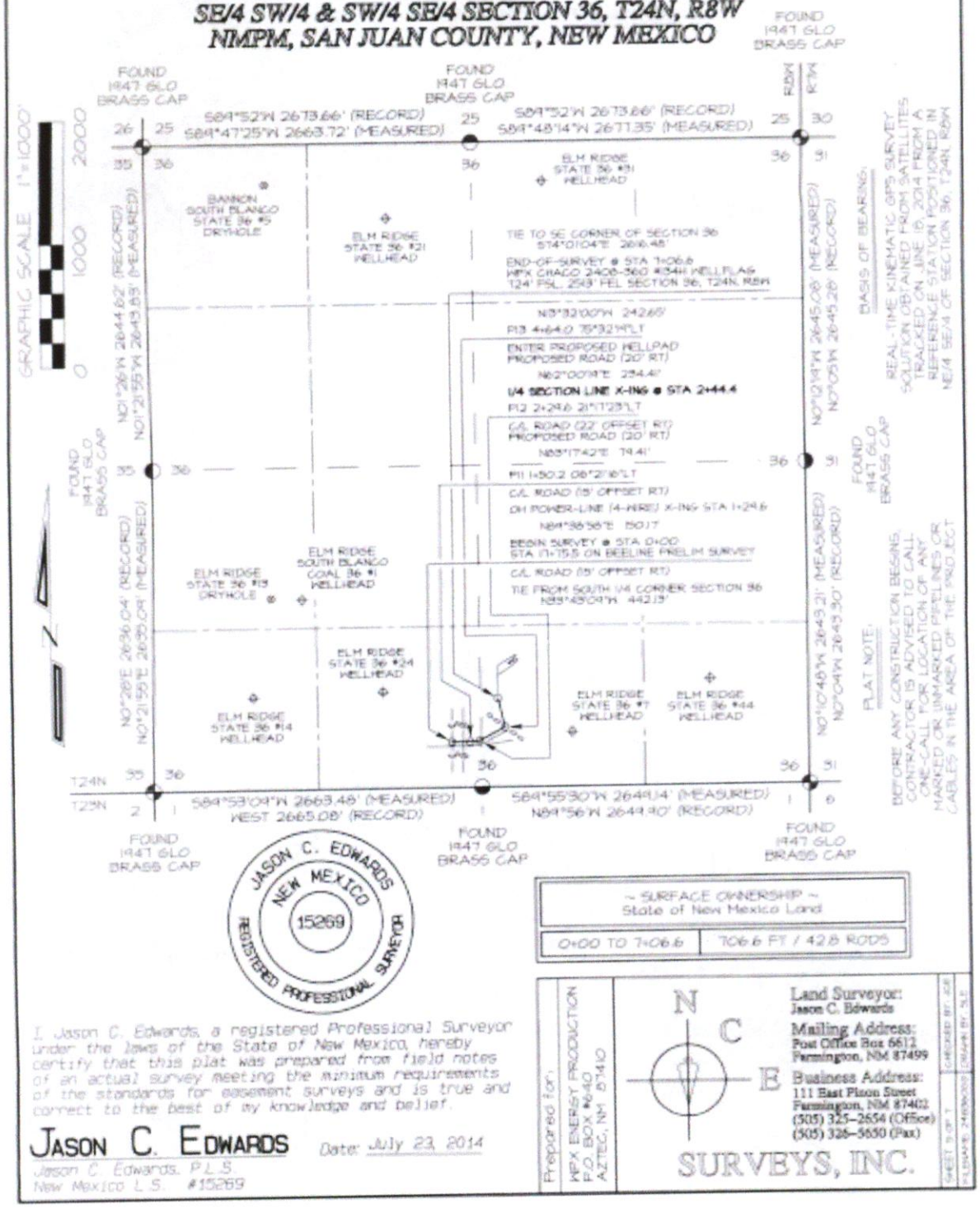
Prepared for:
WPX ENERGY PRODUCTION
P.O. BOX 640
AZTEC, NM 87410

N C E

Land Surveyor:
Jason C. Edwards
Mailing Address:
Post Office Box 6612
Farmington, NM 87499
Business Address:
111 East Pinon Street
Farmington, NM 87402
(505) 325-2654 (Office)
(505) 325-5650 (Fax)
SURVEYS, INC.

SHEET 4 OF 7 | CHECKED BY: JCE
FILENAME: 2408-360.DWG | DRAWN BY: BLE

WPX ENERGY PRODUCTION, LLC CHACO 2408-36O #134H
PROPOSED PIPELINE SURVEY LOCATED IN THE
SE/4 SW/4 & SW/4 SE/4 SECTION 36, T24N, R8W
NMPM, SAN JUAN COUNTY, NEW MEXICO



WPX ENERGY PRODUCTION, LLC CHACO 2408-36O #134H

724' FSL & 2513' FEL, SECTION 36, T24N, R8W, N.M.P.M.
SAN JUAN COUNTY, NEW MEXICO

NAMES OF TOPO MAPS
CROW MESA WEST & CROW MESA EAST

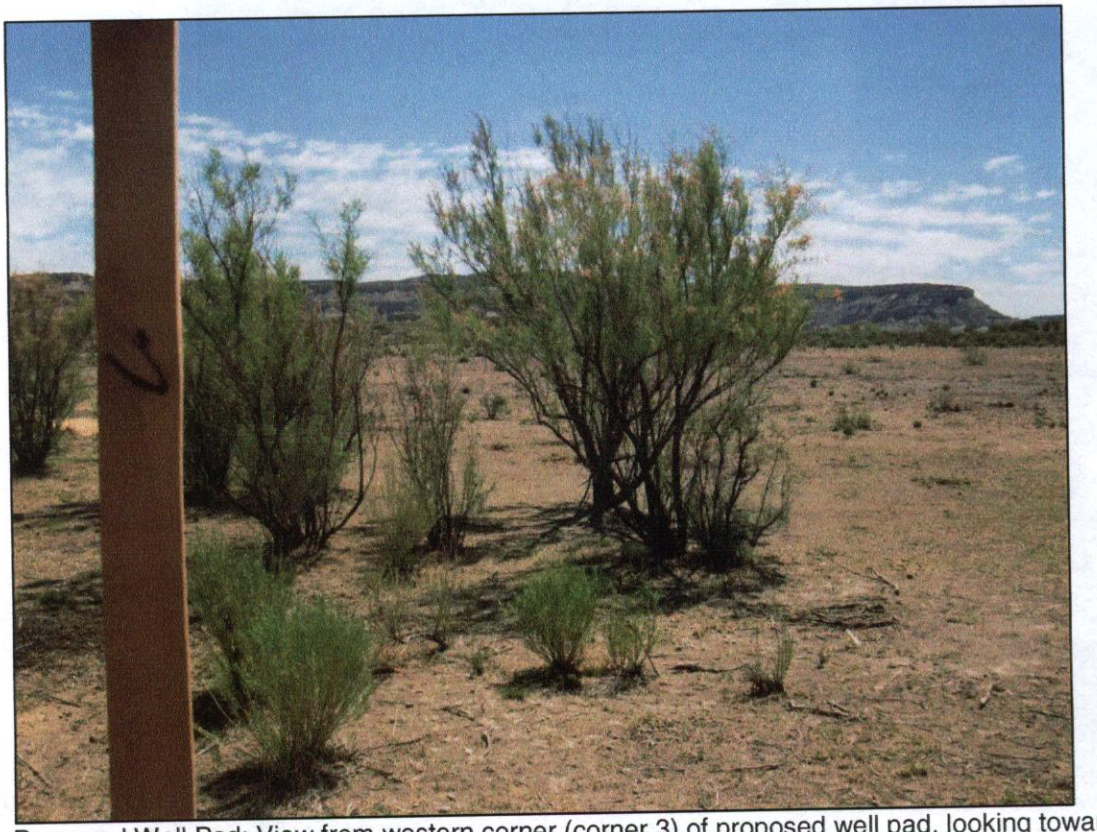
⊕ PRODUCING WELL ⊗ PLUGGED & ABANDONED WELL

APPENDIX C. PHOTOGRAPHS

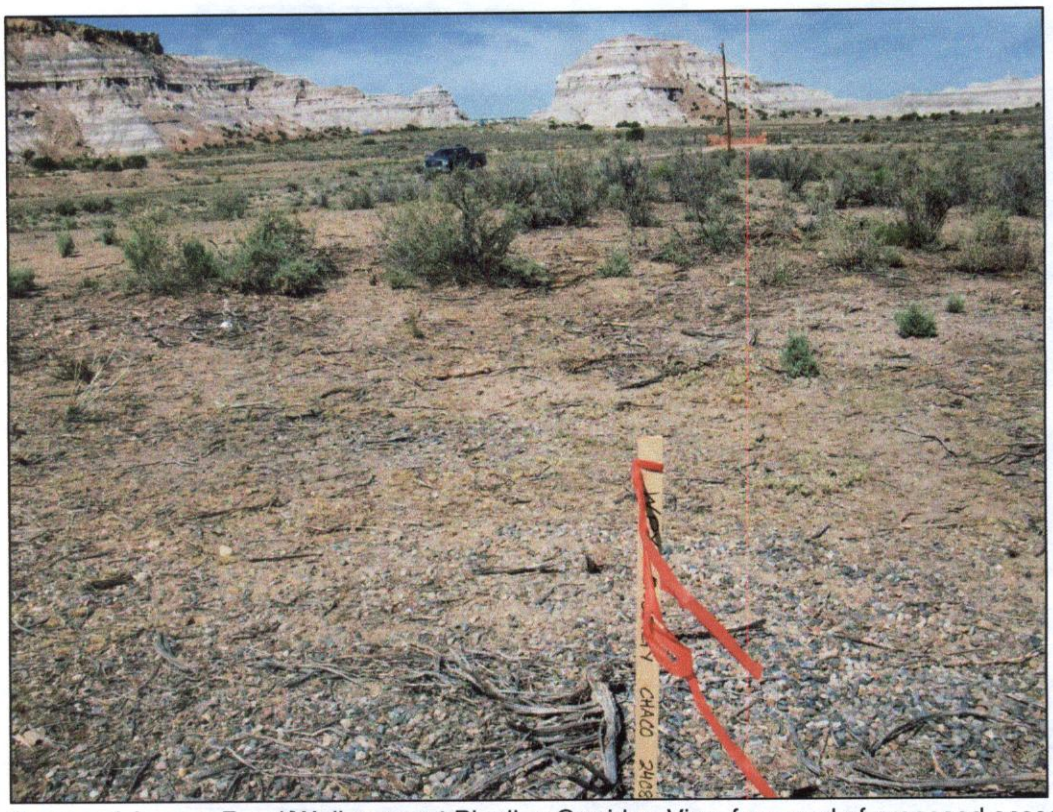
Proposed Well Pad: View from northern corner (corner 5) of proposed well pad, looking toward proposed wellheads

Proposed Well Pad: View from eastern corner (corner 6) of proposed well pad, looking toward proposed wellhe

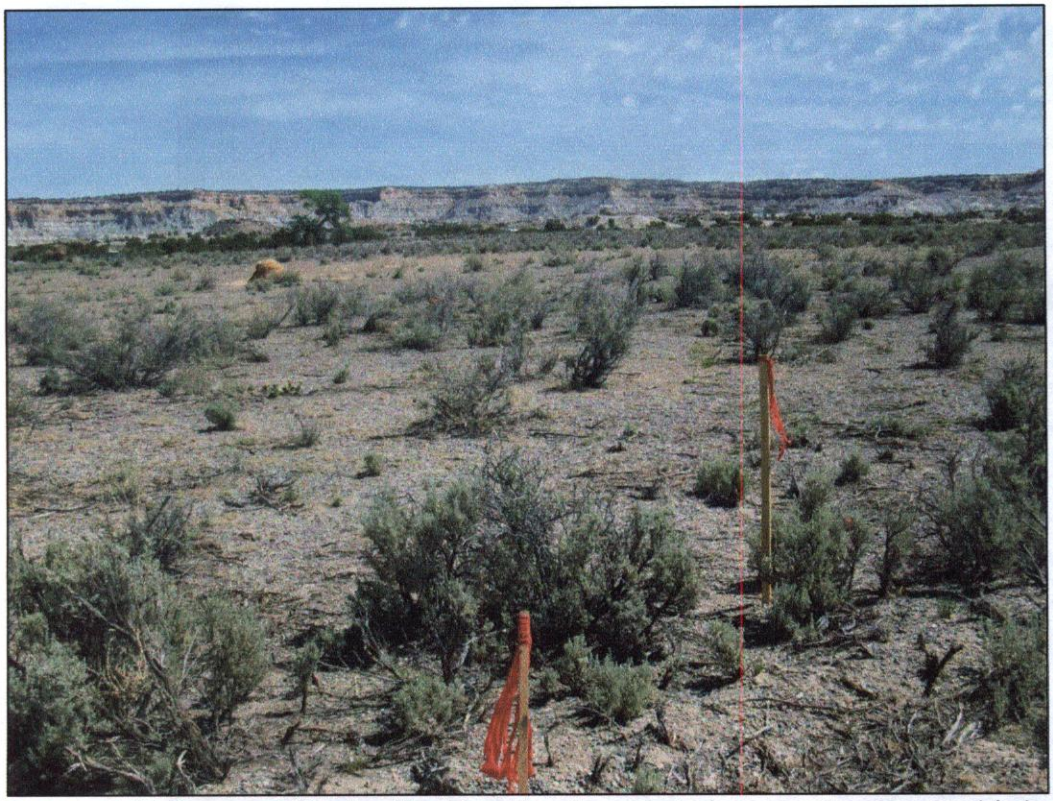
Proposed Well Pad: View from southern corner (corner 2) of proposed well pad, looking toward proposed wellheads



Proposed Well Pad: View from western corner (corner 3) of proposed well pad, looking toward proposed wellheads



Proposed Access Road/Well-connect Pipeline Corridor: View from end of proposed access road (edge of proposed well pad), looking west-southwestward along proposed access road/well-connect pipeline corridor



Proposed Well-connect Pipeline Corridor: View from start of proposed access road (edge of existing South Bla State 36 No. 7 access road), looking westward along proposed well-connect pipeline corridor