BUREAU OF LAND MANAGEMENT
FARMINGTON FIELD OFFICE

ENVIRONMENTAL ASSESSMENT
FOR

Application for Permit to Drill
XTO Energy Inc.'s

Breech C 244F
Lease# NMNM 0003554

Breech D 240G
Lease# NMNM 0003553

Breech D 685F
Lease # NMNM 0003553

Breech D 685G
Lease# NMNM 0003553

Breech E 89F
Lease# NMNM 0003551

Breech F 133
Lease# NMNM 0003547

Well Pads, Access Roads, and Well-tie Pipelines

NM- F010- 2011-166
March 2011 (Revised April 2011)

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1.0 Introduction

A representative of XTO Energy Inc. (XTO) filed an Application for a Permit to Drill (APD) with the BLM for the well pads, access roads, and well-tie pipelines for the following projects: Breech C 244F, Breech D 240G, Breech D 685F, Breech D 685G, Breech E 89F, and Breech F 133. The proposed projects are located in Sections 3, 4, 11, 14, and 15, Township 26N, Range 6W, and Section 33, Township 27N, Range 6W, in Rio Arriba County, New Mexico.

This site-specific analysis tiers into and incorporates by reference the information and analysis contained in the Farmington Proposed Resource Management Plan Final Environmental Impact Statement (PRMP/FEIS). This project EA addresses site-specific resources and/or impacts that aie not specifically covered within the PRMP/FEIS, as required by the National Environmental Policy Act of 1969 (NEPA), as amended (Public Law 91-90, 42 U.S.C. 4321 et seq.).

1.1 Purpose and Need

The purpose for the proposal is to define and produce natural gas on one or more valid federal oil and gas mineral leases issued to the applicant by the BLM. 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. The Mineral Leasing Act of 1920 (MLA), as amended [30 USC 181 et seq.], authorizes the BLM to issue oil and gas leases for the exploration of oil and gas and permit the development of those leases. The existing leases are a binding legal contract that allows development of the mineral by the holder. An approved Application for Permit to Drill (APD), issued by the BLM, authorizes the applicant to construct and drill the proposed wells.

The six Breech gas wells would allow XTO Energy Inc. to develop their leases and provide additional natural gas for the national energy market, which would also generate federal and state tax revenue as well as revenue for XTO Energy Inc.

1.2 Conformance with Applicable Land Use Plan and Other Environmental Assessments

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this site-specific environmental assessment (EA) tiers to and incorporates by reference the information and analysis contained in the Farmington Proposed Resource Management Plan/Final Environmental Impact Statement [(PRMP/FEIS) BLM 2003a], which was approved as the Final Resource Management Plan for the Farmington Field Office (FFO) of the BLM by the Record of Decision (ROD) signed September 29, 2003 (BLM 2003b). The PRMP/FEIS, Final Plan, and Record of Decision are available for review at the BLM Farmington Field Office, 1235 La Plata Hwy., Farmington, NM or electronically at http://www.nm.blm.gov/ffo/ffo_home.html. This EA addresses the resources and impacts on a site-specific basis as required by the National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-90, 42 USC 4321 et seq.). The proposed action would not be in conflict with any local, county, or state plans.

1.3 Federal, State or Local Permits, Licenses or Other Consultation Requirements

Under Section 402 of the Clean Water Act (as amended), the U.S. Environmental Protection Agency (EPA), was directed to develop a phased approach to regulate storm water discharges under the National Pollutant Discharge Elimination System (NPDES) program. Industrial activities disturbing land may require permit coverage through a NPDES storm water discharge. Depending on the acreage disturbed, either a Phase I industrial activity (five or more acres disturbance) or a Phase II small construction activities (between one and five acres disturbance) permit may be required. However, gas and oil activities were recently exempted from NPDES permitting. Additionally, a U.S. Army Corps of Engineers Section 404 permit for the discharge of dredge and fill materials may also be required. Operators are required to obtain all necessary permits and approvals prior to any disturbance activities.

Farmington Field Office staff reviewed the proposed action and determined it would be in compliance with threatened and endangered species management guidelines outlined in the September 2002 Biological Assessment (Cons. #2-22-01-1-389). No further consultation with the U.S. Fish and Wildlife Service is required.

Compliance with Section 106 responsibilities of the National Historic Preservation Act are adhered to by following the BLM – New Mexico SHPO protocol agreement, which is authorized by the *National Programmatic Agreement between the BLM,* the *Advisory Council on Historic Preservation,* and the *National Conference of State Historic Preservation Officers,* and other applicable BLM handbooks.

Additionally, the Operator is required to:

- Comply with all applicable Federal, State and Local laws and regulations.
- Obtain the necessary permits for the drilling, completion and production of these wells including water rights ?propriations, the installation of water management facilities, water discharge permits, and relevant air quality permits.

ertify that a Surface Use Agreement has been reached with private landowners where required.

2.0 Alternatives Including the Proposed Action

2.1 Alternative A - No Action

The BLM NEPA Handbook (H-1790-1) states that for Environmental Assessments (EAs) on externally initiated proposed actions, the No Action Alternative generally means that the proposed activity will not take place. This option is provided in 43 CFR 3162.3-1 (h) (2). This alternative would deny the approval of the proposed application, and the current land and resource uses would continue to occur in the proposed action area. No mitigation measures would be required.

2.2 Alternative B – Proposed Action

XTO proposes to construct six well pads, access roads, and well-tie pipelines in order to drill and develop federal minerals in the Dakota, Mesaverde, and Mancos formations. Total new surface disturbance from the proposed projects would be approximately 19.66 acres. Long-term surface disturbance from the proposed well locations would be approximately 5.23 acres. Disturbance for the construction of 883' of new access roads would be approximately 0.62 acres. The construction of 2,991' of associated pipeline ROW's would disturb approximately 1.38 acres.

Access to the six proposed Breech well pads would be gained by traveling east on Hwy 64 for 10.5 miles from the intersection of Hwy 550 and Hwy 64 in Bloomfield, NM. Turn right on Road 4450 and travel southeasterly on dirt roads for 4.25 miles. Just after Fivemile Crossing keep left at Road 4990 and travel 14.75 miles southeasterly to County Road 379 (Largo Canyon Road). Continue southeasterly on County Road 379 for 6.5 miles and turn left at County Road 367. Continue northeasterly on County Road 367 for approximately 4.70 miles to an unnamed road on the left. To access the Breech F 133 proposed well pad, travel north on the unnamed road approximately 2,800' and turn left at another unnamed road. Continue approximately 2,000' northwest to the staked well location. Access to the Breech E 89 F can be gained by continuing southeast on County Road 367 for 430'. Turn left and travel north approximately 1,000' to an unnamed pipeline ROW. Travel east on pipeline ROW approximately 1,600' to the staked well location. To access the Breech D 685 G, Breech D 685 F, and Breech C 244 F, continue down County Road 367 approximately 2.25 miles and turn right at unnamed road. Travel southeast on unnamed road to the three staked well locations west and northwest of Albert Lake. Access to the seventh well (Breech D 240 G) can be gained by traveling southwest on unnamed roads down Dogie Canyon. The proposed projects are on federal land with federal minerals. Total new surface disturbance from the proposed projects would be approximately 19.66 acres and would be located within the BLM/FFO Ensenada Mesa Wildlife Area.

Breech C 244F

The proposed well pad would be 255' X 290' with an additional 50' construction buffer zone on all four sides of the well pad. The well pad would require between 3.4 and 6.4 feet of fill on the north side of the location, and between 1.9 and 7.4 feet of cut on the south and west sides of the location. The construction buffer zones may be used to stockpile topsoil or vegetative material that would be utilized later during reclamation. Production pits would be lined. Cut and fill slopes would be returned to the original contour upon reclamation. New surface disturbance from the proposed well location would be approximately 3.42 acres, with long-term disturbance totaling 1.01 acres.

Runoff would be diverted around the well site. Diversion ditches would be constructed as needed such that storm water run-off would be diverted around the well pad.

A new access road approximately 376' in length with an average clearing width of 30' would be developed to BLM "Gold Book" standards to provide access to the proposed well pad. The surfacing and repair of deteriorated sections of the existing access roads may be required. Culverts 24" minimum in diameter may be placed at the entrance of the well location, at the proposed access road take-off and in low areas where necessary and according to "Gold Book" standards. The new access road would result in approximately 0.26 acres of new surface disturbance.

Once the proposed Breech C 244 F gas well is completed, an associated 520' long, 20' wide pipeline ROW would be constructed, connecting the proposed Breech C 244 F to the existing Breech C 244 pipeline. The proposed pipeline would parallel new access road disturbance; potential new disturbance for the pipeline would be approximately 0.24 acres.

Breech D 240G

The proposed well pad would be 255' X 290' with an additional 50' construction buffer zone on all four sides of the well '3d. The well pad would require between 1.8 and 6.2 feet of cut on the north and west sides of the location, and between .1 and 5.9 feet of fill on the south and east sides of the location. The construction buffer zones may be used to stockpile opsoil or vegetative material that would be utilized later during reclamation. Corners would be rounded as necessary to avoid excess site disturbance. Cut and fill slopes would be returned to the original contour upon reclamation. The proposed project would be twinned on the existing Breech D 237 and new surface disturbance from the proposed well location would be approximately 2.43 acres, with long-term disturbance totaling 0.75 acres.

Runoff would be diverted around the well site. A diversion ditch may need to be constructed such that storm water run-off would be diverted around the well pad.

No new access road would be developed. The surfacing and repair of deteriorated sections of the existing access roads may be required. Culverts 24" minimum in diameter may be placed at the entrance of the well location, at the proposed access road take-off and in low areas where necessary and according to "Gold Book" standards.

Once the proposed Breech D 240 G gas well is completed, an associated 119' long, 20' wide pipeline ROW would be constructed on new well pad disturbance, connecting the proposed Breech D 240G to the existing Breech D 237 pipeline. The proposed pipeline would be constructed within the proposed well pad disturbance; potential new disturbance for the pipeline would be approximately 0.05 acres.

Breech D 685F

The proposed well pad would be 255' X 290' with an additional 50 foot construction buffer zone on all four sides of the well pad. The well pad would require between 2.5 and 5.3 feet of fill on the north and west sides of the location, and between 1.2 and 10.1 feet of cut on the south and east sides of the location. Corners would be rounded as necessary to avoid excess site disturbance. The construction buffer zones may be used to stockpile topsoil or vegetative material that would be utilized later during reclamation. Production pits would be lined. Cut and fill slopes would be returned to the original contour upon reclamation. New surface disturbance from the proposed well location would be approximately 3.34 -;res, with long-term disturbance totaling 0.93 acres.

Diversion ditches would be constructed as needed, draining potential storm water run-off around the well pad.

A new access road approximately 256' in length with an average clearing width of 30' would be developed, and 1,171' of existing two-track road would be upgraded to BLM "Gold Book" standards to provide access to the proposed well pad. Culverts 24" minimum in diameter will be placed at the entrance of the well location, at the proposed access road take-off and in low areas where necessary and according to "Gold Book" standards. The surfacing and repair of deteriorated sections of the existing access roads may also be required. Disturbance for the construction of the access road would be approximately 0.18 acres.

Once the proposed Breech D 685 F gas well is completed, an associated 355' long, 20' wide pipeline ROW would be constructed, connecting the proposed Breech D 685 F to the existing Breech C 689 pipeline. The proposed pipeline would parallel the proposed access roadway and the existing access roadway disturbance; potential new disturbance for the pipeline would be approximately 0.16 acres.

Breech D 685G

The proposed well pad would be 255' X 290' with an additional 50 foot construction buffer zone on three sides of the well pad, with a 20 foot construction zone buffer on the north side of the well pad. The well pad would require between 4.0 and 9.8 feet of fill on the north and west sides of the location, and between 3.4 and 11.2 feet of cut on the south and east sides of the location. Corner number six (6) would be rounded to avoid excess cut, and corner number three (3) would be rounded to avoid excess fill. The construction buffer zones may be used to stockpile topsoil or vegetative material that would be utilized later during reclamation. Production pits would be lined. Cut and fill slopes would be returned to the

- Under the Migratory Bird Treaty Act, any proposed project 4.0 acres or more of vegetative disturbance, no construction activities from May 15 to July 31 will be permitted without a migratory bird nest survey. These surveys will be conducted by a BLM/FFO approved biologist using a survey protocol developed by a BLM/FFO biologist. If any active nests are located within the proposed project area, projects activities will not be permitted until written approval by a BLM/FFO biologist. The BLM/FFO will monitor any active nests located from a nest survey.

Table 2.2 – Proposed Wells Information

Breech C	244F	26N	6W	14	1360' FNL 2625' FEL	NMNM 0003554	04/01/1948
Breech D	240G	26N	6W	15	915' FNL 1010' FWL	NMNM 0003553	10/01/1948
Breech D	685F	26N	6W	11	1827' FSL 1910' FWL	NMNM 0003553	10/01/1948
Breech D	685G	26N	6W	11	1760' FSL 1865' FEL	NMNM 0003553	10/01/1948
Breech E	89F	26N	6W	3	880' FNL 1140' FWL	NMNM 0003551	04/01/1948
Breech F	133	27N	6W	33	1955' FSL 1980' FEL	NMNM 0003547	05/01/1948

County: Rio Arriba

Applicant: XTO Energy

Surface Owner: Bureau of Land Management

2.3 Alternative C – Full Alternative Action

XTO proposes to construct six well pads, access roads, and well-tie pipelines in order to drill and develop federal minerals in the Dakota, Mesaverde, and Mancos formations. Of the six proposed wells, three have been analyzed as Alternative C Actions, or Full Alternative Actions. These three include the Breech D 685F, Breech D 685G, and Breech F 133

Breech D 685F

The proposed well pad would be 255' X 290' with an additional 50 foot construction buffer zone on all four sides of the well pad. The well would be twinned on the existing Breech D 185 and require a directional drill of approximately 950 feet to the proposed location at 1827' FSL, 1910' FWL. Approximately 0.75 acres of existing well pad disturbance would be utilized. The construction buffer zones may be used to stockpile topsoil or vegetative material that would be utilized later during reclamation. Production pits would be lined. Cut and fill slopes would be returned to the original contour upon reclamation. New surface disturbance from the proposed well location would be approximately 2.43 acres, with long-term disturbance totaling 0.75 acres.

Diversion ditches would be constructed as needed, draining potential storm water run-off around the well pad. BMP's used on the existing Breech D 185 would be utilized to the fullest extent.

original contour upon reclamation. New surface disturbance from the proposed well location would be approximately 3.26 acres, with long-term disturbance totaling 0.78 acres.

Runoff would be diverted around corner six (6), draining north and west. A diversion ditch would be constructed as needed, draining potential storm water run-off around the well pad.

A new access road approximately 38' in length with an average clearing width of 30' would be developed, and a considerable length of existing two-track road would be upgraded to BLM "Gold Book" standards to provide access to the proposed well pad. Culverts 24" minimum in diameter will be placed at the entrance of the well location, at the proposed access road take-off and in low areas where necessary and according to "Gold Book" standards. The surfacing and repair of deteriorated sections of the existing access roads may also be required. Disturbance for the construction of the new access road would be approximately 0.03 acres.

Once the proposed Breech D 685 G gas well is completed, an associated 166' long, 20' wide pipeline ROW would be constructed, connecting the proposed Breech D 685 G to the existing Breech C 189 pipeline. The proposed pipeline would parallel new and existing access road disturbance; potential new disturbance for the pipeline would be approximately 0.08 acres.

Breech E 89F

The proposed well pad would be 255' X 290' with an additional 50 foot construction buffer zone on all four sides of the well pad. The well pad would require between 2.1 and 9.5 feet of fill on the north and west sides of the location, and between 1.3 and 6.7 feet of cut on the south and east sides of the location. Corners would be rounded as necessary to avoid excess site disturbance. The construction buffer zones may be used to stockpile topsoil or vegetative material that would be utilized later during reclamation. Production pits would be lined. Cut and fill slopes would be returned to the original contour upon reclamation. New surface disturbance from the proposed well location would be approximately 3.27 acres, with long-term disturbance totaling 0.90 acres.

Diversion ditches would be constructed as needed, draining potential storm water run-off around the well pad.

A new access road approximately 50' in length with an average clearing width of 30' would be developed to BLM "Gold Book" standards to provide access to the proposed well pad. Culverts 24" minimum in diameter will be placed at the entrance of the well location, at the proposed access road take-off and in low areas where necessary and according to "Gold Book" standards. The surfacing and repair of deteriorated sections of the existing access roads may also be required. The access road for the proposed Breech E 89 F well pad totals 205', with 155' utilizing the existing pipeline ROW. Disturbance for the construction of the new access road and the upgrade of the existing two-track would be approximately 0.15 acres.

Once the proposed Breech E 89 **F** gas well is completed, an associated 186' long, 20' wide pipeline ROW would be constructed, connecting the proposed Breech **E** 89 F to the existing Breech E 54 pipeline. The proposed pipeline would parallel the proposed access roadway and the existing access roadway disturbance; potential new disturbance for the pipeline would be approximately 0.09 acres.

Breech F 133

The proposed well pad would be 255' X 290' with an additional 50 foot construction buffer zone on all four sides of the well pad. The well pad would require between 1.2 and 5.3 feet of cut on the north side of the location, and between 1.7 and 6.3 feet of fill on the south side of the location. The construction buffer zones may be used to stockpile topsoil or vegetative material that would be utilized later during reclamation. A closed-loop system would be utilized. Cut and fill slopes would be returned to the original contour upon reclamation. New surface disturbance from the proposed well location would be approximately 3.94 acres, with long-term disturbance totaling 0.86 acres.

Runoff would be diverted around corners two (2) and three (3), draining south. A diversion ditch would be constructed above the north side of the well pad, draining potential storm water run-off around the well pad.

A new access road approximately 163' in length with an average clearing width of 30' would be developed to BLM "Gold Book" standards to provide access to the proposed well pad. Culverts 24" minimum in diameter will be placed at the entrance of the well location, at the proposed access road take-off and in low areas where necessary and according to Sold Book" standards. The surfacing and repair of deteriorated sections of the existing access roads may also be =quired. The new access road would result in approximately 0.11 acres of new surface disturbance.

Once the proposed Breech F 133 gas well is completed, an associated 1,645' long, 20' wide pipeline ROW would be constructed, connecting the proposed Breech F 133 to the existing Breech F 40 pipeline. The proposed pipeline would parallel the proposed access roadway and the existing access roadway disturbance; potential new disturbance for the pipeline would be approximately 0.76 acres.

Construction of the well-tie pipelines would consist of digging a trench with excavation equipment such as a wheel-ditcher or backhoe, laying pipe, and back filling the trench. The pipelines would be buried at least five feet deep. A 4.5-inch carbon steel pipeline manufactured to American Petroleum Institute 5L specifications would be used. The wall thickness of the pipe would be 0.156". The pipe wall strength would be 42,000 pounds per square inch (PSI).

Production equipment used during the life of the wells may include a 3-phase separator- dehydrator, a meter run, 400-barrel tanks and/or smaller fiberglass or galvanized tanks for water disposal. It is also likely that a compressor would be placed on the locations during the life of the well. The use of compressors provides an increase in the economic life of the wells, increases the ultimate recovery of gas from low-pressure reservoirs, and prevents waste of the gas resources. All above ground equipment would be painted Juniper Green to blend in with the surrounding tree cover and would be low profile.

Farmington Field Office established environmental Best Management Practices (BMP's) will be followed during construction and reclamation of well site pads, access roads, pipeline ties, facility placement or any other surface disturbing activity associated with this project. Bureau wide standard BMP's are found in the Gold Book, Fourth Edition-Revised 2007. Farmington Field Office BMP's are integrated into the general and site specific stipulations.

For a detailed description of design features and construction practices associated with the proposed action, refer to the APD (attached as Appendix 7.1). Also see the subject APD for additional maps showing the proposed well locations and <ssociated facilities described above. Implementation of committed mitigation measures contained in the Conditions of .pproval (COAs) are also listed in Appendix 7.1 and incorporated and analyzed in this alternative. Site specific stipulations and mitigation measures determined at the onsite include:

- All pits would meet State of New Mexico, Oil Conservation Division (NMOCD) pit guidelines and requirements, NMAC 19.15.17. Pits would be lined.
- Excavated materials from the cuts would be used on the fill portions of the location.
- Reclaimed slopes would be re-contoured to pre-construction topographical contours.
- A tight sheep fence would be constructed around three sides of the pit during drilling, and around the fourth side after the completion rig leaves the wellhead. The fences would remain until the pits are dried and backfilled.
- Cut material from the reserve and burn pits will be stockpiled on the location or used to construct the back-walls of the burn pit.
- All disturbed areas not needed for production would be seeded with the FFO specified standard seed mixture.
- Above ground structures would be painted to blend with the natural color of the landscape. Paint color would be Juniper Green Federal Standard 595a-17127.
- Additional 24" culverts and silt traps for the access road and other necessary hydrologic BMPs would be installed as necessary for proper drainage and sediment management.
- Any cultural resource stipulations would be followed.
- Diversion ditches would be constructed where specified such that storm water run-off would be diverted around the well pads.
- Corners would be rounded where specified to avoid excess site disturbance.
- Low profile equipment would be utilized.
- The proposed projects would be located within the Ensenada Mesa Wildlife Area, therefore Seasonal Timing Limitations would be employed from May 1 through July 15 to protect important seasonal wildlife habitat for the pronghorn antelope.

No new access road would be developed. Existing two-track road would be upgraded as needed to BLM "Gold Book" standards to provide access to the proposed well pad. Culverts 24" minimum in diameter will be placed at the entrance of the well location, at the proposed access road take-off and in low areas where necessary and according to "Gold Book" andards. The surfacing and repair of deteriorated sections of the existing access roads may also be required.

Breech D 685G

The proposed well pad would be 255' X 290' with an additional 50 foot construction buffer zone on all four sides of the well pad. The well pad would be twinned on the Breech D 685E and utilize existing well pad, pipeline and access road disturbance. The alternative action would require an approximately 1,200 foot directional drill to the proposed location at 1760' FSL, 1865' FEL. The construction buffer zones may be used to stockpile topsoil or vegetative material that would be utilized later during reclamation. Production pits would be lined. Cut and fill slopes would be returned to the original contour upon reclamation. New surface disturbance from the proposed well location would be approximately 2.43 acres, with long-term disturbance totaling 0.75 acres.

Diversions would be constructed as needed, draining potential storm water run-off around the well pad. All BMP's on the existing Breech D 685E would be utilized to the fullest extent.

No new access road would be developed, but existing two-track road would be upgraded to BLM "Gold Book" standards to provide access to the proposed well pad. Culverts 24" minimum in diameter will be placed at the entrance of the well location, at the proposed access road take-off and in low areas where necessary and according to "Gold Book" standards. The surfacing and repair of deteriorated sections of the existing access roads may also be required.

Breech F 133

The proposed well pad would be 255' X 290' with an additional 50 foot construction buffer zone on all four sides of the well pad. The well pad would be twinned on the existing Breech F 4M and would utilize existing well pad and access road disturbance. The proposed well would require a directional drill of approximately 1,100 feet to the proposed location at 1955' FSL, 1980' FEL. The construction buffer zones may be used to stockpile topsoil or vegetative material that would be utilized later during reclamation. Cut and fill slopes would be returned to the original contour upon reclamation. New 1rface disturbance from the proposed well location would be approximately 2.61 acres, with long-term disturbance taling 0.75 acres.

Diversions would be constructed as needed, draining potential storm water run-off around the well pad. All BMP's utilized on the Breech F 4M would be followed.

No new access would be developed, but existing access would be upgraded to BLM "Gold Book" standards to provide access to the proposed well pad. Culverts 24" minimum in diameter will be placed at the entrance of the well location, at the proposed access road take-off and in low areas where necessary and according to "Gold Book" standards. The surfacing and repair of deteriorated sections of the existing access roads may also be required.

Once the proposed Breech F 133 gas well is completed, an associated 400' long, 20' wide pipeline ROW would be constructed, connecting the proposed Breech F 133 to the existing Breech F 40 pipeline. The proposed pipeline would parallel the existing access roadway disturbance; potential new disturbance for the pipeline would be approximately 0.18 acres.

Table 2.3- Alternative C Wells Information

Breech D	685F	26N	6W	11	Surface: 1700' FSL 990'FWL Bottom Hole: 1360' FNL 2625' FEL	NMNM 0003553	10/01/1948
Breech D	685G	26N	6W	11	Surface: 858' FSL 927' FEL Bottom Hole: 1760' FSL 1865' FEL	NMNM 0003553	10/01/1948
Breech F	133	27N	6W	33	Surface: 1520' FSL 1070' FEL Bottom Hole: 1955' FSL 1980' FEL	NMNM 0003547	05/01/1948

County: Rio Arriba

Applicant: XTO Energy

Surface Owner: Bureau of Land Management

2.4 Alternatives Considered But Not Analyzed In Detail

Breech C 244F

An alternative to the proposed location for the Breech C 244F was considered at 1980' FNL, 2065 FEL, Section 14, Township 26 N, Range 6 W. This location would have required a considerably longer access road of 1,147 feet, and would have potentially impacted USAGE regulated waterways. This alternative has been eliminated from further analysis.

Breech O 240G

An alternative location was considered for the Breech D 240G, however no further analysis is needed due to the fact that the proposed location is twinned and another location would require all new disturbance.

Breech E 89F

No additional alternatives were considered for the Breech E 89F and the proposed location was selected for the best drainage of subsurface resources while protecting surface resources to the maximum extent possible.

3.0 Description of Affected Environment

This section describes the environment that would be affected by implementation of the proposed actions described in 'ection 2. Aspects of the affected environment described in this section focus on the relevant major resources or issues. ertain critical environmental components require analysis under BLM policy. These items are included below in Table -1'.1. Following the tables, only the aspects of the affected environment that are potentially impacted are described.

Table 3.1 – Affected Environment and Basis for Determination No Further Analysis

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT				
Air Resources	X		X	
Areas of Critical Environmental Concern		X	X	
Cultural Resources	X		X	
Native American Religious Concerns		X	X	A review of existing information indicates the project is not associated with any known Traditional Cultural Property.
Environmental Justice		X	X	
Farmlands, Prime or Unique		X	X	
Floodplains		X	X	
'·wasive, Non-native 'ecies		X	X	
Threatened or Endangered Species		X		BLM/FFO review determined compliance with threatened and endangered species management guidelines outlined in the Sept. 2002 Biological Assessment. No further Section 7 ESA consultation with the USFWS is required.
Wastes, Hazardous or Solid		X	X	
Water Quality - Surface/Ground	X		X	
Wetlands/Riparian Zones		X	X	
Wild and Scenic Rivers		X		There are no Wild and Scenic Rivers in Farmington Field Office, no indirect effects are projected outside the FFO.
Wilderness		X		Project is greater than 30 miles from the nearest Wilderness Area or Wilderness Study Area. No indirect effects are projected.
NON-CRITICAL ELEMENTS				

General Topography/Surface Geology	X		X	
Mineral Resources	X		X	
Paleontology		X	X	
Soils	X		X	
Watershed/Hydrology	X		X	
Vegetation, Forestry	X		X	
Livestock Grazing	X		X	
Special Management Species		X	X	
Wildlife	X		X	Project areas located within Ensenada Mesa Wildlife SDA.
Wild Horse and Burros		X	X	
Recreation		X	X	
Visual Resources	X		X	
Public Health and Safety		X	X	

3.1 Air Resources

The action alternatives are located in Rio Arriba County, New Mexico. Additional general information on air quality in the area is contained in Chapter 3 of the Farmington RMP/Environmental Impact Statement. In addition to the air quality information in the RMP cited above, new information about greenhouse gases (GHGs), and their effects on national and global climate conditions has emerged since this RMP 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 (H_2O), 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.

The 2003 RMP discussed ozone in the Baseline Air Quality and Impact Assessment sections. The National Ambient Air Quality Standard (NAAQS) at the time was 0.084 ppm. In March of 2008, the Environmental Protection Agency (EPA) announced a new primary 8-hour standard of 0.075 ppm.

Increased development in the Four Corners area including a proposed new coal fired power plant, increased oil and gas development, and population growth are all contributing to air quality concerns. Many residents are concerned with potential health impacts from other pollutants. An overall haze and plume of nitrogen oxides can often been seen in the skies, which impact visibility, and there are concerns for the ecosystem due to deposition of mercury and nitrogen.

In addition, the Environmental Protection Agency (EPA), on October 17, 2006, issued a final ruling on the lowering of the National Ambient Air Quality Standard (NAAQS) for particulate matter ranging from 2.5 micron or smaller particle size. This ruling became effective on December 18, 2006, stating that the 24-hour standard for PM2.5, was lowered to 35 ug/m^3 from the previous standard of 65 ug/m^3. This revised PM2.5 daily NAAQS was promulgated to better protect the public from short-term particle exposure.

This EA incorporates an analysis of the contributions of the proposed action to GHG emissions, and a general discussion of potential impacts to climate.

·r quality and climate are the components of air resources, which include applications, activities, and management of the r resource. Therefore, the BLM must consider and analyze the potential effects of BLM and BLM-authorized activities on air resources as part of the planning and decision making process.

The Environmental Protection Agency (EPA) has the primary responsibility for regulating air quality, including seven nationally regulated ambient air pollutants. Regulation of air quality is also delegated to some states of which New Mexico is one. 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. Greenhouse gases and the potential effects of GHG emissions on climate are not regulated by the EPA, however climate has the potential to influence renewable and non-renewable resource management.

3.1.1 Air Quality

The area of the action alternatives is considered a Class II air quality area. A Class II area allows moderate amounts of air quality degradation. The primary sources of air pollution are dust from blowing wind on disturbed or exposed soil and exhaust emissions from motorized equipment.

Air quality in the area near the action alternatives is generally good and is not located in any of the areas designated by the Environmental Protection Agency as "non-attainment areas" for any listed pollutants regulated by the Clean Air Act. During the summers of 2000 through 2002, ozone levels in San Juan County were approaching non-attainment. Additional modeling and monitoring was conducted by Alpine Geophysics, LLC and Environ International Corporations, Inc., in 2003 and 2004. Results of the modeling suggest the episodes recorded in 2000 through 2002 were attributable to regional transportation and high natural biogenic source emissions. The model also predicted that the region will not violate the ozone NAAQS through 2007 and that the trends in the 8-hr ozone values in the region will be declining in the future. At the present time, San Juan County is classified as in attainment with the revised federal ozone standard of 0.075 ppm. Rio Arriba County is unclassified because there are no ozone monitors sited in Rio Arriba County.

■ reenhouse gases, including carbon dioxide (CO_2) and methane (CH_4), and the potential effects of GHG emissions on mate, are not regulated by the EPA under the Clean Air Act. However, climate has the potential to influence renewable nd non-renewable resource management. The EPA's Inventory of US Greenhouse Gas Emissions and Sinks found that in 2007, total U.S. GHG emissions were over 7 billion metric tons and that total U.S. GHG emissions have increased by 17% from 1990 to 2007. Emissions increased from 2006 to 2007 by 1.4 percent (99.0 Tg CO_2 Eq.). The following factors were primary contributors to this increase: (1) cooler winter and warmer summer conditions in 2007 than in 2006 increased the demand for heating fuels and contributed to the increase in the demand for electricity, (2) increased consumption of fossil fuels to generate electricity and (3) a significant decrease (14.2 percent) in hydropower generation used to meet this demand (EPA 2009).

The levels of these GHGs are expected to continue increasing. The rate of increase is expected to slow as greater awareness of the potential environmental and economic costs associated with increased levels of GHG's result in behavioral and industrial adaptations.

3.1.2 Climate

Global mean surface temperatures have increased nearly 1.0°C (18°F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) predicted a warming of about 0.2°C per decade for the next two decades, and then a further warming of about 0.1°C per decade. The National Academy of Sciences (2006) supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are

likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures.

A 2007 US Government Accountability Office (GAO) Report on Climate Change found that, "federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include, among others: 1) physical effects such as droughts, floods, glacial melting, and sea level rise; 2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and 3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses." It is not, however, possible to predict with any certainty regional or site specific effects on climate relative to the proposed action and subsequent actions.

In New Mexico, a recent study indicated that the mean annual temperatures have exceeded the global averages by nearly 50 percent since the 1970's (Enquist and Gori 2008). Similar to trends in national data, increases in mean winter temperatures in the southwest have contributed to this rise. When compared to baseline information, periods between 1991 and 2005 show temperature increases in over 95 percent of the geographical area of New Mexico. Warming is greatest in the northwestern, central, and southwestern parts of the state.

3.2 Areas of Critical Environmental Concern (ACECs)

Areas of Critical Environmental Concern (ACEC) were designated in the FFO/BLM 2003 FRMP, under authority of the FLPMA of 1976 allowing for multiple use of lands administered by the BLM. The ACEC designation pertains to "…areas within public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historical, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards." (FLPMA 1976 Sec. 103, 43 U.S.C. 1702 et seq.).

None of the action alternatives would be located in any BLM/FFO designated Areas of Critical Environmental Concern (ACECs).

3.3 Cultural Resources

The action alternatives are located within the archaeologically rich San Juan Basin of northwestern New Mexico. In general, the prehistory of the San Juan Basin can be divided into five major periods: Paleo-Indian (ca. 10000 B.C. to 5500 B.C.), Archaic (ca. 5500 B.C. to A.D. 400), Basketmaker II-III and Pueblo I-IV periods (aka Anasazi; A.D. 1-1540), and the historic (A.D. 1540 to present), which includes Native American as well as later Hispanic and Euro-American settlers. Detailed description of these various periods and select phases within each period is provided in the Bureau of Land Management Farmington Field Office Final Environmental Impact Statement (2003) and will not be reiterated here. Additional information is also included in an associated document, Cultural Resources Technical Report (CRTR; SAIC 2002).

The BLM FFO has categorized variability in archeological sites by major time period, cultural affiliations/components, average size, and occurrence of features in each of the 20 watersheds within the BLM FFO's jurisdiction (BLM 2003b:3-88). The action alternatives are located on the southern end of Ensenada Mesa within the Largo Canyon watershed. Numerous years of both cultural resource management and research projects conducted in the area have resulted in the identification of hundreds of archaeological sites. These sites represent Archaic, Anasazi, Navajo, Hispanic and Anglo/Euro-American occupations, as well as sites for which no cultural affiliation could be determined. Site types range from simple artifact scatters and limited activity areas to long term habitations. Features common to these sites include simple artifact scatters, residential pueblos and pit houses, great kivas, hogans, defensive sites (aka pueblitos), sweat lodges, and rock art.

The entire area of potential affect for the action alternatives was surveyed by the Division of Conservation Archaeology (DCA) at a BLM Class III level (100%) and inventory reports were 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).

Four new archaeological sites and 18 isolated occurrences were documented during the survey of the proposed action area (DCA Report No. 08-DCA-041 ; BLM 2011(11)042F). The sites consist of habitation and other simple features, rock

art, and artifact scatters of prehistoric and historic origin. All four sites are recommended BLM-FFO Category 2 and have been recommended as eligible for inclusion on the National Register of Historic Places. The eighteen isolated occurrences recorded during the inventory, consisting of single or small numbers of artifacts.

.4 American Indian Religious Concerns

Traditional Cultural Properties (TCPs) is a term that has emerged in historic preservation management and the consideration of Native American religious concerns. TCPs are places that have cultural values that transcend, for instance, the values of scientific importance that are normally ascribed to cultural resources such as archaeological sites. The National Park Service (Parker and King 1998:1) has defined TCPs as follows:

> A traditional cultural property can be defined generally as one (a property) that is eligible for the National Register because of its association with cultural practices or beliefs of a living community that, (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. (National Register Bulletin 38)

Native American cultural associations are the "communities" most likely to identify TCPs, although TCPs are not restricted to this group. Some TCPs are well known, while others may only be known to a small group of traditional practitioners, or otherwise only vaguely known.

There are several pieces of legislation or Executive Orders that should be considered when evaluating Native American religious concerns. These govern access and use of scared sites, possession of sacred items, protection and treatment of human remains, and the protection of archaeological resources ascribed with religious or historic importance. These include the following:

- The American Indian Religious Freedom Act of 1978 (AIRFA; 42 USC 1996, P.L. 95-431 Stat. 469).
  - ./ Possession of sacred items, performance of ceremonies, access to sites
- Executive Order 13007 (24 May 1996).
  - ./ Access and use of sacred sites, integrity of sacred sites
- The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA; 25 USC 3001, P.L. 101-601).
  - ./ Protection, ownership, and disposition of human remains, associated funerary objects, unassociated funerary objects, sacred objects, or objects of cultural patrimony
- The Archaeological Resources Protection Act of 1979 (ARPA; 16 USC 470, Public Law 96-95).
  - ./ Protection or archaeological resources on Federal and Indian lands

For the action alternatives, identification of TCPs were limited to reviewing existing published and unpublished literature (e.g. Valkenburgh 1941, 1974, Brugge 1993, Kelly et al2006), and the site-specific cultural resources survey report conducted for the Proposed Action. In addition, the BLM's cultural resources program was contacted for information regarding the presence of TCPs identified through ongoing BLM tribal consultation efforts.

A review of existing information compiled during previous land use planning efforts, existing studies, or via direct consultation indicates the action alternatives are not within a known Traditional Cultural Property.

3.5 Environmental Justice

Executive Order 12898 requires federal agencies to assess projects to ensure there is no disproportionately high or adverse environmental, health, or safety effects on minority and low-income populations. Minorities comprise a large proportion of the population residing inside the boundaries of the Farmington Field Office (see pages 3-106 to 3-107 of the PRMP/FEIS for more details on ethnicity and poverty rates).

3.6 Farmlands, Prime or Unique

Several of the watersheds within the Farmington Field Office boundaries have some soils meeting the definition of prime farmland, all of which must be irrigated to produce high quality crops (BLM 2003a, pg 3-19).

The action alternatives would not be located within any soil units known to contain prime or unique farmlands (BLM 2003a, pg 3-22).

3.7 Floodplains

Field inspection of the action alternatives area and a review of the GIS data on active and 100-year floodplains (derived from Federal Emergency Management Agency floodplain maps) indicate the action alternatives are not located within any designated floodplains.

3.8 Invasive, Non-Native Species

The objective of the Farmington Field Office weed management program is to detect invasive plant species populations, prevent the spread of new invasive populations, manage existing populations using the tools of integrated weed management and eradicate invasive populations, using the safest environmental methods available. For all actions on public lands that involve surface disturbance or rehabilitation, reasonable steps would be required to prevent the introduction or spread of noxious weeds, including requirements for using weed seed-free hay, mulch and straw.

No invasive or noxious weeds were encountered during the onsite inspections of the action alternatives areas. BLM GIS data of known invasive or noxious weed populations indicate no known weed populations to be in or nearby the area of the action alternatives.

3.9 Wastes, Hazardous or Solid

The Resource Conservation and Recovery Act (RCRA) passed in 1976, establishes a comprehensive program for managing hazardous wastes from the time they are produced until their disposal. The U.S. Environmental Protection Agency (EPA) regulations define solid wastes as any "discarded materials" subject to a number of exclusions. A "hazardous waste" is a solid waste that is (1) is listed by the EPA as a hazardous waste, (2) exhibits any of the characteristics of hazardous wastes (ignitability, corrosivity, reactivity, or toxicity) or (3) is a mixture of solid and hazardous waste. In 1980, an amendment to RCRA conditionally exempted from regulation as hazardous wastes, "drilling fluids, production waters, and other wastes associated with the exploration, development, or production of crude oil or natural gas". On July 6, 1988, EPA determined that oil and gas exploration, development, and production (ED&P) wastes would not be regulated as hazardous wastes under RCRA. A simple rule of thumb was developed for determining if an ED&P waste is likely to be considered exempt or non-exempt from RCRA regulations: If (1) the waste came from down-hole, or (2.) the waste was generated by contact with the oil and gas production stream during removal of produced water or other contaminants, the waste is most likely to be considered exempt by EPA. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA), passed in 1980, deals with the release (spillage, leaking, dumping, accumulation, etc.) or threat of a release of hazardous substances into the environment. Despite many oil and gas constituent wastes being exempt from hazardous waste regulations, certain RCRA exempt contaminants could be subject to regulations as hazardous substances under CERCLA. The New Mexico Oil Conservation Division (OCD) administers hazardous waste regulations for oil and gas activities in New Mexico.

No hazardous or solid waste materials are present at the action alternative sites. The notification of releases such as natural gas, natural gas liquids, and petroleum, outside a facility site is required under CERCLA and under BLM NTL-3A.

3.10 Water Quality- Surface/Ground

Availability of water quality data, like stream-flow data, is largely limited to the perennial streams in the northern part of the San Juan Basin. The water quality of the perennial streams varies from upstream to downstream and is strongly influenced by the type of rock and soils with which the water has been in contact. In the upper reaches, the perennial streams have relatively low concentrations of dissolved solids. In the middle and lower reaches, the streams contain progressively more magnesium, calcium, sodium and sulfate concentrations and vary according to flow conditions.

Quality data for the ephemeral runoff south of the San Juan River are limited to only a few observations at sampling stations associated with the USGS coal hydrology program. Ephemeral flows are generally very poor quality water due to the highly erosive and saline nature of the soils. Sparse vegetative cover and rapid runoff conditions are characteristic of the area.

There are no perennial water resources within the immediate vicinity of the action alternatives.

The action alternatives are located on the southern end of Ensenada Mesa west of Albert Mesa at the headwaters of Ice Canyon and Dogie Canyon. The area is typified by large ridges extending out from Albert Mesa and which are generally rolling and covered with sagebrush and various grasses. The general project area is in a desert scrub

, rabbitbrush, broom snakeweed, grama grass, cheat grass, galleta grass, Opuntia cacti, and Russian thistle.

he proposed Breech C 244F project area is located approximately 4,300 feet west of seasonal Albert Lake. The reposed project area drains northwest approximately 3,500 feet into the Dogie Canyon drainage. Dogie Canyon drains seasonally approximately 5.8 miles southwest on Largo then flows seasonally approximately 26.5 miles northwest into the perennial San Juan River.

The proposed Breech D 240G project area is located approximately 800 feet upslope from the bottom of Dogie Canyon. The ephemeral flow of water drains the project area southwest down Dogie Canyon into on Largo. The seasonal flow of water in Largo Wash drains approximately 26.5 miles northwest into the perennial San Juan River.

The proposed Breech D 685F and Breech D 685G project areas sit just upslope of a tributary drainage to Dogie Canyon. The project areas drain northwest and west into Dogie Canyon, which itself flows approximately 4.5 miles into C on Largo on Largo drains into the San Juan River (perennial) approximately 26.5 miles northwest. Both the Alternative C locations for the Breech D 685F and Breech D 685G would be located in close proximity to the proposed locations and surface and ground water would not differ from that noted above.

The proposed Breech E 89F is situated approximately 1,500 feet upslope of the Ice Canyon drainage. The proposed project area drains approximately 4.3 m . Largo Wash drains seasonally approximately 26.0 miles northwest into the perennial San Juan River.

The proposed Breech F 133 project is located within an unnamed, intermittent drainag , which itself drains into the San Juan River approximately 26.0 miles northwest. The Alternative C location for the Breech F 133 would be located approximately 990 feet to the southeast of the proposed location. The surface and ground water would not be significantly different from the proposed location's.

The San Juan Basin is underlain by sandstone aquifers and unconsolidated sand and gravel aquifers. The Colorado Plateaus Aquifers are sandstone while the Rio Grande Aquifer system is unconsolidated sand and gravel. The primary olorado Plateaus Aquifers underlie the vast majority of the San Juan Basin are the Uinta-Animas Aquifer and the Mesa erde Aquifer.

The quality of groundwater in the San Juan Basin generally ranges from fair to poor. The Uinta-Animas contains fresh to moderate saline water and the quality of the Mesa Verde is extremely variable. In general, areas of the aquifer that are recharged by infiltration from precipitation or surface water sources contain relatively fresh water.

The operator proposes to set surface casing to a depth of 250 feet, or as specified by the BLM, to protect any shallow aquifers. An operation plan with the proposed casing program to protect the aquifers would be submitted with the APD.

3.11 Wetlands/Riparian Zones

Field inspection of the action alternatives and a review of BLM and USFWS GIS data indicate the action alternatives are not located within any riparian or wetlands habitat.

3.12 General Topography/Surface Geology

The proposed Breech C 244F project area would be located on a northeast facing ridge slope west of a narrow drainage valley. This portion of Ensenada Mesa is mostly devoid of overstory vegetation and consists of rolling sagebrush and grass hills between meandering narrow drainage valleys. Elevation in the immediate project area ranges from 6,600-6,645 feet in gently sloping hillside terrain.

The proposed Breech D 240G project area is located on a southeast facing slope overlooking portions of the Dogie Canyon drainage just upslope from where it becomes a well-defined, constricted canyon. A large hill rises to the north of the proposed project area. Elevation in the immediate project area ranges from 6,485-6,495 feet.

The proposed Breech D 685F project area would be located in the Dogie Canyon headwater area on a north slope of a low ridge which terminates at a sandstone outcrop. This ridge divides a tributary drainage from the main Dogie Canyon drainage, with the confluence of these two drainages just west of the proposed project area. The proposed Breech D 685G project is located approximately 1,500 feet east of the Breech D 685F proposed location on the north end of a north-south trending finger ridge which extends north from the upper southern portions of Ensenada Mesa. Elevation in the immediate Breech D 685F project area ranges from 6,520-6,545 feet and from 6,560-6,590 feet in the Breech D 685G project area. The Alternative C locations for both the Breech D 685F and Breech D 685G would be located in close proximity to the proposed locations noted above. The general topography and surface geology within the Alternative C project areas would not differ significantly from the proposed locations.

The proposed Breech E 89F project area would be located on a densely wooded and slightly eroded upper slope on the north and west end of the ridge which divides the Ice Canyon and Dogie Canyon drainages. Sandstone bedrock is exposed is several parts of the proposed well pad area. The ridge top offers 360 degree views of the region with numerous landmarks visible. Elevation in the immediate project area ranges from 6,580-6,600 feet.

The proposed Breech F 133 project area would be located in a broad drainage valley near the head of Ice Canyon. Alluvial processes are active in the area with deep alluvial deposits. A shallow but incised drainage crosses through the west portion of the proposed project area. Elevation in the immediate project area ranges from 6,530-6,550 feet. The Alternative C location for the Breech F 133 would be located approximately 990 feet to the southwest of the proposed location. General topography and surface geology within the Alternative C project area would not differ significantly from the proposed location.

3.13 Mineral Resources

Federal lands in the San Juan Basin are important sources of mineral materials for construction projects in the region, including sand and gravel, rock and stone and other fill materials. The action alternatives are not located on any permitted surface mineral mining operation or free use area.

3.14 Paleontology

The Farmington Field Office Resource Management Plan identified specific areas within the region as Specially Designated Areas (SDA) for the protection of paleontological resources within the Nacimiento Formation.

The BLM uses the Potential Fossil Yield Classification (PFYC) system to identify areas with a high potential to produce significant fossil resources (IM 2008-009). This system has ranked all lands within the FFO management area as a Class 5 designation. Class 5 designations are described as being Very High Potential paleontological resource areas, thus requiring an assessment at the project level (IM 2008-011). The proposed project areas are located within the paleontological rich area of the San Juan Basin of northern New Mexico.

The San Jose Formation found within the proposed project areas is not known to contain any paleontological resources. No fossils are known to occur within or proximate to the action alternatives.

3.15 Soils

The soils in the San Juan Basin were formed primarily from two kinds of parent material: alluvial sediment and sedimentary rock. The alluvial sediment is material that was deposited in river valleys and on mesas, plateaus, and ancient river terraces. The material has been mixed and sorted in transport and has a wide range of mineralogy and particle size. Sedimentary parent material consists mainly of sandstone and shale bedrock. These shale and resistant sandstone beds form prominent structural benches, buttes and mesas bounded by cliffs.

Soils in the immediate area of the proposed Breech E 89F project are comprised of the Vessilla-Menefee-Orlie complex, 1 to 30 percent slopes. The different characteristics of these soil types are listed in Table 3.15.1.

Table 3.15.1

Type	Brown fine to brown clay loam	Light brown gravelly fine sandy loam	Brown clay loam
Slope	1-8%	1-65%	2-80%
Depth	3-60 inches	2-15 inches	8-20 inches
Surface Runoff	Medium	Medium to Rapid	Rapid
Water Erosion	Moderate	Moderate	Moderate
Soil Blowing	Moderate	Moderate	Moderate
Drainage Class	Well drained	Well drained	Well drained
Available Water Cap.	Very high	Moderate	Moderate
Permeability	Moderately slow	Moderately rapid	Slow
Parent Material	Sandstone and Shale	Sandstone	Shale

Soils in the immediate area of the proposed Breech C 244F, Breech D 240G, Breech D 685F, Breech D 685F Alternative C, Breech D 685G, Breech D 685G Alternative C, Breech F 133 and Breech F 133 Alternative C project areas are comprised entirely of Orlie fine sandy loam. The Orlie series consists of very deep, well drained, moderately slowly permeable soils that formed in alluvium and eolian materials derived from shale and sandstone on summits of mesas, dipslopes of cuestas, hills, summits of plateaus and fan remnants on valley sides. Slopes are 0 to 8 percent. The mean annual temperature is about 49 degrees F, and the mean annual precipitation is about 13 inches. Orlie soils are used for ·vestock grazing. The potential natural vegetation is western wheatgrass, bottlebrush squirreltail, Indian ricegrass, galleta 1d big sagebrush. The characteristics of this soil type are listed in Table 3.15.2.

Table 3.15.2

Type	Brown fine to brown clay loam
Slope	1-8%
Depth	3-60 inches
Surface Runoff	Medium
Water Erosion	Moderate
Soil Blowing	Moderate
Drainage Class	Well drained
Available Water Cap.	Very high
Permeability	Moderately slow
Parent Material	Sandstone and Shale

3.16 Watershed-Hydrology

The San Juan Basin consists of broad mesas interspersed with many deep canyons with steep canyon walls, dry washes, entrenched narrow valleys, and alluvial fans and floodplains. Elevations range from approximately 4,800 feet, where the San Juan River flows into Utah, to approximately 8,800 feet near the Jicarilla Apache land, and near 7,300 feet near Lindrith, New Mexico. The planning area is divided into watersheds based on the Hydrologic Units (4th level) delineated by the USGS. Principally, the administrative area under the jurisdiction of the Farmington Field Office consists of five of these 4th level hydrologic watershed units. These watershed units are: (1) Middle San Juan, (2) Animas, (3) Upper San Juan, (4) Blanco Canyon, and (5) Chaco. The action alternatives are within the Blanco Canyon watershed.

3.17 Vegetation, Forestry

The proposed Breech C 244F, Breech D 240G, Breech D 685F, Breech D 685F Alternative C, Breech D 685G, Breech D 685G Alternative C, Breech F 133, and Breech F 133 Alternative C project areas would be located within a desert scrub environment that is devoid of overstory, and consists mainly of sagebrush, rabbitbrush, broom snakeweed, galleta grass, Indian rice grass, grama grass, cheat grass, prickly pear cactus, hedgehog cactus, and cholla cactus understory. No trees would be removed by any of the above mentioned proposed actions.

The proposed Breech E 89F project area would be located within a on-juniper woodland interspersed with sagebrush flat vegetation community. The proposed action would result in the removal of approximately 75-80 trees. Vegetation includes , with an understory of sagebrush, rabbitbrush, galleta grass, grama grass, cheat grass, prickly pear cactus, and broom snakeweed.

3.18 Livestock Grazing

There are 167 grazing allotments managed by the Farmington Field Office with 351 grazing authorizations that permit cattle, sheep and horse grazing within the resource area. Of the 351 grazing authorizations, 317 are permitted under section 3 of the Taylor Grazing Act. Of the 167 grazing allotments, there are four authorizations issued under section 15 of the Taylor Grazing Act to the Navajo Tribe that authorizes grazing on 35 allotments. There are an additional 30 section 15 authorizations that permit grazing on 30 allotments in the Lindrith, NM area.

The action alternatives are located within the Ice Canyon Allotment #5114. The grazing allotment is operated from November 1 through June 30 annually with a maximum of 382 head of cattle. The Ice Canyon Allotment #5114 is 26,021 acres and consists of 90% of public land.

3.19 Wild Horse and Burros

There are no areas managed for wild horse or burros within the action alternatives. The action alternatives lie over 20 miles southwest of the Jicarilla Wild Horse Territory. No wild horses or burros, or sign of wild horses or burros, exist nor are suspected to exist in the action areas.

3.20 Wildlife

Pronghorn antelope, Mule deer and Elk are common in the proposed action area as are other common mammalian species such as the coyote, deer mouse, and the black-tailed jackrabbit. Game birds found in the area may include mourning dove. No evidence of nesting birds was observed in the proposed action area at the time of field inspections. The most notable reptiles are the eastern fence lizard and the short-horned lizard.

The action alternatives would be located within the BLM/FFO designated Ensenada Mesa Wildlife Area (BLM 2003a, pg. C-163). Seasonal Timing Limitations would be employed, and no construction activity will be allowed in this area between May 1st and July 15th to protect important seasonal wildlife habitat (pronghorn antelope fawning range). There are a total of 51,280 acres within the boundary of this management area, of which 43,179 are public land acres (BLM) and 45,767 are federal mineral acres. Standard mitigation measures to protect or restore wildlife habitat can be found in the Farmington Resources Management Plan (December 2003) pages 2-25 and 2-26.

3.21 Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC§§ 701-715s, as amended), established protections for migratory birds and their parts (i.e. eggs, nests, and feathers) from taking, hunting, capture, transport, sale, or purchase. Executive Order 13186, 66 Fed. Req. 3853, (January 17, 2001), entitled "Responsibilities of Federal agencies to Protect Migratory Birds," directed agencies to take certain actions to further implement the migratory bird conventions, the Migratory Bird

Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA) and other pertinent statutes. A Memorandum of Understanding (MOU) between the US Department of the Interior Bureau of Land Management (BLM) and the US Fish and Wildlife Service (FWS) was signed on April 12, 2010, and outlines a collaborative approach to promote the 1nservation of migratory bird populations. The purpose of the MOU is to strengthen migratory bird conservation by entifying and implementing strategies that promote conservation and avoid or minimize adverse impacts on migratory irds through collaboration between the BLM and FWS, in coordination with state, tribal, and local governments. Information from the New Mexico PIF website (http://www.hawksaloft.org/pif.shtml), the New Mexico PIF highest priority list of species of concern by vegetation type, and the 2002 Birds of Conservation Concern Report for the Southern Rockies/Colorado Plateau Bird Conservation Region (BCR) No. 16 have been used to develop a list of migratory bird species with potential to occur in the area of the action alternatives.

For proposed projects 4.0 acres or more of vegetative disturbance, no construction activities from May 15 to July 31 will be permitted without a migratory bird nest survey. These surveys will be conducted by a BLM/FFO approved biologist using a survey protocol developed by a BLMIFFO biologist. If any active nests are located within the proposed project areas, project's activities will not be permitted until written approval by a BLM/FFO biologist. The BLM/FFO will monitor any active nests located from a nest survey.

Common Name (Scientific name)	Habitat Associations
Loggerhead shrike *(Lanius /udovicianus)*	Relatively xeric habitats dominated by shrubs and grasses.
Sage thrasher *(Oreoscoptes montanus)*	Sagebrush plains.
Sage sparrow *(Amphispiza belli)*	Sagebrush-grassland habitat
Black-throated sparrow *(Amphispiza bilineata)*	Xeric habitats dominated by open shrubs with areas of bare ground.
•Jrrowing owl *.1thene cunicu/aria)*	Open grasslands or desert scrub. Presence of suitable nest burrow is critical prerequisite (often prairie dog burrows).
Bendire's Thrasher *(To ostoma bendirei)*	Brushy desert, especially areas of tall vegetation, cholla cactus, creosote bush and yucca.
Ash-throated Flycatcher *(Myiarchus cinerascens)*	Arid and semiarid scrub, open woodland, and riparian woodlands.
Gray vireo *(Vireo vicinior)*	Found in desert scrub, mixed juniper or pinon pine and oak scrub associations, and chaparral, in hot, arid mountains and high plains scrubland.
Green-tailed towhee *(Pipilo chlorurus)*	At low elevations uses more mesic areas with a high diver -juniper, at high elevations uses more xeric shrub areas.
Scaled quail *(Callipepla squamata)*	Found on barren mesas and plateaus, semidesert shrublands, and grasslands with mixed scrub.
Rock wren *(Salpinctes obso/etus)*	Arid and semiarid habitats, sunny talus slopes, scrublands and dry washes.

3.22 Special Management Species

In accordance with BLM Manual 6840, BLM manages certain sensitive species 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. Included in this category are state listed endangered species and federal candidate species which receive no special protections under the Endangered Species Act. Special Management Species with potential to occur in the area of the action alternatives are listed in Table 3.22.

Table 3.22- Special Management Species of the BLM/FFO and their potential to occur in the proposed action areas.

Common Name (Scientific name)	Status*	Habitat Association	Presence**
BIRDS			
American peregrine falcon *(Falco peregrinus anatum)*	SMS NM-T	Nest in ledges or potholes on cliffs in wooded/forested habitats; Forage over riparian woodlands, coniferous & deciduous forests, shrublands, prairies.	NS
Ferruginous hawk *(Buteo regalis)*	SMS	Breed in open country, usually prairies, plains and badlands; semi-desert grass-shrub, sagebrush-grass & pinon-juniper plant associations.	NS
Golden eagle *(Aquila chrysaetos)*	SMS	In the west, mostly open habitats in mountainous, canyon terrain. Nests primarily on cliffs and trees.	NS
Bald eagle *(Haliaeetus leucocephalus)*	SMS NM-T	Nests in forested areas adjacent to large bodies of water.	NP
Burrowing Owl *(Athene cunicularia)*	SMS	Open grasslands or desert scrub. Presence of suitable nest burrow is critical prerequisite (often prairie dog burrows).	NP
Prairie falcon *(Falco mexicanus)*	SMS	Forage in open grassland, desert scrub, rangeland, agricultural; nest in cavities, ledges, on cliffs, trees, and power structures.	NS
Mountain plover *(Charadrius montanus)*	SMS	Lowland grasslands, sites with grassland characterists (alkali flats, agricultural lands).	NP
Yellow-billed cuckoo *(Coccyzus americanus)*	SMS C	Breeds in riparian woodlands with dense, understory vegetation.	NP
Gray vireo *(Vireo vicinior)*	SMS	sagebrush.	NP
PLANTS			
Brack's hardwall cactus *(Sclerocactus cloveriae ssp brackii)*	SMS NM-E	Sandy clay of the Nacimiento Formation in sparse shadscale scrub (5,000-6,000 ft.)	NP
Aztec gilia *(Aiiciella formosa)*	SMS NM-E	Salt desert scrub communities in soils of the Nacimiento Formation (5,000-6,000 ft).	NP
Sources: BLM 2005, New Mexico Natural Heritage Program 2005, NM Rare Plant 1999, USFWS 2007			

Status*	Presence**
SMS = BLM Special Management Species C = Federal Candidate NM-E = State of NM Endangered NM-T = State of NM Threatened	K = Known, documented observation within project area. S = Habitat suitable and species suspected to occur within the project area. NS = Habitat suitable but species is not suspected to occur within the project area. NP = Habitat not present and species unlikely to occur within the project area.

The action alternatives provide potential foraging habitat for the American peregrine falcon, Prairie falcon, Golden eagle, and Ferruginous hawk. No birds of prey or signs of their presence were observed during onsite inspections. The nearest recorded SMS activity area, a Burrowing owl nesting site, lies within 1.0 mile of the proposed Breech E89F project area.

3.23 Visual Resources

Visual Resource Management (VRM) on public lands is conducted in accordance with BLM Handbook 8410 and BLM Manual 8411. Further details of the Farmington Field Office VRM Program are contained on pages 2-9 to 2-10 and 3-61 to ·63 of the Farmington PRMP/FEIS.

The proposed actions are located in a VRM Class IV. Management objectives for Class IV designation provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements. (BLM 2003b:2-10).

3.24 Recreation

The Farmington Field Office has set aside several areas for special use and manages them as Specially Designated Areas (SDA). Recreation SDA's are managed to accommodate a large variety of recreational uses and outdoor recreational experiences. Areas located outside of recreation SDAs are managed as Extensive Recreation Management Areas (ERMAs). Few recreation facilities or supervisory efforts exist on these lands and they are managed to maintain a freedom of recreation choice with limited regulatory constraints. The action alternatives would not be located within a recreation SDA.

3.25 Public Health and Safety

All worker safety is governed by Occupational Safety and Health Administration (OSHA) safety laws and regulations. Worker safety incidents must also be reported to the BLM under the procedures of Notice to Lessee (NTL)-3A. Pipeline safety regulations are administered by OSHA as well as Department of Transportation (DOT) regulations. Pipeline safety regulations (49 CFR Parts 190 and 192) govern design, construction and operation of gas transmission lines. Any incidents involving DOT-regulated pipelines must be reported under these regulations (District 2003a).

Most substances and wastes generated at oil and gas facilities are exempt from regulation under the Resource Conservation and Recovery Act (1976). The Environmental Protection Agency (EPA) and DOT regulate materials associated with well construction and production activities that are classified as hazardous. When significant amounts of chemicals are stored on-site, governmental agencies will be notified as required under the Emergency Planning and ommunity Right to Know Act (1986). The notification of releases such as natural gas, natural gas liquids, and petroleum, Jtside the facility site is required under the Comprehensive Environmental Response Compensation and Liability Act, 980 (CERCLA) and under BLM NTL-3A. The well locations must have an informational sign, as directed under 43 CFR 3160.

Additional hazards to the general public in the area of the action alternatives include safety hazards associated with increased traffic during the construction of the proposed or alternative wells. General hazards around producing oil and gas fields such as accidental pipeline failures and moving equipment like pump jacks are potential/present in the action areas. Hydrogen sulfide gas is not known to be or expected to be a problem within the area of the action alternatives.

4.0 Environmental Consequences and Proposed Mitigation Measures

No Action

Under the No Action Alternative, the proposed wells would not be drilled. There would be no new impacts from oil and gas production to the resources. The No Action Alternative would result in the continuation of the current land and resource uses in the project area and is used as the baseline for comparison of alternatives.

Action Alternatives

A summary of potential surface disturbances is presented in Tables 4.0.1-4.0.6. Descriptions of potential effects on individual resources for the action alternatives are presented in the following text. Also described are potential mitigation measures that could be incorporated by the BLM where appropriate as Conditions of Approval attached to the permit.

Table 4.0.1- Summary of Disturbance (Breech C 244F)

Well Pad	New Disturbance	255 x 290	1.70	Short Term
		-	0.75	Long Term
	Existing Disturbance	-	-	Long Term
Construction Zone	New Disturbance	1290 x 50	1.48	Short Term
	Existing Disturbance	-	-	Short Term
Pipeline	New Disturbance	520 x 20	0.24	Short Term
	Existing Disturbance	-	-	Short Term
Road		376 x 30	0.26	Long Term
Total new disturbance			**3.42**	**Short Term**
			1.01	**Long Term**

* All well pads will have interim reclamation. The average long term disturbance is 0.75 acres.

Table 4.0.2- Summary of Disturbance (Breech D240G)

Well Pad	New Disturbance	255 x 290	1.70	Short Term
		-	0.75	Long Term
	Existing Disturbance	-	0.75	Long Term
Construction Zone	New Disturbance	1290 x 50	1.48	Short Term
	Existing Disturbance	-	-	Short Term
Pipeline	New Disturbance	119 x 20	0.05	Short Term
	Existing Disturbance	-	-	Short Term
Road		-	-	Long Term

Total new disturbance	**2.43**	**Short Term**
	0.75	**Long Term**

• All well pads will have interim reclamation. The average long term disturbance is 0.75 acres.

Table 4.0.3 -Summary of Disturbance (Breech D 685F)

Well Pad	New Disturbance	255 x 290	1.70	255 x 290	1.70	Short Term
		-	0.75	-	0.75	Long Term
	Existing Disturbance	-	-	-	0.75	Long Term
Construction Zone	New Disturbance	1290 x 50	1.48	1290 x 50	1.48	Short Term
	Existing Disturbance	-	-	-	-	Short Term
Pipeline	New Disturbance	355 x 20	0.16	-	-	Short Term
	Existing Disturbance	-	-	-	-	Short Term
Road		256 x 30	0.18	-	-	Long Term
Total new disturbance			**3.34**		**2.43**	**Short Term**
			0.93		**0.75**	**Long Term**

• All well pads will have interim reclamation. The average long term disturbance is 0.75 acres.

Table 4.0.4- Summary of Disturbance (Breech D 685G)

Facility		Alternative B		Alternative C		Duration
		Feet	Acres	Feet	Acres	
Well Pad	New Disturbance	255 x 290	1.70	255 x 290	1.70	Short Term
		-	0.75	-	0.75	Long Term
	Existing Disturbance	-	-	-	0.75	Long Term
Construction Zone	New Disturbance	1290 x 50	1.48	1290 x 50	1.48	Short Term
	Existing Disturbance	-	-	-	-	Short Term
Pipeline	New Disturbance	166 x 20	0.08	-	-	Short Term
	Existing Disturbance	-	-	-	-	Short Term
Road		38 x 30	0.03	-	-	Long Term

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Total new disturbance	**3.26**		**2.43**	**Short Term**
	0.78		**0.75**	**Long Term**

• All well pads will have interim reclamation. The average long term disturbance is 0.75 acres.

Table 4.0.5 – Summary of Disturbance (Breech E 89F)

Well Pad	New Disturbance	255 x 290	1.70	Short Term
		-	0.75	Long Term
	Existing Disturbance	-	-	Long Term
Construction Zone	New Disturbance	1290 x 50	1.48	Short Term
	Existing Disturbance	-	-	Short Term
Pipeline	New Disturbance	186 x 20	0.09	Short Term
	Existing Disturbance	-	-	Short Term
Road	New Disturbance	50 x 30	0.04	Long Term
	Existing Disturbance	155 x 30	0.11	Long Term
Total new disturbance			**3.27**	**Short Term**
			0.90	**Long Term**

• All well pads will have interim reclamation. The average long term disturbance is 0.75 acres.

Table 4.0.6 – Summary of Disturbance (Breech F 133)

Well Pad	New Disturbance	255 x 290	1.70	255 x 290	1.70	Short Term
		-	0.75	-	0.75	Long Term
	Existing Disturbance	-	-	-	0.75	Long Term
Construction Zone	New Disturbance	1290 x 50	1.48	1290 x 50	1.48	Short Term
	Existing Disturbance	-	-	-	-	Short Term
Pipeline	New Disturbance	1645 x 20	0.76	400 x 20	0.18	Short Term
	Existing Disturbance	-	-	-	-	Short Term
Road		163 x 30	0.11	-	-	Long Term
Total new disturbance			**3.94**		**2.61**	**Short Term**
			0.86		**0.75**	**Long Term**

*All well pads will have interim reclamation. The average long term disturbance is 0.75 acres.

Short-term impacts are those which can be stabilized or mitigated rapidly (within 5 years). Long-term impacts are those at would substantially remain for more than 5 years.

For the purpose of this EA, potential impacts have been divided into three categories:

High:- as defined in CEQ guidelines (40 CFR 1500-1508), impacts which are substantial in severity and therefore should receive the greatest attention in decision-making.
Moderate: - impacts that cause a degree of change that is easy to detect, but do not meet the criteria for significant impacts.
Low:- impacts which cannot be easily detected, and cause little change in the existing environment.

4.1 Air Resources

4.1.1 Direct and Indirect Effects

4.1.1.1 Air Quality

Air quality would temporary be directly impacted with pollution from exhaust emissions, chemical odors, and dust that would be caused by the motorized equipment used to construct the access roads, well pads, and by the drilling rigs that will be used to drill the wells. Dust dissemination would discontinue upon completion of the construction phase of the access roads and well pads. Air pollution from the motorized equipment would discontinue at the completion of the drilling phase of the operations. The winds that frequent the northwestern part of New Mexico generally disperse the odors and emissions. The impacts to air quality would be greatly reduced as the construction and drilling phases are completed. Other factors that currently affect air quality in the area include dust from livestock herding activities, dust from recreational use, and dust from use of roads for vehicular traffic.

Over the last 10 years, the leasing of Federal oil and gas mineral estate in Farmington Field Office has resulted in an 1verage total of approximately 450 to 500 wells drilled on federal leases annually. These wells would contribute an cremental increase to the total emissions (including GHG's) from oil and gas activities in New Mexico.

Potential impacts of development could include increased air borne soil particles blown from new well pads or roads, exhaust emissions from drilling equipment, compressors, vehicles, and dehydration and separation facilities, as well as potential releases of GHG, NOx and VOCs during drilling or production activities. The amount of increased emissions cannot be quantified at this time since it is unknown how many wells might be drilled, the types of equipment needed if a well were to be completed successfully (e.g. compressor, separator, dehydrator), or what technologies may be employed by a given company for drilling any new wells. The degree of impact will also vary according to the characteristics of the geologic formations from which production occurs.

The reasonable and foreseeable development scenario developed for the Farmington RMP demonstrated 522 wells would be drilled annually for federal minerals. Current APD permitting trends within the field office confirm that these assumptions are still accurate. This level of exploration and production would contribute a small incremental increase in overall hydrocarbon emissions, including GHGs, NOx, and VOCs released into the planet's atmosphere. When compared to total national or global emissions, the amount released as a result of potential production from the proposed wells would not have a measurable effect on climate change due to uncertainty and incomplete and unavailable information; therefore is not possible to determine the effects on climate change on a regional, national, or global scale.

Consumption of oil and gas developed from the proposed wells is expected to produce GHGs, NOx and VOCs. Consumption is driven by a variety of complex interacting factors including energy costs, energy efficiency, availability of other energy sources, economics, demography, and weather or climate. Regional and global transportation, metropolitan traffic, fires (including wildfires, controlled burns and use of domestic fire places), and power plant emissions from the west are all parts of the equation. Regional air quality modeling conducted for the Northern San Juan Basin Coal Bed Methane FEIS Project in August 2006, determined that potential cumulative visibility impacts to Federal PSD Class I

Areas (Mesa Verde National Park and the Weminuche Wilderness Area) could occur at some unspecified time in the future.

The NAAQS are set for the most common and widespread pollutants. The standards are concentrations of air pollution above which the EPA has determined that serious health and welfare consequences could occur. If the concentrations are below the NAAQS, there are no expected adverse effects to humans and the environment.

4.1.1.2 Climate

The assessment of GHG emissions and climate change is in its formative phase. It is currently not feasible to know with certainty the net impacts from the proposed actions on climate. The inconsistency in results of scientific models used to predict climate change at the global scale coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decisions made at this level. When further information on the impacts to climate change is known, such information would be incorporated into the BLM's planning and NEPA documents as appropriate.

4.1.2 Potential Mitigation

The FFO has been a participant of the Four Corners Air Quality Task Force (FCAQTF) since its inception back in 2002 when it was known as the Four Corners Ozone Task Force. Because of the unanswered questions raised by these modeling efforts, the FCAQTF has continued to look at air quality issues in the Four Corners region. The FCAQTF is comprised of a broad base of representatives including federal, state, Indian, and local governments, as well as industry, interest groups, and concerned community members. The FCAQTF has several working groups, which worked on the development of a mitigation options report (completed December 2007), to serve as a resource and guide to the regulatory agencies. The responsible agencies may use the report as the basis for developing air quality management plans for the region. 1his may include developing new and revising existing regulations, supporting new legislation, developing new outreach and information programs, and developing and/or expanding voluntary programs for emission reductions.

Additional air quality modeling conducted since completion of the 2003 FEIS/RMP and provisions in the ROD for the FEIS/RMP provide for applications of additional emission controls if requested by the NMAQB. Based on this modeling, the NMAQB issued an interim directive that all newly issued APDs limit compressor emissions to no more than 2 grams per horsepower hour of N_2O for engines of 300 horsepower or less. The FFO has complied with this directive through a condition of approval (COA) which has been in effect since August 1, 2005. To date, NMAQB has made no other such requests.

Currently, development on Federal minerals in New Mexico's San Juan Basin is at a lower level than forecast in the Reasonable Foreseeable Development (RFD) Scenario prepared in 2001 for the FFO EIS/RMP. The impacts forecast by the RFD are still valid. At the time the 2003 EIS/RMP was written, ozone readings did not represent a violation of the NAAQS for this pollutant. The New Mexico Environment Department Air Quality Bureau has determined that the 2007 – 2009 ozone design value for San Juan County is 0.070 ppm. The design value for the county must be greater than the revised 8-hour ozone standard of 0.075 ppm for a nonattainment designation.

The EPA's inventory data describes "Natural Gas Systems" and "Petroleum Systems" as the two major categories of total US sources of GHG gas emissions. The inventory identifies the contributions of natural gas and petroleum systems to total CO_2 and CH_4 emissions (natural gas and petroleum systems do not produce noteworthy amounts of any of the other greenhouse gases). Within the larger category of "Natural Gas Systems", the EPA identifies emissions occurring during distinct stages of operation, including field production, processing, transmission and storage, and distribution. "Petroleum Systems" subactivities include production field operations, crude oil transportation and crude oil refining. Within the two categories, the BLM has authority to regulate only those field production operations that are related to oil and gas measurement, and prevention of waste (via leaks, spills and unauthorized flaring and venting).

The BLM's regulatory jurisdiction over field production operations has resulted in the development of "Best Management Practices" (BMPs) designed to reduce impacts to air quality by reducing all emissions from field production and operations. Typical measures may include: flare hydrocarbon and gases at high temperatures in order to reduce

emissions of incomplete combustion; require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; placement of compressor engines 300 horsepower or less must have NOx emissions limited to 2 grams per horsepower hour; re-vegetate areas of the pad not required for production facilities to reduce the amount f dust from the pads; and water dirt roads during periods of high use in order to reduce fugitive dust emission. The .gnificant threshold for particulate matter of 35 ug/m³ daily PM2.5 NAAQS is not expected to be exceeded under the proposed actions.

The EPA data show that improved practices and technology and changing economics have reduced emissions from oil and gas exploration and development (Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006). One of the factors in this improvement is the adoption by industry of the BMPs proposed by the EPA's Natural Gas Energy Star program. The Farmington Field Office will work with industry and NMAQB to help facilitate the use of the relevant BMPs for operations proposed on federal mineral leases where such mitigation is consistent with agency policy.

4.2 Areas of Critical Environmental Concern

No effect.

4.3 Cultural Resources

4.3.1 Direct and Indirect Effects

Direct effects normally include alterations to the physical integrity of a cultural resource. If a cultural resource is significant for other than its scientific information, direct effects may also include the introduction of audible, atmospheric, or visual elements that are out of character for the cultural site. A potential indirect effect from the proposed action is the increase in human activity or access to the area with the increased potential of unauthorized removal or other alteration to cultural resources in the area. Based on a review of the archaeological reports and the assessment of the undertaking in this area, the BLM cultural resources staff has determined that the proposed action will have no effect on cultural resources (BLM No. 2011(11)042F). This determination will be included with the FFO/BLM cultural resources stipulations, if any, attached to the APD/R-0-W, as the case may be.

4.3.2 Potential Mitigation

All FFO/BLM cultural resources stipulations will be followed as indicated in the Cultural Resource Records of Review, attached to the R-0-W/APD. These stipulations may include, but are not limited to temporary or permanent fencing or other physical barriers, monitoring of earth disturbing construction, project area reduction and/or specific construction avoidance zones, and employee education. All employees, contractors, and sub-contractors of the project will be informed by the project proponent that cultural sites are to be avoided by all personnel, personal vehicles, and company equipment, and that it is illegal to collect, damage, or disturb cultural resources, and that such activities are punishable by criminal and or administrative penalties under the provisions of the Archaeological Resources Protection Act (16 U.S.C. 470aa-mm).

No further work to protect cultural resources on the Breech C 244F, Breech D 240G, Breech D 685F, Breech D 685G, Breech E 89F, or Breech F 133 is required (DCA Report No. 08-DCA-041 ; BLM 2011(11)042F). The four sites are all associated with now abandoned locations and all will be completely avoided by the proposed construction activities.

Thorough in-field recordation and point-plotting has exhausted the research potential of the eighteen isolates and no further work is recommended with regard to the isolates.

In the event of a discovery during construction, the project proponent will immediately stop all construction activities in the immediate vicinity of the discovery and immediately notify the archaeological monitor, if present, or the BLM. The BLM would then evaluate or cause the site to be evaluated. Should a discovery be evaluated as significant (e.g., National Register, NAGPRA, ARPA), it will be protected in place until mitigating measures can be developed and implemented according to guidelines set by the BLM.

4.4 American Indian Religious Concerns

4.4.1 Direct and Indirect Effects

The action alternatives are not known to physically threaten the integrity of any TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere or otherwise hinder the performance of traditional ceremonies and rituals pursuant to AIRFA or EO 13007. There are currently no known threats to remains that fall within the purview of NAGPRA or ARPA.

4.5 Environmental Justice

4.5.1 Direct and Indirect Effects

No minority or low income populations would be directly affected in the vicinity of the action alternatives. Indirect effects could include effects due to overall employment opportunities related to the oil and gas and service support industry in the region as well as the economic benefits to state and county governments related to royalty payments and severance taxes. Other effects could include a small increase in activity and noise disturbance in areas used for grazing, wood gathering, or hunting. However, these effects would apply to all public land users in the project area. A more detailed description of potential impacts is contained in the PRMP/FEIS p.4-120 and 4-129.

4.6 Farmlands, Prime or Unique

No effect.

4.7 Floodplains

No effect.

4.8 Invasive, Non-native Species

4.8.1 Direct and Indirect Effects

Weeds (invasive/nonnative vegetation) can be introduced in many ways, including wind, vehicles, heavy equipment, livestock, and wildlife. The potential for weeds to invade or spread within an area is increased when native vegetation is removed and physical disturbance to the soil occurs. Establishment of weeds usually occurs in disturbed sites such as oil/gas pads, pipelines, stock water ponds, and edges of roads.

The Farmington Field Office and the operator would follow BLM policy to control and manage invasive nonnative vegetation species. There were no invasive weeds encountered during the onsite inspection of the action alternatives.

4.8.2 Potential Mitigation

It would be the responsibility of the operator to control and eradicate all noxious/invasive weeds within the project area during the life of the projects.

4.9 Wastes, Hazardous or Solid

Typical wastes associated with the action alternatives would include trash, sewage, produced water, and produced hydrocarbons. During drilling and completion, a trash receptacle and a chemically treated portable toilet would be on location for trash and sewer disposal. All produced hydrocarbons would be put in tanks on location during completion work. Produced water would be put in onsite tanks or within lined reserve pit during completion work. All wastes would be disposed of in a proper manner as required by federal and state law and as described in the COAs.

When significant amounts of chemicals are stored on-site, governmental agencies would be notified as required under the Emergency Planning and Community Right to Know Act (1986). The notification of releases such as natural gas, natural gas liquids, and petroleum, outside the facility sites are required under the Comprehensive Environmental Response " ompensation and Liability Act, 1980 (CERCLA) and under BLM NTL-3A. The well locations must have an informational .gn, as directed under 43 CFR 3160.

4.10 Water Quality: Surface and Groundwater

4.10.1 Direct and Indirect Effects

There are no perennial water sources, springs, seeps, wetlands or well defined ephemeral drainages within the area of the action alternatives. Effects to ground water resources would be low due to mitigation measures such as casing. Below casing depth, losses of produced water or mud may occur to differing degrees in various formations, but the losses are considered to be low and contained to within a few feet of the well bore. These losses are not considered to be substantial because of the very small amount of groundwater that could be affected (BLM 2003a, p. 4-14).

4.10.2 Potential Mitigation

Culverts, diversions, and silt traps, where indicated in the attached COA's, would be used to stabilize and reduce sediment flow. The Operator would be responsible to ensure an adequate casing program is designed to protect ground water from contamination. Onshore Order #2 requires that all useable aquifers be protected by casing or cementing. All pits would be lined to prohibit drilling and production fluids from infiltrating into groundwater resources or flowing into surface water resources.

4.11 Wetlands/Riparian Zones

No effect.

4.12 General Topography/Surface Geology

.lthough there will be surface disturbance for all projects, interim reclamation and reseeding is incorporated into the project for site mitigation. No prominent topographical features would be removed or disturbed by the action alternatives.

4.13 Mineral Resources

No effect.

4.14 Paleontology

The San Jose Formation found within the proposed project area is not known to contain any paleontological resources. No fossils are known to occur within or proximate to the action alternatives.

4.14.1 Direct and Indirect Effects

Although no paleontological resources are known to occur within the area of the action alternatives, impacts to paleontological resources from the proposed project implementation could possibly occur. Direct impacts of the proposed project to fossil localities could result from the ground disturbing activities or the disturbance of the stratigraphic context in which they are located. This project could also create indirect impacts to areas by changing erosion patterns. Additionally there could be an increase in off-road vehicular access from the project area for recreational activities. An increase in human activity in the area could increase the possibility of unauthorized removal or other alterations to paleontological resources in the area. Potential impacts to paleontological resources as a result of the proposed actions would be low and long-term.

4.14.2 Potential Mitigation

All BLM/FFO paleontological resources stipulations will be followed as indicated in the COAs, attached to the APD. These stipulations may include, but are not limited to temporary or permanent fencing or other physical barriers, monitoring of earth disturbing construction, project area reduction and/or specific construction avoidance zones, and employee education. Upon review, a determination for final project clearance and stipulations shall be issued by the BLM/FFO.

If previously undocumented paleontological sites are encountered during construction, all activities shall stop in the vicinity of the discovery and the BLM will be immediately notified. The site will then be evaluated. Mitigation measures such as data recovery may be required by the BLM to prevent impacts to newly identified paleontological resources.

4.15 Soils

4.15.1 Direct and Indirect Effects

Due to the nature of drilling for oil and gas there would be soil disturbance at the location of the action alternatives. All areas to be disturbed would be bladed as needed to create flat surfaces for operating equipment and vehicles. Depth of soil disturbance would increase with rougher topography. Available topsoil would be stockpiled for reclamation. The cut and fill slopes on the action alternatives would be especially susceptible to wind and water erosion until vegetation has been reestablished (one to two growing seasons). The potential impacts would be dependant, in part, on seasonal variation in rainfall and snowmelt run-off, terrain, soil type, prevailing winds, and vegetative cover. The heaviest amounts of erosion will be short-term (one to two growing seasons) until the vegetation has established. Effects to soils would likely be low to moderate for the action alternatives.

4.15.2 Potential Mitigation

Re-vegetation will reduce or minimize impacts created by water and/or wind erosion. Approximately half of the well locations and the entire well-tie pipeline disturbances would be reclaimed. The remaining surface disturbances would remain disturbed for the life of the well for production equipment and vehicle travel surfaces. Following final down-hole plugging and abandonment of the well, the entire well pads and access roads would be reclaimed.

Other mitigation could include culverts, diversion ditches, berms, and other such soil erosion control structures (see attached COAs). Existing dirt roadways may be re-ditched and re-crowned or surfaced at the direction of the BLM, to minimize sedimentation.

4.16 Watershed- Hydrology

4.16.1 Direct and Indirect Effects

The action alternatives would comply with water quality, quantity, and ground water protection standards under the Clean Water Act of 1977, and the Safe Drinking Water Act of 1974 as amended. The action alternatives would disturb less than five (5) acres individually; currently, a Storm Water Pollution Prevention Plan for the Environmental Protection Agency (EPA) under the Clean Water Act would not be required.

The Operator would be required to comply with any future changes to the National Pollutant Discharge Elimination System permitting process for storm water discharge from construction activities enacted by the EPA prior to the completion of well construction and site stabilization. The proposed action for Breech F 133 overlaps a USGS NHD watercourse (a "blue line"). Construction of Breech F 133 would require less than 25 cubic yards of material to be placed below the plane of the ordinary high water mark, therefore the action would be covered under a US Army Corps of Engineers Nationwide Permit No. 18 (Minor Discharges).

4.16.2 Potential Mitigation

Drainage diversions would be constructed for the action alternatives. The diversions would be directed such that water ::>uld drain away from the pads. Culverts would be installed where needed to maintain drainages along access roads - ee attached COA's).

4.17 Vegetation, Forestry

4.17.1 Direct and Indirect Effects

Direct impacts would be the removal of trees, shrubs, and grasses to construct the well pads, access roads, and pipelines for the action alternatives. The action alternatives would remove between 16.59 and 19.66 acres of established vegetation and would result in the removal of approximately 75-80 trees. Indirect impacts would be the remaining long-term (20-30 years) disturbance of the well locations used for production equipment and vehicle driving surfaces, which would equal between 4.80 and 5.23 acres. The removal of vegetation is projected to have low effects on the general vegetation as the species of plants to be removed are widespread and abundant in the project area and throughout the San Juan Basin.

4.17.2 Potential Mitigation

Under the action alternatives, upon the completion of the construction, drilling, and the well being placed into service, the rehabilitation and reseeding of the unused portion of the well pads and pipelines would occur. Those surfaces used for production equipment and vehicle travel would be reclaimed as directed by the conditions of approval (GOA's) after final abandonment of the well.

4.18 Livestock Grazing

4.18.1 Direct and Indirect Effects

There would be a temporary loss of between 16.59 and 19.66 acres prior to rehabilitation and reseeding. There would be reduction in an average of 2.80 AUMs as per typical BLM grazing allowances.

4.18.2 Potential Mitigation

Mitigation measures associated with soils, water, riparian and wildlife serve to lessen impacts to the rangeland components essential for rangeland health. Under the proposed actions, upon the completion of the construction, drilling, and the well being placed into service, the rehabilitation and reseeding of the unused portion of the well pads and pipelines would occur. Those surfaces used for production equipment and vehicle travel would be reclaimed as directed by the conditions of approval (COA's) after final abandonment of the well. Following site reclamation, long-term habitat disturbance would equal between 4.80 and 5.23 acres.

4.19 Wild Horse and Burros

No effect.

4.20 Wildlife

4.20.1 Direct and Indirect Effects

Some temporary displacement of wildlife could occur during the construction, drilling and completion phase of the project. Potentially affected species include the pronghorn antelope, cottontail, blacktailed jackrabbit, mule deer, coyote, and other species that typically utilize such habitat.

The action alternatives would remove between 16.59 and 19.66 acres of potential habitat for such species. There are approximately 435,500 acres of sagebrush or desert scrub habitat and 633,400 acres of pinon-juniper woodland in the

BLM/FFO planning area (BLM 2003a, pg 3-31). Habitat in the project area is not unique to the planning area and is common throughout the northern half of the planning area. Effects to wildlife as a result of direct removal of sage/pinyon/juniper vegetation would be low for oil and gas development that adheres to proper conditions of approval. However, there may be indirect loss of habitat due to increased habitat fragmentation as a result of adding six new wells, 883 feet of new road and 2,991 feet of new pipeline right of way. The magnitude of these specific disturbances is difficult to predict but if viewed from a cumulative perspective there will likely be some loss of effective habitat.

4.20.2 Potential Mitigation

Standard mitigation measures to protect or restore wildlife habitat can be found in the RMP (December 2003) pages 2-25 and 2-26. All construction activities would be confined to permitted areas only. Rapid and permanent vegetation and cover reestablishment would minimize impacts to wildlife. All hazards associated with construction and operation of the proposed action would be fenced or contained in storage tanks. Open trench associated with the pipeline would be monitored for any trapped wildlife and escape ramps constructed every quarter mile. Finally, Seasonal Timing Limitations would be employed from May 1 through July 15 to protect seasonal pronghorn antelope fawning habitat within the Ensenada Mesa SDA. Following site reclamation, long-term habitat disturbance would equal between 4.80 and 5.23 acres.

4.21 Migratory Birds

4.21.1 Direct and Indirect Effects

Adult migratory birds would not be directly harmed by the proposed actions because of their mobility and ability to avoid areas of human activity. Any nests within the area of the proposed actions may be directly impacted, along with eggs and juveniles. No old nests left from the previous breeding season or other evidence of these species was detected during the onsite inspections of the proposed actions. The increased human presence during construction, drilling, and reclamation activities may indirectly disturb or displace adults from nests and foraging habitats for a short period of time, three months or less. Long term production operations would result in only a slight increase in human activity in the immediate proposed action areas. Effects to the population status of migratory birds are not anticipated due to the mobility of individuals and the abundance of adjacent habitat for these species. In consideration of these factors, there would be low short-term effects to migratory birds, and minimal long-term effects as a result of the proposed action alternatives.

Potentially affected migratory bird species listed by New Mexico Partners in Flight as priority for management include black-throated gray warbler, gray flycatcher, ash-throated flycatcher, juniper titmouse, pinon jay, Western bluebird, mountain bluebird, Cassin's kingbird, and Say's phoebe for pinon-juniper habitat; and Bendire's thrasher, sage thrasher, loggerhead shrike, sage sparrow, and brewer's sparrow for sagebrush habitat. Wildlife and bird species may lose nesting/den/burrow habitat and foraging habitat. The action alternatives would temporarily remove between 16.59 and 19.66 acres of potential habitat. Following site reclamation, long term habitat disturbance would equal between 4.80 and 5.23 acres.

4.21.2 Mitigation Measures

Project mitigation measures are designed to minimize effects on migratory birds and other wildlife. These measures include netting of any permanently open pits and vent caps on all open pipes to prevent bird entry and nesting. All construction activities would be confined to permitted areas only. Rapid and permanent vegetation and cover reestablishment would minimize impacts to migratory birds. All hazards associated with construction and operation of the proposed action would be fenced or contained in storage tanks.

Best Management Practices (BMPs) would be used to avoid or minimize the possibility of the unintentional take of migratory birds, as instructed in, the MBTA Washington Office Interim Management Guidance and BLM/FFO Interim Management Policy (MOU No. NM-F00-2010-001). Combined ground disturbance for the complete action is over 4.0 acres of vegetative disturbance, and no construction activities from May 15 to July 31 will be permitted without a BLM/FFO approved migratory bird nest survey or written approval by a BLM/FFO Biologist. If any active nests are located within the proposed action areas, project activities will not be permitted without written approval and monitoring by a BLM/FFO approved biologist.

4.22 Special Management Species

4.22.1 Direct and Indirect Effects

The proposed action areas provide potential foraging habitat for the American peregrine falcon, Prairie falcon, Golden eagle, and Ferruginous hawk. There would be a temporary loss of potential foraging habitat for the four raptor species prior to rehabilitation and reseeding.

4.22.2 Potential Mitigation

Standard conditions of approval designed to protect wildlife and migratory birds would serve to protect Special Management Species (see Appendix 7.1). All construction activities would be confined to permitted areas only. Rapid and permanent vegetation and cover reestablishment would minimize impacts to wildlife. All hazards associated with construction and operation of the action alternatives would be fenced or contained in storage tanks.

4.23 Visual Resources

4.23.1 Direct and Indirect Effects

The proposed actions would not be visible as a foreground or middle ground feature from any highway, county road, residence, or recreation area. The proposed actions would result in vegetation alteration, visual scars on the landscape, and the placement of new aboveground equipment. During construction and drilling, disturbed ground, construction equipment, machinery, drilling and completion rigs would be highly visible. Upon completion, production equipment would be less visible. The proposed actions would achieve Class IV visual resource management objectives. With the implementation of FFO standard and site specific mitigation measures, the effects of the proposed actions on visual resources are anticipated to be moderate for the short term and low for the long term.

4.23.2 Potential Mitigation

1sual changes of the proposed actions will be mitigated to blend into the current setting, to the greatest extent possible. Rapid construction, reclamation, and re-vegetation will decrease the period of moderate visual effect. Above ground production equipment will be painted Juniper Green (Federal Standard 595a-17127) to mimic the vertical elements of the surrounding vegetation. For safety purposes, some equipment or parts of equipment may be required to be painted appropriate high visibility colors. During final abandonment and reclamation, the existing cut and fill slopes, and flat well pad will be re-contoured to the existing pre-construction topography. The goal of final reclamation will be to diminish evidence of cuts, fills, and the flat well pad surfaces. All equipment would be low profile to blend in with the surrounding topography.

4.24 Recreation

4.24.1 Direct and Indirect Effects

The proposed action is located in a somewhat remote area not often frequented by individuals not involved in the gas and oil industry. The proposed actions at the well sites may affect recreation activities and the general recreational experience of the public through increased noise, dust, visual changes to the landscape (see Section 4.17 above), and a general increase in human activity in the area. The proposed activities would decrease the solitude of the immediate area. The general public may encounter heavy construction and drilling vehicles within the immediate areas of the well sites, as well as along the access road to the proposed action areas.

The recreational user may observe new surface disturbances, drilling activities, and additional energy production equipment. However, the proposed actions would be less noticeable as there are numerous existing wells, ROWs and other infrastructure in the area. The proposed actions would be consistent with the existing environment

6.0 Consultation/Coordination

This section includes individuals or organizations from the public, public land users, the interdisciplinary team, and permittees that were contacted during the development of this document.

Table 6.0- Summary of Public Contacts Made During Preparation of Document and Interdisciplinary Team

Public Contact	Title	Organization	Present at Onsite?
ID Team Member	**Title**	**Organization**	**Present at Onsite?**
Steven "Craig" Willems	Environmental Protect. Spec.	BLM	YES
Kyla Vaughan	Regulatory Compliance	XTO Energy Inc.	YES
Malia Villers	Regulatory Compliance	XTO Energy Inc.	YES
Randy Watson	Third Party Contractor	Daggett Enterprises	YES
Maria Adkins	Third Party Contractor	Adkins Consulting	YES
Matt Zabka	Third Party Contractor	Adkins Consulting	NO
Jim Copeland	Cultural specialist	BLM	NO
John Hanson	Wildlife specialist	BLM	NO
John Kendall	T&E specialist	BLM	NO
Sarah Scott	Natural Resource specialist	BLM	NO
Jeff Tafoya	Range specialist	BLM	NO
Barney Wegener	Riparian specialist	BLM	NO
Dale Wirth	Hydrology specialist	BLM	NO

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7.0 Appendices

7.1 APD/COA

'ee attachment. The APD and COAs contain additional information about the proposed action including maps of all cilities, roads, pipelines, power lines, etc.

7.2 Authorities

Code of Federal Regulations (CFR)

40 CFR All Parts and Sections inclusive Protection of Environment, Revised as of July 1, 2001.

43 CFR, All Parts and Sections inclusive - Public Lands: Interior. Revised as of October 1, 2000.

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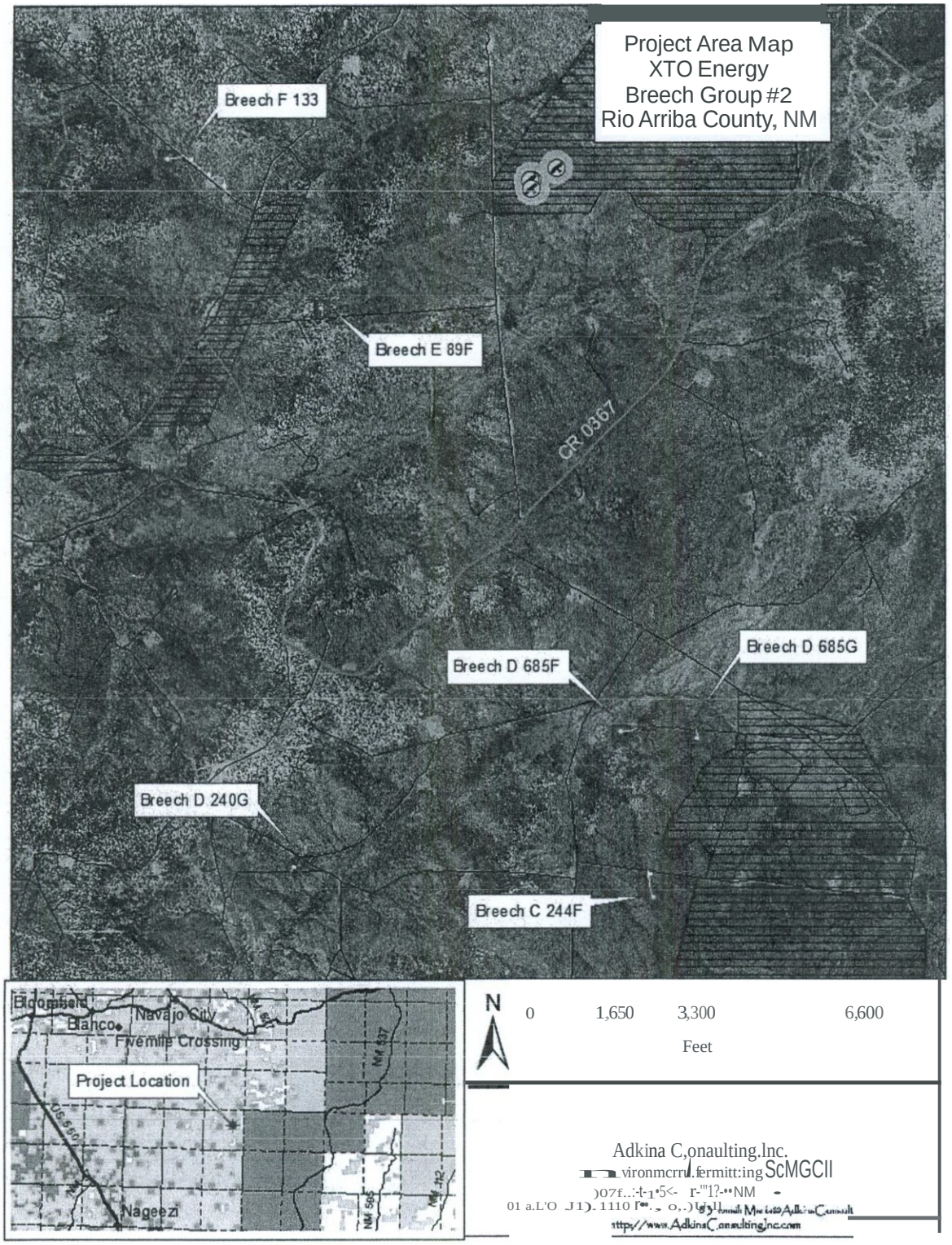
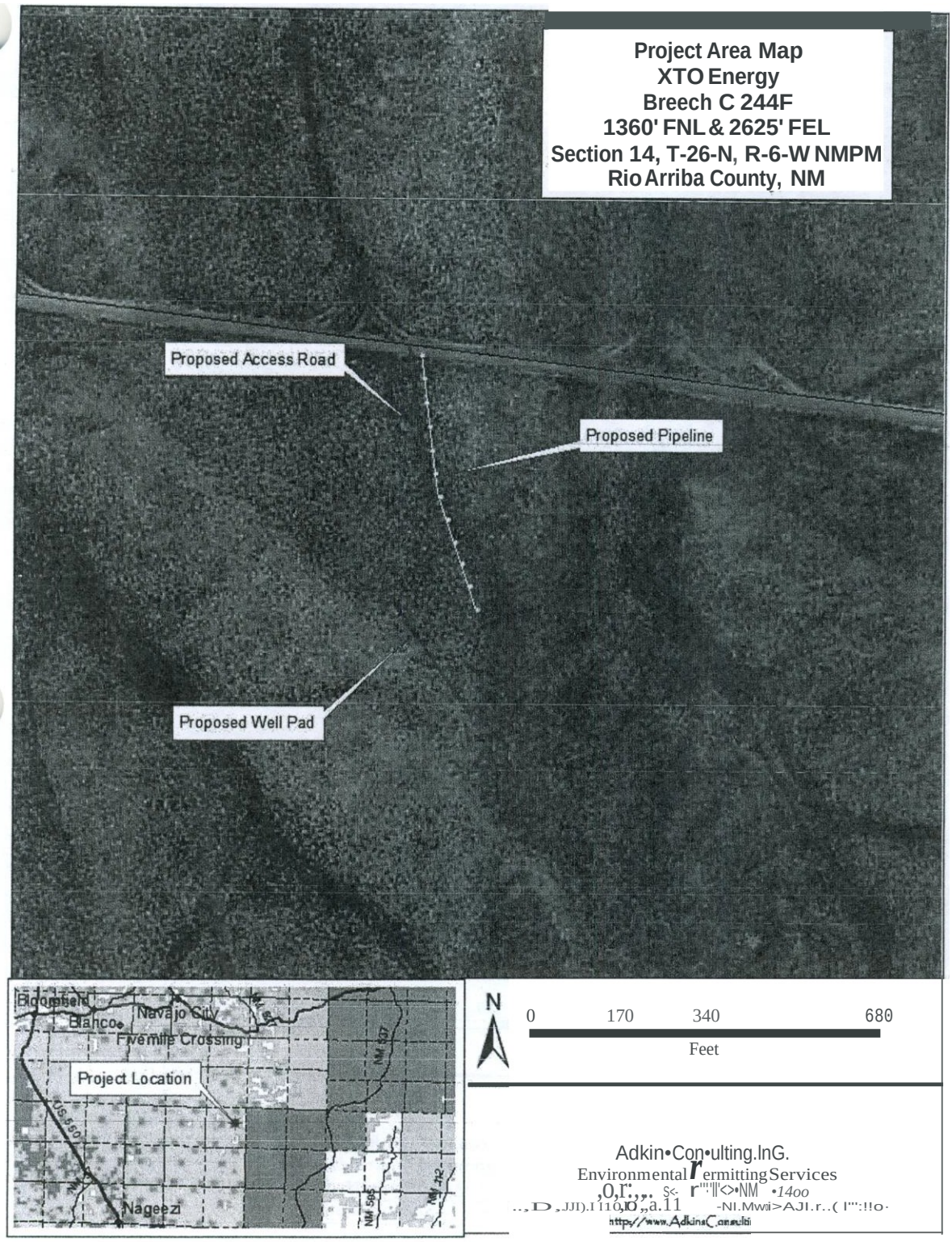
The Federal Land Policy and Management Act, as amended. Public Law 94-579.

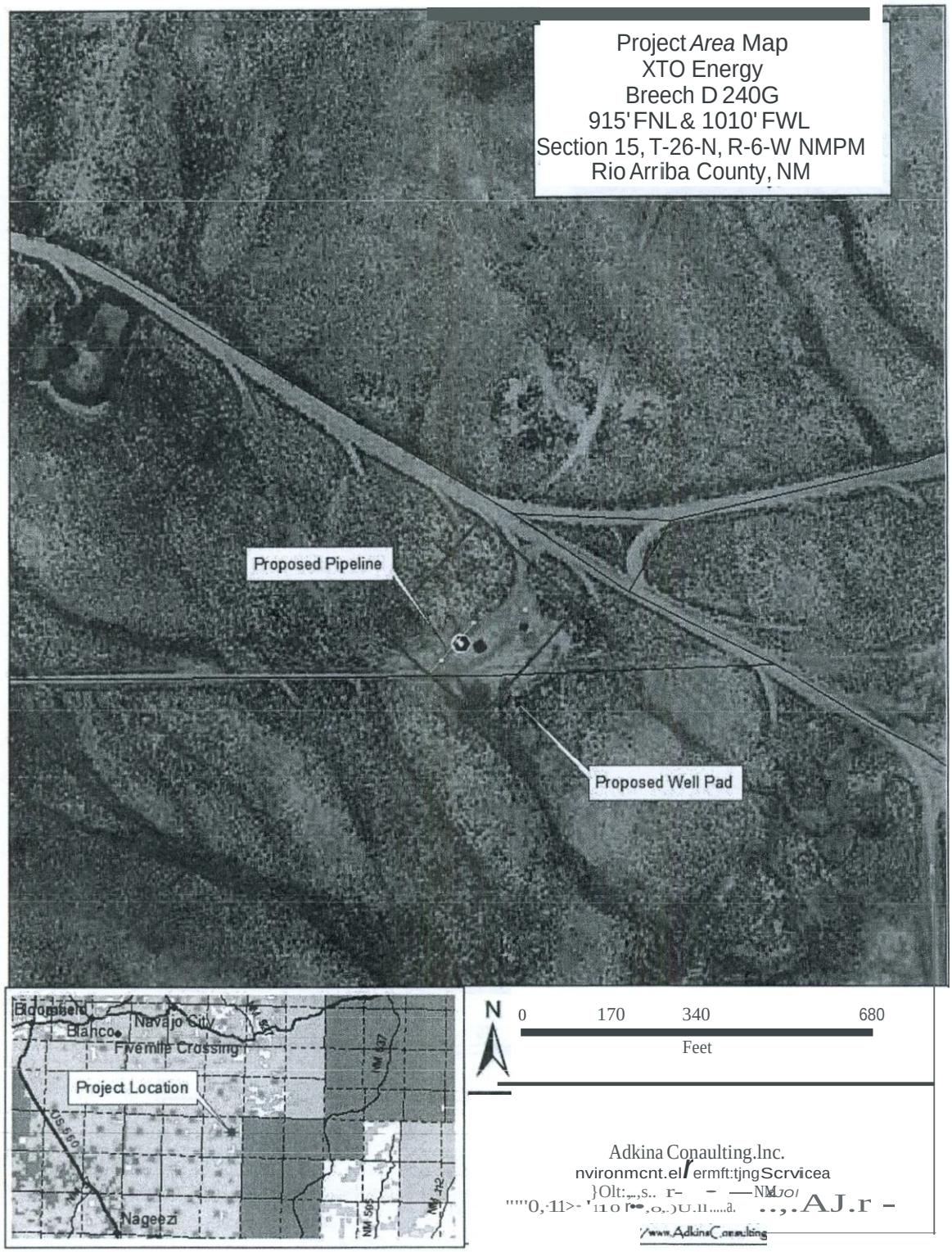
7.3 Breech Group No.2 Project Area Map



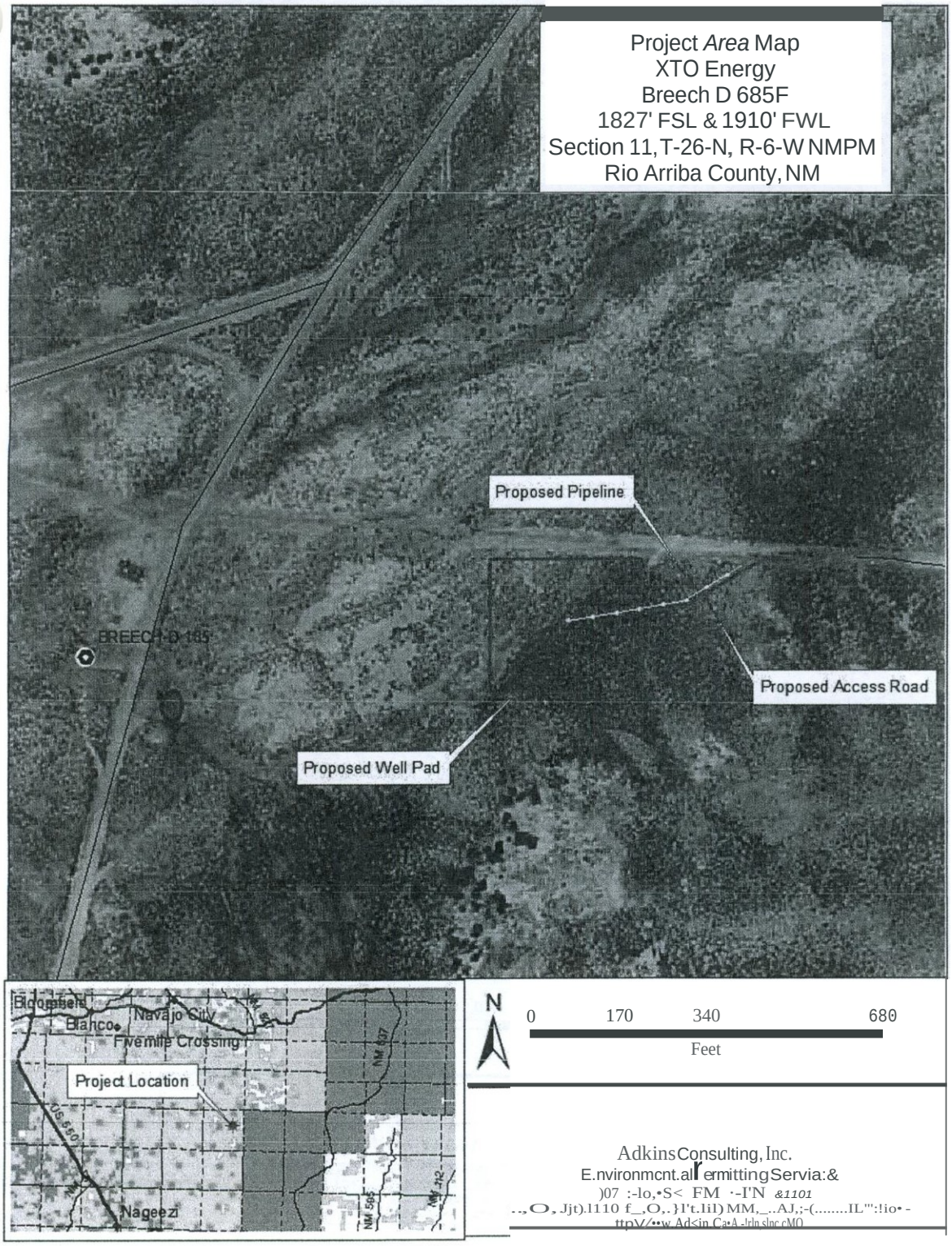
7.4 Breech C 244F Project Area Map



7.5 Breech D 240G Project Area Map



7.6 Breech D 685F Project Area Map



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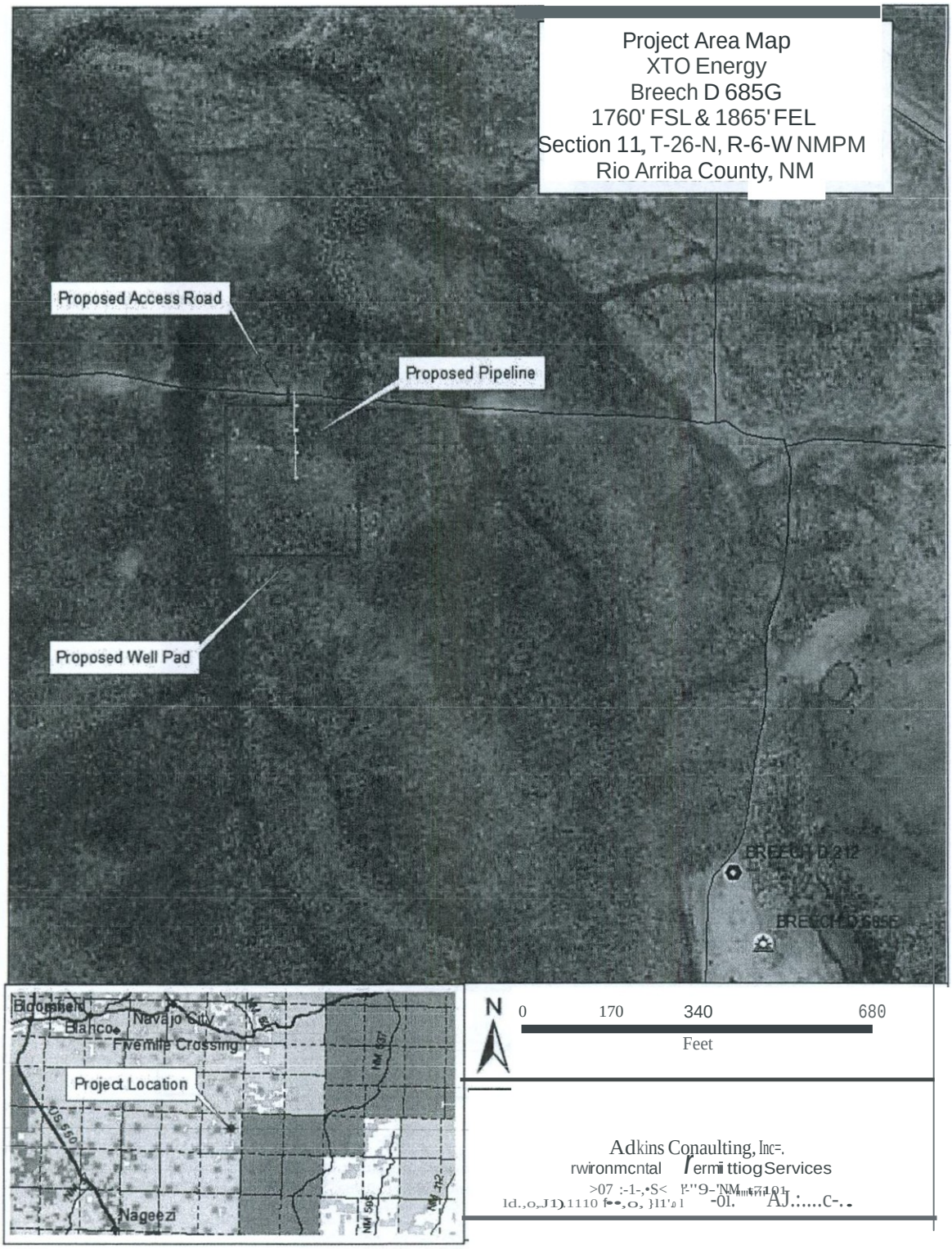
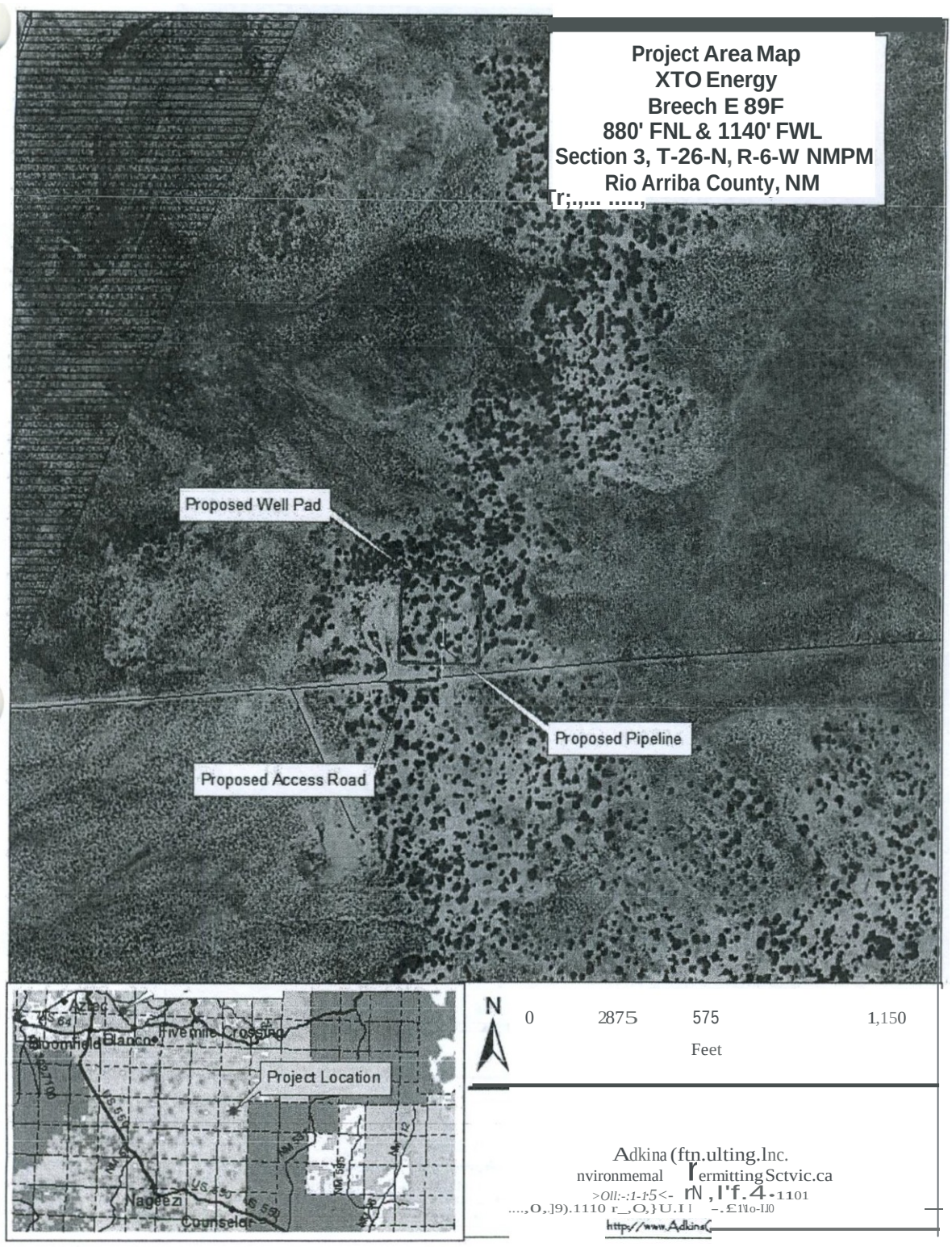
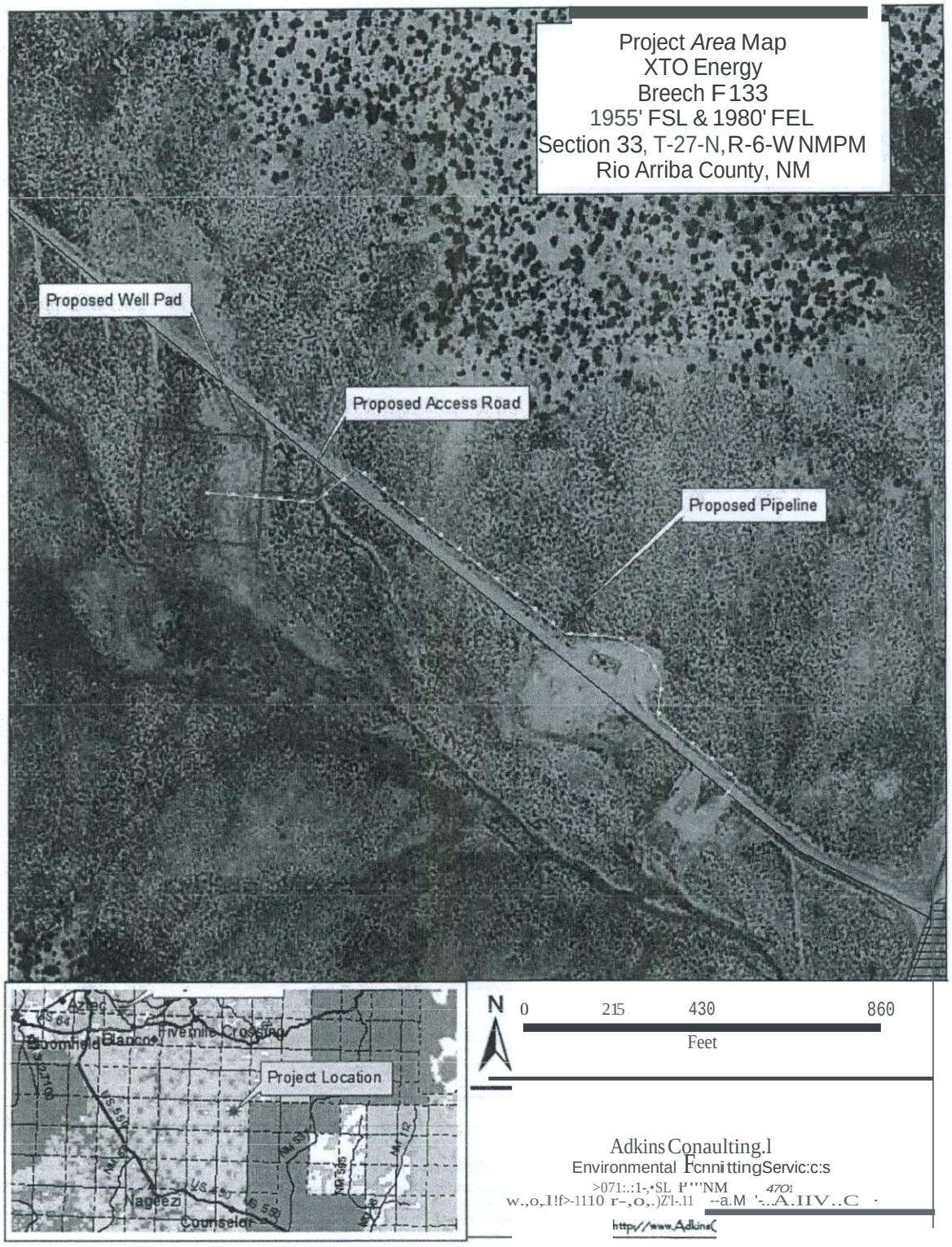


7.8 Breech E 89F Project Area Map



7.9 Breech F 133 Project Area Map