ENVIRONMENTAL ASSESSMENT

for

Rosa Unit Nos. 80C and 166C
Well Pads and Pipeline Ties

Williams Production Company, LLC
&
Williams Four Corners, LLC

BLM EA No. NM-F010-2011-198 & 204

Well Pad Surface Locations:

Sections 8 and 30, Township 31 North, Range 05 West

New Mexico Principal Meridian,
Rio Arriba County, New Mexico

U.S. Department of the Interior
Bureau of Land Management
Farmington Field Office

April2011

Table of Contents

Page

1.0 Introduction.....1

1.1 The Proposal I

1.2 Purpose and Need 1

1.3 Conformance with Applicable Land Use Plan and Other Environmental Assessments 2

1.4 Federal, State, or Local Permits, Licenses, or Other Consultation Requirements.....2

2.0 Alternatives Including the Proposed Action.....3

2.1 Alternative A- No Action 3

2.2 Alternative B - Proposed Action 3

2.3 Alternatives Considered but not Analyzed in Detail.....13

3.0 Description of Affected Environment 15

3.1 Air Resources 16

3.2 Surface and Groundwater Quality and Quantity 19

3.3 Hazardous or Solid Waste Materials.....19

3.4 Environmental Justice/Socio-Economics 20

3.5 Cultural Resources.....20

3.6 Native American Religious Concerns.....21

3.7 Federally Listed Threatened or Endangered Species 22

3.8 Invasive, Non-Native Species 24

3.9 Mineral Resources/Geology 25

3.10 Soils 25

3.11 Watershed/Hydrology.....26

3.12 Vegetation/Forestry 27

3.13 Wildlife 27

3.14 Migratory Birds 28

3.15 Range 31

3.16 Special Management Species.....31

3.17 Wild Horses and Burros 34

3.18 Visual Resources 34

3.19 Noise 35

3.20 Paleontology .....

35
4.0 Environmental Consequences 36
4.1 Air Quality 37
4.2 Surface and Groundwater Quality and Quantity 39
4.3 Hazardous or Solid Waste Materials 40
4.4 Environmental Justice/Socio-Economics 40
4.5 Cultural Resources 41
4.6 Native American Religious Concerns 41
4.7 Federally Listed Threatened or Endangered Species 42
4.8 Invasive, Non-Native Species 42
4.9 Mineral Resources/Geology 42
4.10 Soils 43
4.11 Watershed/Hydrology 44
4.12 Vegetation/Forestry 44
4.13 Wildlife 44
4.14 Migratory Birds 46
4.15 Range 47
4.16 Special Management Species 47
4.17 Wild Horses and Burros 48
4.18 Visual Resources 48
4.19 Noise 49
4.20 Paleontology 50
4.21 Residual Effects SO

4.22 Cumulative Effects 51
5.0 Consultation/Coordination 53
6.0 References 54
APPENDIX A 58
SELECTED LAWS AND REGULATIONS GOVERNING.....
FEDERAL OIL AND GAS DEVELOPMENT 58
APPENDIX B.....60
SURVEY PLATS 60
APPENDIX C 69
BLM-FFO Noise NTL (04-02 FFO).....69
APPENDIX D 75
PHOTOGRAPHS OF PROPOSED ACTION AREA 75
APPENDIX E 80
BIOLOGICAL SURVEY REPORT 80

Mancos and Blanco Mesaverde/Basin Dakota gas from valid and existing federal leases, NMSF 078763and NMSF 078764, issued in 1948. Williams is the lessee of record and shares operating rights for these leases. The BLM is authorized under the Mineral Leasing Act of 1920 (MLA), as amended (30 United States Code [USC] 181 et seq.), to issue oil and gas leases for exploration and development. The existing leases constitute a binding legal contract that allows for mineral development by the lease holder. Approved APDs, issued by the BLM, would authorize the applicant to construct, drill, operate, and finally abandon the proposed wells and any associated facilities. The associated natural gas pipeline ties would allow for natural gas to be produced from the proposed wells.

BUREAU OF LAND MANAGEMENT
FARMINGTON FIELD OFFICE

ENVIRONMENTAL ASSESSMENT
for
WILLIAMS PRODUCTION COMPANY, LLC
Rosa Unit Nos. SOC and 166C
WELL PADS
&
WILLIAMS FOUR CORNERS, LLC
PIPELINE TIES

1.0 Introduction

1.1 The Proposal

Williams Production Company, LLC (Williams) has Applications for Permit to Drill (APDs) with the Bureau of Land Management, Farmington Field Office (BLM-FFO) for a Basin Mancos/Blanco Mesaverde/Basin Dakota gas well (Rosa Unit No. 166C) and for a Blanco Mesaverde/Basin Dakota gas well (Rosa Unit No. 80C). These wells would be twinned with existing Rosa Unit well pads. The proposed actions would include the construction, drilling, production, nd final abandonment of these wells and associated well pads, and the construction, operation, and final abandonment of two natural gas pipeline ties. Williams Four Comers, LLC has two right-of-way (ROW) applications with the BLM-FFO for the associated natural gas pipeline ties, which would be necessary to deliver natural gas from the wells into the existing pipeline infrastructure. The surface and minerals associated with the proposed actions are managed by the BLM-FFO.

This site-specific analysis tiers into and incorporates by reference the information and analysis contained in the Farmington Resource Management Plan/Environmental Impact Statement (RMP/EIS) approved as per the September 29, 2003 Record of Decis ion (ROD) as the Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/FEIS), pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21 (BLM 2003a). This document is available for review at the Farmington Field Office, Farmington, New Mexico, Mexico or on the World Wide Web at http://www.nm.blm.gov/ffo/ffo_home.html. This environmental assessment (EA) addresses site-specific resources and effects of the proposed actions that were 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 United States Code [USC] 4321 et seq.).

1.2 Purpose and Need

The purpose ofthe proposed actions would be to produce Blanco Mesaverde/Basin Dakota/Basin

1.3 Conformance with Applicable Land Use Plan and Other Environmental Assessments

The regulations under 43 CFR 1610.5 requires the proposed actions to be in confonnance with the terms and the conditions of the RMP/EIS as approved by the ROD signed September 29, 2003 (BLM 2003b). Specially Designated Areas (SDAs) and Areas of Critical Environmental Concern (ACECs) for the proposed action areas were identified in the PRMP/FEIS under authority of the Federal Land Policy and Management Act (FLPMA) of 1976 (Public Law 94-579,43 USC 1701 et seq.), allowing for multiple use of lands administered by the BLM. The proposed Rosa Unit No. 166C is within the Rosa Mesa SDA (Figure 2, page 6). The proposed Rosa Unit No. 80C is not within the Rosa Mesa SDA, but is 0.41 mile south-southeast of the Bancos No. 5 Core Bald Eagle ACEC (Figure 4, page 8).

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

Williams and Four Comers would comply with all applicable federal and State of New Mexico laws and regulations (Append ix A). Non-point source pollution is an identified problem in the planning areas that are directly associated with soil stability and water quality. The New Mexico Energy, Minerals and Natural Resources Department requires operators to follow "pit rule" guidelines contained within NMAC 19.15.17 in an effort to reduce ground water contamination from industry related activities. Mandated by the Clean Water Act (CWA), efforts to reduce non-point source pollution through implementation of erosion control and management practices are an important part of the BLM's management activities. Industrial activities disturbing land may require permit coverage through a National Pollution Discharge Elimination System (NPDES) stonn water discharge. Oil and gas development, however, is exempt from NPDES regulation per 40 CFR Part 122. A U.S. Army Corps of Engineers Section CWA 404 Pennit 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.

Consultation with the U.S. Fish and Wildlife Service (USFWS), as required by Section 7 of the Endangered Species Act, was conducted as part of the Farmington RMP/EIS (Consultation No. 2-22-01-1-389) to address cumulative effects of RMP implementation. The consultation is summarized in Appendix M of the RMP/EIS. Review of current USFWS Federally Listed Species and onsite evaluation of habitat for the proposed action indicate no need for additional Section 7 consultation.

Compliance with Section 106 responsibilities of the National Historic Preservation Act are adhered to by following the BLM-New Mexico State Historic Preservation Officer (NM 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 Council of State Historic Preservation Officers.

The State of New Mexico Oil Conservation Commission (NMOCC) has assigned spacing rules for producing oil and gas fonnations. Current spacing for the Blanco Mesaverde/Basin Mancos/Basin Dakota fonnations is 80 acres per four wells.

Additionally, the APD Operator would:

> Comply with all applicable Federal, State ofNew Mexico, and local laws and regulations. A listing of selected federal laws and regulations applicable to the proposed actions can be found in Appendix A.

Obtain applicable permits for the construction, drilling, completion, production, and final abandonment of these wells including water rights appropriations, water discharge permits, relevant air quality permits, and permits associated with the installation of water management facilities.

2.0 Alternatives Including the Proposed Action

2.1 Alternative A - No Action

The BLM NEPA Handbook (H-1790-1) states that for EAs on externally initiated proposed actions, the No Action Alternative generally means that the proposed activities would not take place. This option is provided in 43 CFR 3162.3-1 (h)(l). This alternative would deny the approval of the proposed APDs and current land and resource uses would continue to occur in the proposed action areas. No mitigation measures would be required. The No Action Alternative provides a reference, enabling decision makers to compare the magnitude of environmental effects of the alternatives.

2.2 Alternative B- Proposed Action

General Location and Description

Williams has proposed the construction, drilling, production, and final abandonment of two natural gas wells and the construction, operation, and fmal abandonment of two associated well pads. Williams Four Comers, LLC has proposed the construction, operation, and final abandonment of two associated pipeline ties. The actions are proposed for summer/fall 2011.

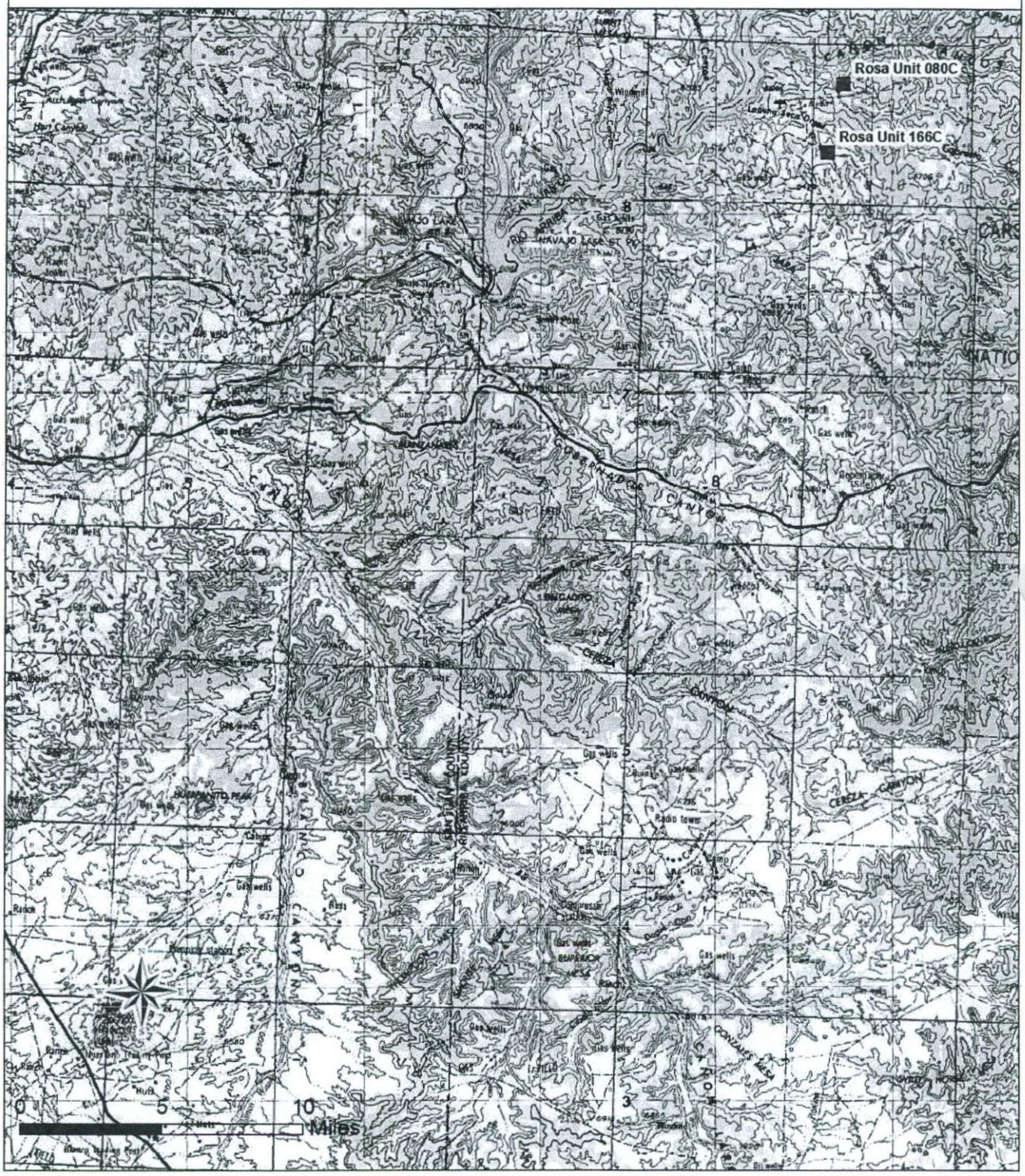
Both proposed wells would be twinned with existing Rosa Unit well pads. The existing Rosa Unit No. 166 pad would be enlarged to accommodate the Rosa Unit No. 166 proposed well. The existing Rosa Unit No. 379A pad would not need to be enlarged to accommodate the proposed Rosa Unit No. 80C well. No new access roads would be necessary.

Proposed Rosa Unit Well Number	Rosa Unit Well Twin Number
80C	379A
166C	166

Alternative B (Proposed Actions)

The Proposed Rosa Unit No. SOC action area is located in the San Juan Basin of northwestern New Mexico; approximately 27.4 miles northeast of the town of Blanco (see Figure 1, page 5). The proposed action area is plotted on the Bancos Mesa Northwest, New Mexico, 7.5-minute United States Geological Service (USGS) quadrangle map (see Figure 2, page 6). The proposed site is located on top of a cliff overlooking Cabresto Canyon to the west. Topography slopes to the west and southwest from the proposed location off the precipitous slope into Cabresto Canyon. Elevation is 6259 feet. All of the proposed action activities would take place within the previously disturbed area of the existing well pad, the Rosa Unit No. 379A. Habitat surrounding the existing disturbance is pinon-juniper woodland.

Figure 1: Project Area Map
Williams Production Company, LLC
Rosa Unit No.s 080C and 166C
T31N R5W Sections 8 and 30
Rio Arriba County, New Mexico



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Directional drilling would be utilized. The surface location for the Rosa Unit 80C would be 1095 feet from the south line (FSL) and 1670 feet from the west line (FWL) of Section 8, Township 31 North, Range 05 West, New Mexico Principal Meridian (NMPM), Rio Arriba County, New Mexico. The bottom hole location would be 1650 feet FSL and 330 feet FWL of Section 8.

The proposed Rosa Unit No. 166C action area is also located in the San Juan Basin of northwestern New Mexico, approximately 25.5 miles northeast of the town of Bianco (see Figure 1, page 5). The proposed action area is plotted on the Gomez Ranch, New Mexico, 7.5-minute USGS quadrangle map (see Figure 2, page 6). Topography is gently rolling with a slope to the west into a well-defined drainage that is within 50 feet of the proposed location. Elevation is 6,362 feet. Most of the proposed action would take place on the previously disturbed areas of the existing Rosa Unit No. 166 well pad. Habitat surrounding the existing disturbance is open sagebrush shrubland with scatted pinon pine.

Directional drilling would be utilized. The surface location for the proposed action area would be 1165 feet from the north line (FNL) and 1045 feet from the east line (FEL) of Section 30, Township 31 North, Range 05 West, NMPM, Rio Arriba County, New Mexico. The bottom hole location would be 330 feet FNL and 330 feet FEL of Section 30.

Figure 2: Vicinity Map Williams Production Company, LLC Rosa Unit No.s 080C and 166C T31N R5W Sections 8 and 30 Rio Arriba County, New Mexico

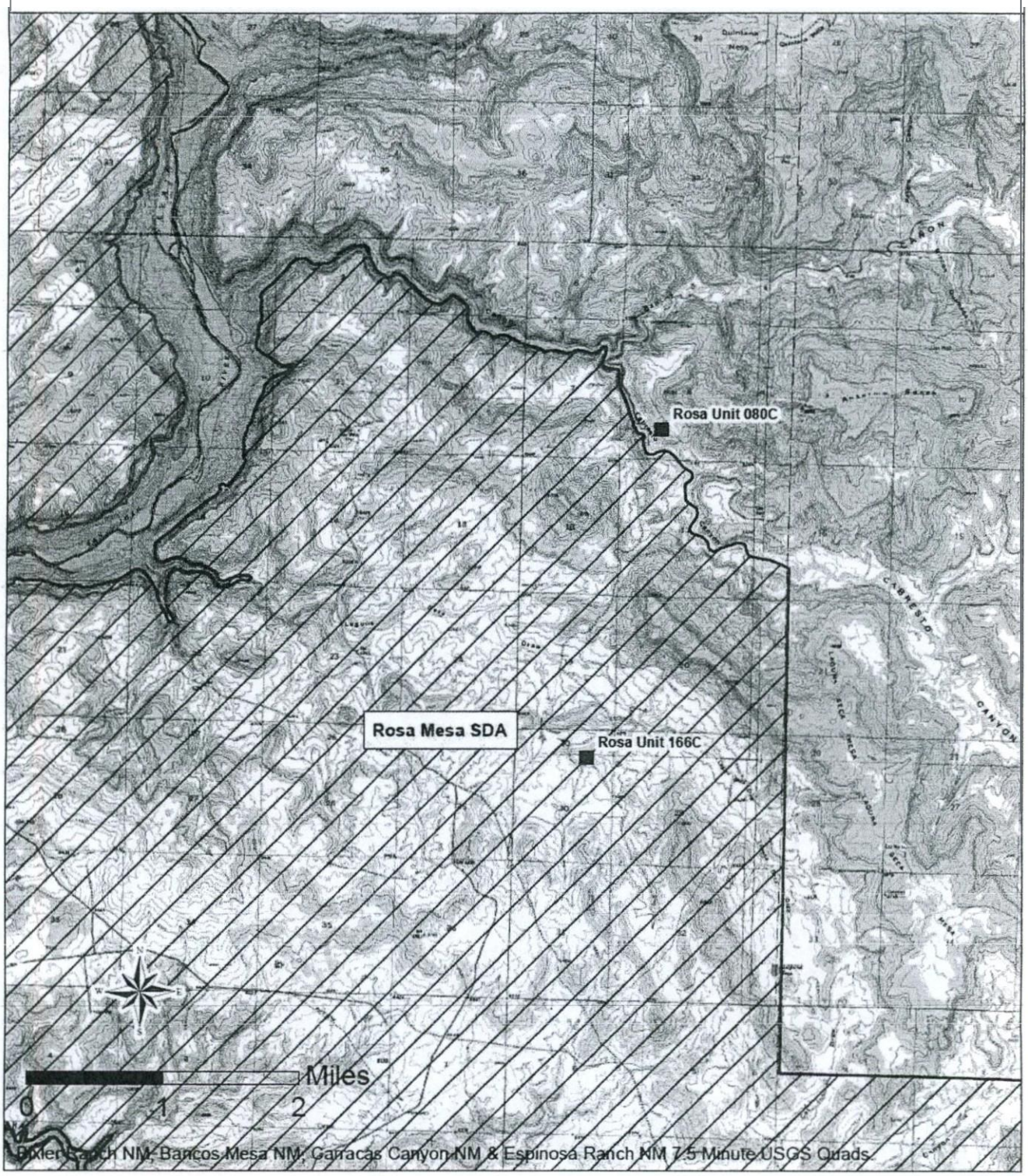
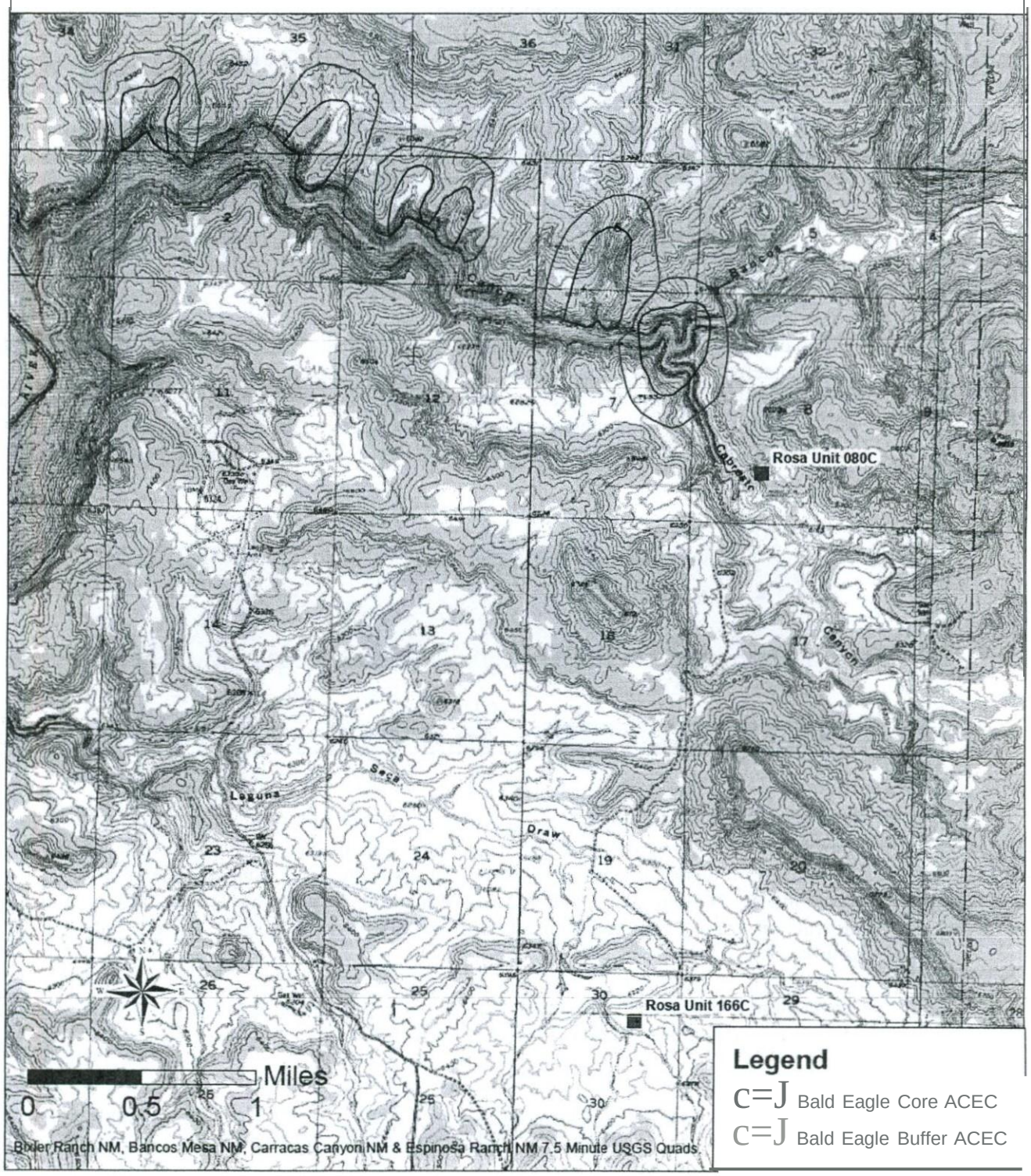


Figure 3: Orthophoto Map Williams Production Company, LLC Rosa Unit No.s 80C and 166C T31N R5W Sections 8 and 30 Rio Arriba County, New Mexico

Figure 4: Core Bald Eagle Areas of Environmental Concern
Williams Production Company, LLC
Rosa Unit No.s 080C and 166C
T31N R5W Sections 8 and 30
Rio Arriba County, New Mexico



Construction Phase

Disturbance acreage and construction details for the proposed actions (Alternative B) have been separated below into two sections (Tables 2.1 - 2.2). Combined disturbance totals for both proposed actions have been tabled in Table 2.0.

TABLE 2.0- ALTERNATIVE B COMBINED DISTURBANCE

Project Component	Previous/ Existing Disturbance Acreage	New Disturbance Acreage	Totals
2 Well Pads	3.14	0.79	3.93
2 Gas Pipeline Ties	0.19	0	0.19
TOTALS	**3.33**	**0.79**	**4.12**

Proposed Rosa Unit No. 80C

The maximum, permitted disturbance associated with this proposed action would be approximately 1.42 acres under the assumption of a 40-foot wide pipeline ROW grant. Because all well pad and pipeline tie disturbance would take place within the boundaries of the existing well pad, there would be no new disturbance. The approximate acreage of disturbance associated with this proposed action is summarized in Table 2.1 below. Survey plats are provided in Appendix B.

TABLE 2.1

Project Component	Previous/ Existing Disturbance Acreage	New Disturbance Acreage	Totals
Well Pad	1.33	0	1.33
Gas Pipeline Tie	0.09	0	0.09
TOTALS	**1.42**	**0**	**1.42**

Well Pad (1.33 acres)

Alternative B would take place entirely within the existing footprint of disturbance from the Rosa Unit No. 379A well pad. Clearing the existing well pad is necessary to provide space for a drilling rig, completion rig, and other heavy equipment to access and drill the proposed well. The Rosa Unit No. 80C proposed well pad would measure 245 feet by 210 feet. There would be no construction zone. Maximum disturbance would be 1.33 acres. There would be no new disturbance.

The maximum cut and fill measurements do not apply to this location, as it would be located within the exact footprint of an existing level well pad.

Access Road

The existing access road to existing Rosa Unit well No. 379A would be used to access the proposed action area. No new access road construction would be necessary.

Gas Pipeline Tie (0.09 acre)

Once the proposed well is completed, 99.7 feet of associated pipeline route would be constructed, connecting the proposed Rosa Unit No. SOC to the existing Rosa Unit No. 379A pipeline. The pipeline would have a 40-foot-wide ROW. The maximum disturbance resulting from the pipeline tie would total 0.09 acre. The proposed pipeline tie would be contained on the proposed and/or existing well pad. There would be no new disturbance resulting from the installation of the pipeline tie.

For a detailed description of design features and construction practices associated with this proposed action, refer to the subject APDs on file at the BLM-FFO, Farmington, New Mexico. Recommended mitigation measures would be implemented as Conditions of Approval (COAs) to the APDs.

Below are site-specific construction mitigation measures determined for the proposed action, per the April 06, 2011 onsite meeting:

);> GENERAL CONSTRUCTION:

- The top six (6) inches of topsoil would be stockpiled within the construction zone; this topsoil would be utilized during reclamation.
- Above-ground structures would be painted to blend with the natural color of the landscape (Green federal Standard 595a-34127).
- Low-profile equipment would be utilized on the location.
- Noise stipulations would apply to the proposed location.
- Drainages, culverts, silt traps, and other applicable BMPs would be installed as necessary for proper drainage and sedimentation management.
- Drainages would be determined or re-established upon reclamation.

);> PITS:

- The reserve pit would be lined with an impervious material, at least 12 millimeters thick.
- All pits would meet State of New Mexico, Oil Conservation Division (NMOCD) pit guidelines and rules, NMAC 19.15.17.
- Upon final reclamation of the reserve and blow pits, pits would be filled utilizing existing disturbance only.
- Cut material from the reserve and bum pits would be stockpiled on the location or used to construct back-walls of the bum pit.
- A tight sheep fence would be constructed around three sides of the pit during drilling and completion, and around the fourth side after the completion rig leaves the wellhead. The fences would remain until the pits are dried and backfilled.

Proposed Rosa Unit No. 166C

The maximum, permitted disturbance associated with the proposed action would be approximately 2.70 acres under the assumption of a 40-foot wide pipeline ROW grant. Actual new disturbance would be approximately 0.79 acre. The approximate acreage of disturbance

associated with this proposed action ts summarized m Table 2.2, below. Survey plats are provided in Appendix B.

TABLE 2.2

Project Component	Previous/ Existing Disturbance Acreage	New Disturbance Acreage	Totals
Well Pad	1.81	0.79	2.60
Pipeline Tie	0.10	0	0.10
TOTALS	**1.91**	**0.79**	**2.70**

Well Pad (2.60 acres)

The proposed action would include the expansion of an existing well pad using a D-8 bulldozer. Clearing for the well pad is needed to provide space and a level surface for a drilling rig, completion rig, and other heavy equipment to access and drill the proposed well. The Rosa Unit No. 166C proposed well pad would measure 225 feet by 250 feet with a 50-foot construction zone perimeter, for a total of approximately 2.60 acres. The proposed well pad would overlap an existing well pad and access road. Existing disturbance within the proposed action area from the existing well pad (Rosa Unit No.166) would be 1.81 acres. Actual acreage of new disturbance would be 0.79 acre.

The maximum cut would be 8 feet on the northeastern comer (No. 6). The maximum fill would be 1 foot on the southeastern comer of the proposed well pad (No. 2).

Access Road

The existing access road to the existing Rosa Unit No. 166 would be used to access the proposed action area. No new access road construction would be necessary.

Pipeline Tie (0.10 acre)

Once the proposed well is completed, an associated pipeline route would be constructed, connecting the proposed Rosa Unit No. 166C to the existing Rosa Unit No. 166 pipeline. Rosa Unit No. l66C would have 112.7 feet of associated pipeline.

The pipeline tie would have a 40-foot-wide ROW. The maximum disturbance resulting from the pipeline tie would total 0.10 acre. The proposed pipeline tie would be contained on the proposed and/or existing well pad. There would be no new disturbance resulting from the installation of the pipeline tie.

For a detailed description of design features and construction practices associated with the proposed action, refer to the subject APDs on file at the BLM-FFO, Farmington, New Mexico. Recommended mitigation measures would be implemented as COAs to the APDs.

Below are site-specific construction mitigation measures determined for the proposed action, per the April 06, 2011 onsite meeting:

GENERAL CONSTRUCTION:

11

Well Pads and Pipeline Ties

- Excavated materials from cuts would be used on fill portions of the location.
- The top six (6) inches of topsoil would be stockpiled within the construction zone; this topsoil would be utilized during reclamation.
- Trees six (6) inches in diameter or greater would be cut, delimbed, and stacked. Remaining debris would be mowed, mulched, and incorporated into the topsoil.
- Low-profile equipment would be used.
- Above-ground structures would be painted to blend with the natural color of the landscape (Green Federal Standard 595a-34127).
- Drainages, culverts, silt traps, and other applicable BMPs would be installed as necessary for proper drainage and sedimentation management.
- Drainages would be detennined or re-established upon reclamation.

PITS:

- The reserve pit would be lined with an impervious material, at least 12 millimeters thick.
- All pits would meet State of New Mexico, Oil Conservation Division (NMOCD) pit guidelines and rules, NMAC 19.15.17.
- Upon final reclamation of the reserve and blow pits, pits would be filled utilizing existing disturbance only.
- Cut material from the reserve and burn pits would be stockpiled on the location or used to construct back-walls of the burn pit.
- A tight sheep fence would be constructed around three sides of the pit during drilling and completion, and around the fourth side after the completion rig leaves the wellhead. The fences would remain until the pits are dried and backfilled.

Drilling Phase

After each well pad is constructed, a drilling rig would be moved onto the location and assembled. Drilling to the Basin Mancos/Blanco Mesaverde/Basin Dakota fonnations would require approximately 14 days. After each well has been drilled, completion would take approximately 14 additional days. Construction, drilling, and completion are expected to require four to eight weeks total. During this phase, both heavy equipment and light vehicles would use existing BLM roads to access the well site. Traffic would include drilling rigs, large tractor-trailers, construction equipment, water trucks, drilling and production equipment, tanks, and numerous light pick-ups.

Production Phase

Interim Reclamation

After the wells are completed, interim reclamation would occur. During interim reclamation, portions of the proposed action areas not required for production equipment and vehicular access would be reclaimed. Of the 0.79 acre of new disturbance for the proposed actions, approximately 0.2 acre would be required for long-term production. Per the onsite meeting, interim reclamation would occur as follows:

- Reclaimed slopes would be recontoured to pre-construction topographical contours.
- All disturbed areas not needed for production would be seeded with Rosa seed mixture, containing native species only.

Equipment Onsite

Production equipment may be required to conform to BLM-FFO Noise Notice to Lessees (NTL) standards. The well production equipment that would remain onsite would include the following:

- Dual wellhead
- Production unit separator
- Cathodic station with solar panel
- Meter run with electronic telemetry
- One to two 500-barrel storage tanks
- Possibly a compressor, to assist in bringing fluids and gas to the surface. The compressor size would be dependent upon production.

Activities

After production of the wells begins, normal upkeep would be required. Typically, one pick-up truck would come to each well site approximately every two days during the normal work week to check on production and resolve any problems that may occur at the well. Occasionally, a work-over rig would be required for downhole maintenance. Surface impacts of a work-over rig would be similar to the effects described for drilling, although usually to a lesser degree. The estimated production phase of a well is 20 to 30 years.

Abandonment Phase

When the wells are no longer commercially viable, they would be plugged and abandoned as follows:

- Downhole well abandonment would be carried out under current BLM-FFO regulations for well plugging and surface restoration.
- Surface equipment would be removed, except for an aboveground marker that would contain individual well identification information, including the location of the plugged holes.
- The well pads, if not needed for other purposes, would be recontoured and revegetated as specified in the approved COA.
- The underground pipeline ties would typically be plugged and left in place.

2.3 Alternatives Considered but not Analyzed in Detail

Alternatives to the proposed actions were considered. No other economically feasible alternative surface locations were identified that would create less disturbance than the proposed actions and more suitably reach the targeted formation and drilling windows.

Utilizing a vertical drilling option to access the two targets would ultimately result in greater disturbance overall. Through the use of directional drilling, impacts would be lessened by decreasing the amount of surface development that would be necessary in order to access the formations. Directional drilling would allow the proposed wells to be

twinned with existing wells, utilizing existing well pad and access road disturbance. No new access roads or off-pad pipeline tie disturbance would be required.

Several technical factors must be considered before deciding on the use of directional applications. Factors such as reservoir depth, angle of deviation, lateral displacement, completion technique, and risk must all be considered. In addition, operating factors such as production efficiency; rod, pump, and tubing wear; and workover frequency must also be a consideration.

Generally, directional well completion and operating costs are 20 to 25 percent higher than vertical well drilling. The primary economic factors that determine the feasibility of directional applications include, but are not limited to, the following:

- Incremental drilling, completion, and operating costs
- Oil and gas reserves
- Rates of production
- Oil and gas pricing
- Royalties and taxes
- Return on investment

3.0 Description of Affected Environment

This section describes the environment that may be affected by implementation of the proposed actions and any alternatives described in Section 2. If they are present, critical resource elements require analysis under BLM policy. These elements are included below in Table 3.0. Following the table, only those resources that have the potential to be affected by the proposed actions are discussed.

TABLE 3.0 – DETERMINATION OF RESOURCES WITHIN THE PROPOSED ACTION AREAS

RESOURCE	POTENTIAL TO OCCUR IN THE PROPOSED ACTION AREAS OR TO BE AFFECTED BY THE PROPOSED ACTIONS	FURTHER ANALYSIS?
CRITICAL RESOURCE ELEMENTS		
Air Resources	Construction activities and well production facilities are potential emission sources.	YES
Surface and Groundwater Quality and Quantity	Construction activities may result in sedimentation, which could affect water quality downgradient of the proposed action areas.	YES
Hazardous and Solid Wastes	Some oil and gas constituent wastes could be subject to regulations as hazardous substances under CERCLA.	YES
Environmental Justice/Socio-Economics	The regional population includes minority and low-income groups.	YES
Cultural Resources	A project-specific cultural resources inventory is required for all ground-disturbing activity.	YES
Native American Religious Concerns	Native American Religious Concerns have been evaluated on a regional and local scale within the BLM- FFO management area. These concerns be anal in detail on a basis.	YES
Federally Listed Species	Federally Listed Species habitat is present within BLM-FFO boundaries and evaluated on a project-specific basis.	YES
Jnvasive, Non-native Species	The potential for introduction of invasive, non-native species exists through ground disturbance, as well as through transportation of and facilities.	YES
Areas of Critical Environmental Concern	The proposed Rosa Unit No. SOC action area is located within 0.41 mile of an ACEC.	YES
Wilderness	The proposed action areas are not located in or near a designated Wilderness Area, nor would they affect any Wilderness Areas.	NO
Wild and Scenic Rivers	No Congressionally-designated or potentially eligible Wild and Scenic Rivers exist within BLM-FFO boundaries; such areas would be affected the actions.	NO
Floodplains	No floodplains (as defined by Executive Order No. 11988) are present in the proposed action areas; such areas would not be affected the actions.	NO
Farmlands, Prime and Unique	No farmlands (as defined by 30 U.S.C. 1201 et seq. and 7 U.S.C. 4202 et. seq.) are present in the proposed action areas; such areas would not be affected the actions.	NO

Well Pads and Pipeline Ties

Wetlands/ Riparian Zones	The proposed action areas are located in an upland setting with no surface water resources, seeps, or springs present; no such resources would be affected by the proposed actions.	NO
	NON-CRITICAL RESOURCE ELEI\1ENTS	
Mineral Resources/ Geology	The proposed actions are intended to extract local mineral resources.	YES
Soils	Well pad construction includes the disturbance, mixing, and compaction of local soils.	YES
Watershed/ Hydrology	Alterations to soils and vegetation may result in sedimentation downgradient of proposed action areas, consequently affecting local hydrology.	YES
Vegetation/ Forestry	Construction may include the removal of some local vegetation, ultimately changing the s pecies composition.	YES
Wildlife	The proposed Rosa Unit No. 166C is located within Rosa Mesa Wildlife SDA. The proposed actions may result in net habitat loss.	YES
Migratory Birds	The proposed actions may result in net habitat loss.	YES
Range	The proposed actions are located within a grazing allotment, and livestock may be present during construction activities and access road use.	YES
Special Management Species (SMS)	SMS habitat is present within BLM-FFO boundaries and is evaluated on a project-specific basis.	YES
Wild Horses and Burros	Wild horses or burros are present in the proposed action areas or alternative locations.	YES
Recreation	The proposed action areas are not located within designated recreation areas.	NO
Visual Resources	The proposed actions would result in visual scarring and a change in local topography. Production facilities may result in a long-term change in landscape views.	YES
Noise	Construction, drilling, and production activities and facilities may result in a change in area noise.	YES
Paleontology	All BLM-FFO lands are designated as Very High Potential paleontological resource areas, thus requiring an assessment at the project level.	YES

3.1 Air Resources

The proposed wells 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 ($C0_2$) methane (CRt); nitrous oxide (N_2O); water vapor; and several trace gases on global climate. Through complex interactions on a global scale, GHG emissions may cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia (along with corresponding variations

in climatic conditions), industrialization and burning of fossil carbon sources have caused GHG concentrations to increase measurably, and may contribute to overall climatic changes, typically referred to as global wanning.

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 eight-hour standard of0.075 parts per million (ppm). In addition, on October 17,2006, the EPA issued a fmal ruling on the lowering of the NAAQS for particulate matter measuring 2.5 microns (PM2.5) or smaller. This ruling became effective on December 18, 2006. It stated that the 24-hour standard for PM2.5 was lowered to 35 micrograms per cubic meter (ug/m^3) from the previous standard of 65 ug/m^3. This revised NAAQS was promulgated to better protect the public from short-term particle exposure.

Increased development in the Four Comers 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 be seen in the skies, impacting visibility, and there are concerns for the ecosystem due to the deposition of mercury and nitrogen.

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

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

The EPA has the primary responsibility for regulating air quality, including the regulation of seven nationally regulated ambient air pollutants. Regulation of air quality is also delegated to some states, including New Mexico. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology, and terrain. Air quality 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.

Air Quaiity

The proposed action area is within 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 proposed action area is generally good. The proposed action area is not within an EPA-designated "non-attainment area" 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

into space. Although GHG levels have varied for millennia (along with corresponding variations

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 transport 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-hour 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 of there are no ozone monitors sited in Rio Arriba County.

Greenhouse gases, including CO_2 and CRt, and the potential effects of GHG emissions on climate, are not regulated by the EPA under the Clean Air Act. However, climate has the potential to influence renewable and non-renewable resource management. The EPA's Inventory ofU.S. Greenhouse Gas Emissions and Sinks found that in 2007, total U.S. GHG emissions were over 7 billion metric tons and total U.S. GHG emissions increased by 17 percent between 1990 and 2007. Emissions increased from 2006 to 2007 by 1.4 percent (99.0 Tg CO2 Eq.). The following factors were primary contributors to this increase: (I) 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 GHGs results in behavioral and industrial adaptations.

Climate

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. Global mean surface temperatures have increased nearly 1.0° C (1.8° F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). In 2007, the Intergovernmental Panel on Climate Change (JPCC) predicted a warming of about 0.2° C per decade for the next two decades, and then a further warming of about 0.1o 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 1he summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. Observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere.

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

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 mean annual temperatures have exceeded the global averages by nearly 50 percent since the 1970s (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 Surface and Groundwater Quality and Quantity

The proposed action areas are in the Colorado River Drainage Basin, in which the Animas and San Juan Rivers are the largest perennially flowing streams. Most stream and wash channels in the region are ephemeral. The proposed actions are within the Navajo Reservoir Watershed of the San Juan River Hydrologic Region. Natural soil erosion compounded by man-made barren surfaces and historic livestock grazing has led to high sedimentation of drainages. The quantity of surface water can reach flash flood levels during thunderstorms or rapid snowmelts. Runoff and sedimentation in washes during precipitation events can be considerable. Generally, surface water quality in drainages is extremely poor following storm/flood/rapid snowmelt events. Key features that adversely influence the surface water quality include ephemeral water sources, sparse vegetative cover, highly erosive and saline soils, and rapid runoff. Erosion conditions promote the formation of canyons, arroyos, and gullies, further contributing to poor water quality.

The BLM-FFO has estimated that surface runoff frequently contains more than 10,000 milligrams per liter (mg!L) of suspended sediment and more than 1,000 mg!L total dissolved solids (TDS). Public Law 93-320 mandated control of salinity runoff into the Colorado River Basin. A 1984 amendment to the Colorado River Salinity Control Act of 1974 "...specifically requires the Director of the BLM to develop a comprehensive program for minimizing salt contributions to the Colorado River and their tributaries from BLM administered lands" (BLM 1988). No specific quantifiable water quality or quantity data for the proposed action areas are available.

Groundwater supplies are deep and limited. The major groundwater aquifer beneath the proposed action areas is the alluvium and fluvial sandstones of the San Jose Formation. Aquifers within this formation produce from shallow zones of 200 to 600 feet, but useable water can occur at up to 3,000 feet. Both the San Jose and Ojo Alamo Formations also contain useable aquifers. The Nacimiento Formation produces water of lower quality.

3.3 Hazardous or Solid Waste Materials

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

from climate change, some of which are already occurring. These effects include,

waste that is (1) 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. A 1980 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, the 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 the 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.

3.4 Environmental Justice/Socio-Economics

On February 11, 1994, the President issued Executive Order No. 12898 concerning Environmental Justice and impacts on minority and low-income populations. The purpose of this order is to identify and address disproportionately high or adverse human health and environmental effects from programs, policies, or activities on minority or low-income populations.

In the region around the proposed actions, statistically significant populations include Native Americans, Hispanics, and white Euro-Americans. Some members of these populations are within financially low-income groups. Rio Arriba County has produced oil and gas resources for over 40 years. The extraction of this resource is an income source to the local communities as well as to Rio Arriba County, the State of New Mexico, and the federal government. Many County and local contractors and their employees are employed in some aspect of the oil and gas industry.

3.5 Cultural Resources

The proposed action areas are located within the archeologically rich San Juan Basin. The pre-history of the San Juan Basin can be divided into five major periods:

- Paleolndian (cs. 10,000 B.C. to 5,500 B.C.)
- Archaic (ca. 5,500 B.C. to A.D. 400)
- Baskctmakcr II-III and Pueblo I-IV periods (A.D. 1 to 1540),
- Historic - Native American as well as later Hispanic and Euro-American settlers (A.D. 1540 to present)

Detailed descriptions of these various periods, and the select phases within each period, are provided in the BLM-FFO's PRMP/FEIS (BLM 2003b). This information 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 2003:3-88). The proposed action areas are within the Navajo Reservoir Watershed. Based on the CRTR, a total of 3106 sites, representing 4329 temporaVcultural components, have been documented within the watershed (BLM 2003b). Of the 19 categories of sites defmed based on temporaVcultural affiliation, 17 are represented in the watershed. Lacking in the watershed are sites attributed to Paleo and Ute occupations. The most frequently occurring cultural affiliations are Basketrnaker II through Pueblo IlJ (65%) period components and Dinetah/Gobemador (16%) period components (BLM 2003b:3-9). Features common to these sites include hearths, middens, and pithouses.

A BLM Class I literature review was conducted by La Plata Archaeological Consultants (LAC) prior to the cultural resources inventory for the proposed actions. Within this review area there are 22 documented sites within a quarter-mile of the proposed action areas.

The proposed action areas and cultural buffer zones were surveyed at a BLM Class III level (100%) by LAC. Two inventory reports, LAC Report No. 2004-28e and LAC Report 2004-54j, were prepared and submitted to the BLM-FFO in accordance with the *Procedures for Performing Cultural Resources Fieldwork on Public Lands in the Area of New Mexico BLM Responsibilities* (BLM 2005). No cultural sites or isolated manifestations were found during the cultural surveys of the proposed action areas (BLM Report No. 2004(IV)157F and BLM Report No. 2005(III)039F).

3.6 Native American 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 assoc1atwns are the "communities" most likely to identity 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 (ArRFA; 42 USC 1996, P.L. 95-431 Stat. 469):
    1. Possession of sacred items
    2. Performance of ceremonies
    3. Access to sites
- Executive Order 13007 (24 May 1996):
    1. Access and use of sacred sites
    2. 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
    - Objects of cultural patrimony
- The Archaeological Resources Protection Act of 1979 (ARPA; 16 USC 470, Public Law 96-95):

    Protection of archaeological resources on Federal and Indian lands

For the proposed action, identification of TCPs was limited to reviewing existing published and unpublished literature (Val Valkenburgh 1941, 1974; Brugge 1993), 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. There are no known TCPs within the proposed action areas (Copeland 2011).

3.7 Federally Listed Threatened or Endangered Species

According to the USFWS, there are five federally listed Threatened or Endangered species, and five Candidate listed species, and one proposed listed species, with potential to occur in Rio Arriba County, New Mexico. Table 3.1, below, lists these species along with their status, habitat, and potential to occur within the proposed action areas.

TABLE 3.1: FEDERALLY LISTED (USFWS) THREATENED, ENDANGERED, AND CANDIDATE SPECIES WITH POTENTIAL TO OCCUR IN RIO ARRIBA COUNTY, NEW MEXICO

Species	Federal Status	Habitat	Potential to Occur in Proposed Action Areas (PAAs)
FISH			
Rio Grande cutthroat trout *(Oncorhynchus clarki virginalis)*	Candidate	Small streams and lakes at high elevations (7,500 - 10,750 feet)	DOES NOT OCCUR: No streams within the PAAs or within the immediate vicinity ofPAAs
Rio Grande silvery minnow *(Hybognathus amarus)*	Endangered	Streams with slow to moderate current over silty or sandy substrate; depth of stream typically less than 50 em Current known distribution: perennial sections of Rio Grande and associated canals	DOES NOT OCCUR: No streams within PAAs or within the immediate vicinity of the PAAs
Roundtail chub *(Gila robusta)*	Candidiate	Rocky runs, rapids, and pools of creeks and small to large rivers.	DOES NOT OCCUR: No streams within the PAAs or within the immediate vicinity ofPAAs
BmDS			
Interior least tern *(Sterna antillarum)*	Endangered	Lakes and rivers with sandy beaches and mudflats; Nesting: riverine sandbars or salt flats Winters: out of region	DOES NOT OCCUR: No lake or river margins with suitable habitat within PAAs or within immediate vicinity ofPAAs
Mexican spotted owl *(Strix occidentalis Iucida)*	Threatened with Critical Habitat	Old growth or mature forests with complex structural components (uneven aged stands, high canopy closure, multi-storied levels, high tree density), preferring canyons with riparian or conifer habitats Nesting: trees, cliff ledges, or caves	DOES NOT OCCUR: No structurally complex forests or riparian/conifer canyons within the PAAs or within immediate vicinity of the PAAs
Mountain plover *(Charadrius montanus)*	Proposed	High plains/short-grass prairie, plowed fields, and desert tablelands; commonly found in prairie dog towns.	DOES NOT OCCUR: No short-grass prairie, plowed fields, tablelands, or prairie dog towns occur within the PAAs or within the immediate vicinity ofthe PAAs
Southwestern willow flycatcher *(Empidona:x traillii extimus)*	Endangered with Critical Habitat	Breeding: Dense, riparian habitats Winters: out of region	DOES NOT OCCUR: No riparian areas within PAAs or within immediate vicinity of PAAs
Yellow-billed cuckoo *(Coccyzus americanus)*	Candidate	Breeding: tall cottonwood, mature willow riparian, or deciduous woodlands; moist thickets; orchards; or	DOES NOT OCCUR: No cottonwood, riparian, or deciduous woodlands; moist thickets; orchards; or

Species	Federal Status	Habitat overgrown pastures Winters: out of region	Potential to Occur in **Proposed Action Areas (PAAs)** overgrown pastures within PAAs or within the immediate vicini ofthe PAAs
MAMMALS			
Black-footed ferret *(Muste/a nigripes)*	Endangered	Grasslands, steppe, and shrub steppe; closely associated with prairie dog colonies (preferably colonies Jar er than 80 hectares	DOES NOT OCCUR: No prairie dog burrows within PAAs or within the immediate vicini ofPAAs
New Mexican meadow jumping mouse *(Zapus hudsonius luteus)*	Candidate	Sedge-forb-willow zones along permanent streams, large wet meadows within river floodplains, narrow riparian zones alona irri ation ditches.	DOES NOT OCCUR: No riparian habitat occurs within the PAAs or within the immediate vicinity of PAAs
AMPHIBIANS			
Jemez Mountains salamander *(Plethodon neomexicanus)*	Candidate	Mixed conifer habitat with abundant rotted logs and surface rocks; vegetation is dominated by Douglas-fu-, spruce, ponderosa pine, white fu-, with occasional as en.	DOES NOT OCCUR: No mixed conifer forest habitat occurs with the PAAs or within the immediate vicinity ofthe PAAs.

Species Considered in Further Detail

No federally listed species have the potential to occur within the proposed action areas. There was no evidence of any federally listed species within the proposed action areas. Please refer to the Biological Species Report (Appendix E) for a complete account of flora and fauna.

3.8 Invasive, Non-Native Species

Management of invasive and non-native species is mandated under the Lacey Act, as amended; the Federal Noxious Weed Act of 1974, as amended; and Executive Order 13112, Invasive Species (February 3, 1999). Invasive plants are found in the San Juan Basin, particularly in areas disturbed by surface activities. These plants displace native plant communities and degrade wildlife habitat. A total of 212 invasive and poisonous weeds have been identified on public land administered by the BLM-FFO (Heil and White 2000).

No federally listed noxious or invasive weed species were observed within the proposed action areas. Cheatgrass *(Bromus tectorus)*, a state-listed noxious weed, was present in the project areas. Russian thistle *(Sa/sola iberica)* was also present in the project areas; although not a listed species, it can out-compete native plant populations.

3.9 Areas of Critical Environmental Concern

The proposed Rosa Unit No. 80C action area is located approximately 0.41 mile from the buffer zone of the Bancos No.5 Bald Eagle ACEC. This ACEC is managed "to protect the most important bald eagle wintering habitat, as well as [to protect]...the bald eagles that use these areas in the winter." The following management prescriptions are applicable to the proposed project:

- Existing oil and gas leases are managed under Controlled Surface Use constraints, including timing limitations from November 1 through March 31 in buffer areas.
- New oil and gas leases are managed under Controlled Surface Use constraints, including timing limitations from November 1 through March 31 in buffer areas.
- Noise stipulations apply (See Chapter 4, 4.9).

3.10 Mineral Resources/Geology

The San Juan Basin holds the second largest accumulation of natural gas in the country in Upper Cretaceous sandstone reservoirs of the Pictured Cliff, Mesa Verde Group, Gallup, and Dakota sandstone. These Cretaceous formations deposited in marine environments in the Western Interior Seaway are conventional sources of natural gas, and range in depth from 2500 to 8000 feet throughout the basin. Most wells permitted in the New Mexico portion of the basin are conventional. New Mexico alone provides approximately 95% of the San Juan Basin production.

Coalbed methane is a more recent development of an unconventional source of natural gas, in that the natural gas is methane associated with coal beds found in the Upper Cretaceous Fruitland Formation. The Fruitland and overlying Kirtland Formations both contain coal beds that are mined for coal-f!red power plants. Coalbed methane wells tend to be shallower, especially along the northeastern edge of the basin, and thus extract large amounts of produced water during production. Coal seam sources contribute more than 60% of the basin total output, with New Mexico accounting for approximately 53 percent of the volume.

Surface geology of the proposed action areas is of the Tertiary San Jose Formation. The San Jose is the uppermost formation in the Basin proper, consists of a sequence of interbedded sandstones and mudstones, and generally forms cliffs with some slopes. It consists of several distinctive members. The Cuba Mesa Member is a 100- to 300-foot-thick single and multiple sheet sandstone, which grades laterally into the Regina Member. The Regina Member consists of green, gray, purple, and yellow mudstone interbedded with lenticular sandstone. The Llaves and Tapicots Members cap the high mesas in the area. The Llaves Member consists of cliff-forming conglomerate and thickly bedded sandstones. The Tapicitos Member is characterized by brick red mudstone and light red sandstone. Separation of these two members is difficult, as they are interbedded. The San Jose Formation thickness ranges from 200 feet in the west and south to 2700 feet near Cuba and Gobernador, New Mexico. This formation outcrops generally east of Aztec, New Mexico and the western part of Rio Arriba County, to near Dulce, and covers the Carson National Forest, much of the Jicarilla Apache Reservation, the Navajo Reservoir area, and the Animas River drainage from Bondad Hill, Colorado south to Aztec.

The San Jose Formation was deposited in a sandy, braided river system with overbank floodplain deposits of mudstones and shales. Some of the variegated red and green mudstones with burrowing and root traces are indicative of paleosol development. Fossil-plants and non-marine invertebrates and vertebrates suggest a humid forested environment.

3.11 Soils

The Soil Conservation Service (now the Natural Resource Conservation Service [NRCS]) has surveyed the soils in the proposed project area. Complete soil information is available in the Soil Survey of Rio Arriba County Area, New Mexico, developed by the United States Department of

Well Pads and Pipeline Ties

Agriculture, NRCS. Soils of the proposed action areas are mapped as the Orlie fine sandy loam, 1 to 8 percent slopes (Rosa Unit No. SOC) and San Mateo sandy loam, 0 to 3 percent slopes (Rosa Unit 166C).

Proposed Rosa Unit No. SOC:
Orliefine sandy loam is found on valley sides and mesa tops. This soil ranges from well drained to somewhat excessively drained on valley sides and hillsides. The parent material primarily consists of alluvium and eolian material derived from sandstone and shale. This soil has a deep structure (greater than 60 inches to underlying rock), which is moderately permeable. Available water capacity is very high with a moderate shrink-swell potential. This soil is moderately susceptible to water erosion. The major use of this soil type is livestock grazing. The potential plant community is characterized by western wheatgrass, Indian ricegrass, needle and thread, galleta, and big sagebrush.

Proposed Rosa Unit No. 166C:
San Mateo sandy loam is found in valley floodplains. The parent material is alluvium derived from sandstone and shale. The typical profile is 3 inches of brown, sandy loam; 3 to 8 inches of pale brown, fine, sandy loam; 8 to 15 inches of pale brown, sandy loam; 15 to 46 inches of brown, clay loam; and 46 to 60 inches of pale brown, clay loam. The available water capacity is high, the permeability is moderately slow, and the soil is moderately sodic. Potential for water erosion is slight: The major use of this soil type is livestock grazing with a potential plant community of alkali sacaton, western wheatgrass, galleta, bottlebrush squirreltail, and four-wing saltbush.

3.12 Watershed/Hydrology

The proposed action areas are located in the Navajo Reservoir Watershed. In the Navajo Reservoir Watershed, the San Juan River arm is the major surface waterway. The San Juan River is a major tributary to the Colorado River. Its headwaters are in the San Juan Mountains of southwestern Colorado, north of Pagosa Springs. From its headwaters, the San Juan River flows south and enters northwestern New Mexico through Navajo Reservoir, or Navajo Lake. Navajo Darn has controlled flow in the San Juan River since 1963, when it was constructed by the Bureau of Reclamation for irrigation, sediment and flood control, and recreation. The San Juan-Chama Project has diverted water upstream of Navajo Dam east to the Rio Grande drainage since 1971. Since 1976, water from Navajo Reservoir has been diverted to irrigate land on the Navajo Indian Irrigation Project, which is south of the San Juan River on Mesa Portales. There are several major tributaries of the San Juan River that flow into Navajo Reservoir. From the north, the Pine River flows into Navajo Reservoir in Colorado; Negro Andy, and Cottonwood Canyon flow into the Reservoir in New Mexico. Canon Bancos, Cabrestro Canyon, and Laguna Seca, all ephemeral streams, flow into the Reservoir from the east and southeast in New Mexico. Frances Canyon and La Jara Creek flow into the lake from the south. Landowners/managers surrounding the Reservoir include private individuals, the BLM-FFO, the Bureau of Reclamation, Carson National Forest, and the Jicarilla Apache Indian Tribe.

Proposed Rosa Unit SOC:
These proposed action area is located above a cliff overlooking Cabresto Canyon to the west. Drainage flows off the proposed site for approximately 0.1 mile into Cabresto Canyon. Cabresto Canyon flows approximately 1.2 miles north-northwest into Navajo Reservoir.

Proposed Rosa Unit 166C:

Drainage from this location flows to the west and southwest approximately 50 feet into an unnamed tributary of Laguna Seca Draw. This tributary flows north-northwest for approximately 1.12 miles into Laguna Seca Draw. Laguna Seca Draw flows into Navajo Reservoir approximately 3 miles to the west.

3.13 Vegetation/Forestry

The vegetation within the proposed action areas is composed of two community types: mature pinon-juniper woodlands and open sagebrush shrubland. Pinon-juniper woodlands and big sagebrush areas on Rosa Mesa have been manipulated in the past to enhance forage for both livestock and wildlife.

The Rosa Unit No. SOC's proposed location is on an existing well pad. The existing reclaimed well pad surface has yet to meet revegetation success parameters. Ground cover ranges from 0 to 30 percent. New grasses were beginning to emerge and had been heavily grazed at the time of the early April survey. Cheatgrass was detected. Habitat surrounding the existing well pad is pinon-juniper woodland. Vegetation within this community is typically composed of a pinon-juniper *(Pinus edulis – Juniperus osteosperma, J. monosperma)* overstory. Common understory shrubs and grasses include big sagebrush *(Seriphidium tridentatum)*, broom snakeweed *(Gutierrezia sarothrae)*, rabbitbrush *(Chrysothamnus* spp.), four-wing saltbush *(Atriplex canescens)*, galleta *(Hilaria jamesii)*, Indian ricegrass *(Achnatherum hymenoides)*, blue grama *(Bouteloua gracilis)*, squirreltail *(Elymus elymoides)*, three-awn *(Aristida purpurea)* and western wheatgrass *(Pascopyrum smithii)*. Yucca *(Yucca angustissima)*, agave *(Agave* sp.), and prickly pear cactus *(Opuntia* spp.) are present. Common forbs include Russian thistle *(Sa/sola iberica)*, cryptantha *(Cryptantha* sp.), and wooly plantain *(Plantago patagonica)*. Ground cover varies from 25 to 35 percent. Where this community has been previously altered for livestock and wildlife grazing, the tree overstory has been diminished and the browse species have been increased. Crested wheatgrass *(Agropyron crista/urn)* is common.

The Rosa Unit No. 166C's proposed location is on and adjacent to an extstmg well pad. Dominant flora species detected within the reclaimed well pad surface include crested wheatgrass, blue grama, and Russian thistle. Reclamation has been successful, with ground cover ranging from 20 to 85 percent. Habitat surrounding the existing well pad is open sagebrush shrubland. This habitat is typically composed of very scattered pinon and juniper trees, with the dominant species being big sagebrush. Other shrub species include rabbitbrush species and broom snakeweed. Forb species include daisy *(Erigeron* sp.), goosefoot *(Chenopodium* sp.), alyssum *(Alyssum* sp.), hairy golden aster *(Heterothica vil/osa)*, and redstem filaree *(Erodium cicutarium)*. Grasses include Indian ricegrass, galleta, western wheatgrass, cheatgrass, and blue grama. Ground cover varies from approximately 25 to 45 percent. Where this community has been previously altered for livestock and wildlife grazing, crested wheatgrass is common.

The Biological Survey Report (Appendix E) provides a list and description of local flora.

3.14 Wildlife

Rosa Unit No. 166C is within the Rosa Mesa Wildlife SDA. Rosa Unit No. SOC is not within an SDA.

The Rosa Mesa Wildlife SDA encompasses 69,762 acres. Of this, 47,375 acres are on public land and 61,406 acres have federal minerals. This area is heavily used by mule deer during the winter. Their distribution is often dependent upon the severity of the winter and human activities.

During hard winters, the deer push further south, beyond the boundaries of the currently identified critical big game habitat.

The management goal of Rosa Mesa Wildlife Area SDA is "to protect and preserve wildlife habitat" (BLM 2003b). Management prescriptions related to oil and gas development in this SDA include the following:

- For new and current oil and gas leases, seasonal timing limitations exist on drilling and construction from December 1 through March 31 in the area north of Frances Canyon Wash and south of Cabresto/Bancos Canyons.
- New oil and gas leases are managed under a Controlled Surface Use constraint.
- ROWs are allowed on a case-by-case basis with special management constraints and mitigation.
- Visual Resource Management Class III and IV designations are implemented.
- Key browse species are managed to meet the needs of wintering deer. This includes big sagebrush, antelope bitterbrush, and mountain mahogany.

The proposed action areas are within New Mexico Department of Game and Fish (NMDGF) Management Unit 2B. The NMDGF monitors big game population trends in the area. Depending on winter weather conditions and snow depths, deer and elk move on to their winter ranges from high elevations during late November and December, and move out in March or April. Twenty-five years of NMDGF aerial survey information for Unit 2 indicates that mule deer and elk winter populations have fluctuated over the years, but no evident trend seems apparent in the proposed action areas. Deer numbers counted appear to be most strongly linked with the severity of winter conditions. The data does not appear to support any cause or effect relationship between wintering deer populations and the level of oil and gas development. Elk numbers also fluctuate with severity of winter, but general trends observed over the years, combined with the professional observations of BLM-FFO staff, indicate that elk use and resident elk populations have expanded in the BLM-FFO jurisdictional area during the past 25 years (BLM unpublished file records).

A number of species use the pinon-juniper habitat and associated rocky outcrops common to the area. (USDI BOR 2008). Perching birds (passerines) are common throughout the proposed action areas. Other common wildlife within the proposed action areas includes desert cottontail *(Sylvilagus audubonii)*, black-tailed jackrabbit *(Lepus californicus)*, and coyote *(Canis latrans)*. Several species of raptors are commonly observed, including red-tailed hawk *(Buteo jamaicensis)*, Swainson's hawk *(Buteo swainsoni)*, American kestrel *(Falco sparverius)*, golden eagle *(Aquila chrysaetos)*, prairie falcon *(Falco mexicanus)*, osprey *(Pandion haliae/us)*, great homed owl *(Bubo virginianus)*, and western screech owl *(Megascops kennicotti)* (USDI BOR 2008). No prairie dog *(Cynomys* spp.) towns are known to occur within the proposed action areas.

The Biological Survey Report (Appendix E) provides a list and description of local fauna.

3.15 Migratory Birds

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Executive Order 13186 (EO) was signed on January 10, 2001 directing executive departments and agencies

of the federal government to take certain actions to further implement the MBTA. Section 3 of the EO directed each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement, within two years, a Memorandum of Understanding (MOU) with the USFWS that shall promote the conservation of migratory bird populations. Section 3(c) of the EO states that the MOU shall recognize that the agency may not be able to implement some elements of the MOU until such time as the agency has successfully included the elements in that agency's formal planning process (such as revision of agency land management plans), including public participation and NEPA analysis as appropriate.

A National MOU between the BLM and the USFWS was signed on April 12, 2010. Included in the MOU is the stipulation that the BLM evaluate effects of projects on migratory birds. The BLM should identify where take may have a measurable negative effect on populations, focusing first on species of concern, priority habitats, and key risk factors. The BLM will then implement approaches to lessen such take.

The BLM-FFO has consulted the Partners in Flight Bird Conservation Plan for the State of New Mexico and the USFWS's list of Birds of Conservation Concern. A review of these documents, specifically as they pertain to the Colorado Plateau physiographic area, indicates there are seven (7) "priority" avian species that utilize the pinon-juniper habitat type and seven (7) species that utilize the Great Basin desert shrub habitat type. The selected species have a known distribution in the BLM-FFO area and may be affected by various types of perturbations. These species and a brief assessment of the effects of the proposed action on their habitat are as follows:

TABLE 3.2- MIGRATORY BIRDS WITH POTENTIAL TO OCCUR WITHIN PROPOSED ACTION AREAS

Species		Potential to Occur in Proposed Action Areas (PAAs)
Ash-throated flycatcher *(Myiarchus cinerascens)*	-juniper, and riparian woodlands	LIKELY: Pinon-juniper woodland found in PAA.
Bendire's thrasher (*Toxostoma bendirei)*	Brushy desert, especially areas of tall vegetation, cholla cactus, creosote bush, and yucca.	UNLIKELY: No brushy desert areas with appropriate vegetation found within PAA.
Black-throated gray warbler *(Dendroica nigrescens)*	Pine and mixed oak-pine woodlands.	LIKELY: Pinon-juniper woodland found in PAA.
Black-throated sparrow *(Amphispiza bil*	Xeric desert habitats dominated by shrubs with bare, open ground.	UNLIKELY: No xeric desert habitats within PAA.
Burrowing owl *(Athene cunicularia)*	Open grasslands or desert scrub; presence of suitable nest burrow is critical prerequisite (often prairie dog burrows).	UNLIKELY: No active prairie dog burrows or other suitable nesting burrows found within PAA.
Cassin's kingbird *(Tyrannus vociferans)*	Open country with scattered trees or open woodlands, including pii'lon-juniper.	LIKELY: Open pinon-juniper woodland found in PAA.
Gray flycatcher *(Empidonax wrightii)*	Open pinon-juniper forest, often with interspersed ponderosa, with an understory of shrubs.	LIKELY: Open pinon-juniper woodland found in PAA.
Gray vireo *(Vireo vicinior)*	Desert scrub, mixed juniper or pinon pine and oak scrub associations, and chaparral in hot, arid mountains and h· scrubland.	LIKELY: Pifion-juniper woodland found in PAA.
Juniper titmouse *(Baeolophus idgwayi)*	Warm, dry, open woodland, especially juniper woodlands.	LIKELY: Open pinon-juniper woodland found in PAA.
Loggerhead shrike *(Lanius ludovicianus)*	Relatively xeric habitats dominated by shrubs and grasses.	UNLIKELY: PAA does not contain xeric habitat dominated by shrubs and grasses.
Pii'lonjay *(Gymnorhinus*	Pinon-juniper woodland, sagebrush, - scrub oak, and chaparral communities· sometimes · forests.	LIKELY: Pii'lon-juniper woodland found in PAA; pinon jay identified within PAA.
Sage sparrow *(Amphispiza bell*	Sagebrush-grassland habitat.	UNLIKELY: Limited sagebrush-grassland habitat within PAA.
Sage thrasher *(Oreoscoptes m ontanus)*	Large sagebrush plains.	UNLIKELY: No large sagebrush plains habitat found within PAA.

Biological surveys were conducted on April 06, 2011. Avian species detected during the biological surveys include:

Rosa Unit No.SOC-
American robin *(Turdus migratorius)*, Townsend's solitaire *(Myadestes townsendi)*, common raven *(Corvus corax)*, and house finch *(Carpodacus mexicanus)*.

Rosa Unit No.166C-
Sage sparrow *(Amphispiza belli)*, common raven, and rock wren *(Salpinctes obsoletus)*.

A Biological Survey Report, which provides more detailed information regarding migratory birds, is provided in Appendix E.

3.16 Range

There are 167 grazing allotments managed by the BLM-FFO, 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 (4) 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, New Mexico area.

The proposed action areas lie within Grazing Allotment No. 505, Rosa Community, a 21,458-acre allotment currently leased to Richard Hodgson and Santiago Velasquez. This allotment is split into two (2) authorizations. Both are 100% public lands. Authorization 3020588 is permitted for 66 head of cattle from May 1 to October 31, annually; a total of 399 federal Animal Unit Months (AUMs) are provided by this authorization. Authorization 3020592 is permitted for 193 head of cattle from May 1 to October 31, annually; a total of 1,168 federal AUMs are provided. No permanent livestock water sources are within the immediate areas.

3.17 Special Management Species

The BLM-FFO has prepared a list of special management species (SMS) to focus species management efforts toward maintaining habitats under a multiple-use mandate. The authority for this policy and guidance is established by the ESA; Title II of the Sikes Act, as amended; the FLPMA of 1976; and Department ofInterior Manual235.1.1A. BLM-FFO SMS are listed in the below table, along with their habitat requirements and potential to occur within the proposed action areas.

Table 3.3. BLM-FFO SMS

Species	Habitat	Potential to Occur in Proposed Action Area (PAAs)
Aztec gilia *(Aliciella formosa)*	Sandy-clay hills of the Nacimiento formation, desert scrub habitat, elevation 5000-6400 ft.	UNLIKELY: The PAAs are not within the BLM-FFO-designated potential habitat "zone" for this species. Geology is not Nacimiento. Habitat is not desert scrub.
Brack's fishhook cactus *(Sclerocactus cloveriae* var. *brackii)*	Sandy-clay hills of the Nacimiento formation, desert scrub habitat, elevation 5000-6400 ft.	UNLIKELY: The PAAs are not within the BLM-FFO-designated potential habitat "zone" for this species. Geology is not Nacimiento. Habitat is not desert scrub.
American peregrine falcon *(Falco peregrinus anatumj*	Rugged, semi-open to wooded areas, including open forests, farmlands, and cities. Nesting: Locally, typically ledges on vertical cliffs.	POSSIBLE: PAAs are within open sagebrush shrubland, which could be used for foraging. No nesting ledges or rock faces within PAA.
Bald eagle *(Haliaeetus leucocephalus)*	Typically within 2.5 *mi* of river or lake that supports fish or waterfowl, but may be in areas where other resources (such as carrion) available.	POSSIBLE: PAAs are within 2.5 mi from river or lake that supports fish or waterfowl. Bald eagles could potentially use the PAA for winter foraging.
Burrowing owl *(Athene cunicularia)*	Open grasslands. Nesting: abandoned animal burrows.	UNLIKELY: No open grasslands within PAAs. No prairie dog colonies or other appropriate burrows within PAAs.
Ferruginous hawk *(Buteo regalis)*	Open country, including prairies, badlands, sagebrush shrubland, desert scrub, and the periphery of pinon- juniper woodlands. Nesting: lone trees, cliff ledges, rock spires, or powerline towers.	UNLIKELY: The sagebrush shrubland within in PAA does not contain habitat characteristics indicative of this species habitat. No lone trees, cliff ledges, rock spires, or powerline towers available for nesting.
Golden eagle *(Aquila chrysaetos)*	Open country, including open forests. Nesting: Cliff ledges or scattered large trees.	POSSIBLE: PAAs are within open sagebrush shrubland, which could be used for foraging. No nesting ledges or trees within PAAs.
Mountain plover *(Charadrius montanus)*	Areas with very short vegetation, >30% bare ground, and flat to gentle slopes.	UNLIKELY: Habitat within PAAs does not include very short vegetation or >30% bare ground.
Prairie falcon *(Falco mexicanus)*	Arid, very open areas, particularly areas with short vegetation, scrub habitat, or large areas of bare ground.	UNLIKELY: No short-grass habitat, scrub habitat, or areas of bare ground within PAAs.
Yellow-billed cuckoo *(Coccyzus americanus)*	Cottonwood woodlands, willow riparian woodlands, deciduous woodlands, moist thickets, orchards, or overgrown pastures.	WOULD NOT OCCUR: No cottonwood, riparian, or deciduous woodlands; moist thickets; orchards; or overgrown pastures within PAAs.

Sources: NatureServe 20I0, New Mexico Rare Plants Technical Council 2005, Wheeler 2003

According to the most recent BLM-FFO raptor nest geographic information system (GIS) data, no active raptor nests are located within 1/3 mile of the proposed action areas.

American peregrine falcon *(Falco peregrinus anatum)*
Peregrine falcons may be found in the region year-round (Wheeler 2003). Peregrine falcons prefer open habitats, such as tundra, moorlands, steppe, seacoasts, mountains, open forests, and human population centers (NatureServe 2010). In the interior U.S., during the summer, this species can be found in rugged, semi-open and wooded, often montane regions. They prefer areas with rocky cliffs, outcrops, and canyons (greater than 30-feet high) adjacent to lakes, rivers, or streams. They often nest on ledges or holes on the faces of rocky cliffs (at least 30 feet high) or crags, on river banks, on tundra mounds, in open bogs, in tree hollows, in other species' large stick nests, and on man-made structures. Locally, nests are typically found on ledges of vertical rocky cliffs. During the winter, lower-elevation pairs may remain in summer breeding habitat, while higher-elevation or northern latitude pairs may move south or to lowland habitat that often lacks cliffs (Wheeler 2003).

The open sagebrush shrubland habitat within the proposed action area could potentially provide foraging habitat for this species. However, no nesting habitat is provided. No evidence of this species was observed during the surveys of the proposed action areas.

Table 3.4

Rosa Unit Nos.	Approximate Distance to Nearest Recorded Per rine Falcon Nest
SOC	15.5 miles West ofPAA
166C	15 miles West of PAA

Bald eagle *(Haliaeetus leucocephalus)*
Bald eagles are typically found in northwestern New Mexico only during the winter (Wheeler 20b:;j.' They typically prefer habitat within 2.5 miles of coastal areas, bays, rivers, lakes, or other bodies of water that provide fish or waterfowl (NatureServe 2010). However, during the winter, if sufficient prey is available, eagles may be found in areas that lack water (Wheeler 2003). This species prefers to roost in conifers or other sheltered sites in the winter. Communal roost sites, used by two or more eagles, are common. Bald eagles typically avoid areas with nearby human activity and development (NatureServe 2010).

The proposed action areas could potentially be used during winter foraging. No bald eagles were observed during the survey of the proposed action area.

The proposed Rosa Unit No. SOC action area is located approximately 0.41 mile from a Bald Eagle ACEC (refer to Section 3.9). Noise stipulations would apply to this location.

Table-3.5

Rosa Unit Nos.	Approximate Distance to Nearest Core Bald Eagle ACEC
SOC	0.41 mile South-southwest ofPAA
166C	2.6 miles North ofPAA

Golden eagle *(Aquila chrysaetos)*
Golden eagles may be found in northwestern New Mexico year-round (Wheeler 2003). Golden eagles are generally found in open country, including prairies, tundra, open wooded areas, and

barren areas. They prefer hilly or mountainous regions (NatureServe 2010). They may be found in areas with light agricultural use, but are rarely found in rural areas. They prefer areas with elevated perches. Nesting birds will utilize embankments or cliffs, or flat to moderate areas with scattered large trees. During the summer, they may be found above timberline; in the winter, they are typically only found below timberline, and may be found in moderate agricultural areas (Wheeler 2003).

No golden eagles or nests were observed during the biological survey of the proposed action area.

Table 3.6

Rosa Unit Nos.	Approximate Distance to Nearest Recorded Golden Eagle Nest
80C	18 miles West of PAA
166C	16 miles West-southwest ofPAA

3.18 Wild Horses and Burros

A small herd of wild horses exists within the project areas. This herd roams throughout the Rosa Unit between public lands within the proposed action area and National Forest Service lands to the east. Generally, the wild horses utilize the lower elevation canyons on the public lands (Eul, Bancos, and Cabresto Canyons) during winter months, and summer on higher elevation National Forest Service lands. A 1995 memorandum of understanding between the U.S. Forest Service and the BLM-FFO targets 23 head of wild horses yearlong to be maintained on the public lands. However, it is estimated that 70 head of wild horses are resident on public lands and the wintering herd may be up to ISO head (USDA personnel communications August 2009a). The U.S. Forest Service completed an environmental assessment for the management of the Jicarilla wild horse territory on 2004. From this assessment, the U.S. Forest Service is managing the wild horse herd at a population level of between 50 to I05 horses within the designated Jicarilla Wild Horse Territory (USDA 2004a). No analogous plan is currently in place for the public lands within the proposed project area.

Wild horse sign was detected on the proposed action areas.

3.19 Visual Resources

The BLM has developed a Visual Resource Management (VRM) classification designed to maintain or enhance visual qualities and describe the different degrees of modification to the landscape.

The proposed Rosa Unit No. SOC is located within VRM Class II. Class II is managed to retain the existing character of the landscape. The level of change to the landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of fonn, line, color, and texture found in the predominant natural features of the characteristic landscape (2003 RMP/FEIS).

The proposed Rosa Unit No. 166C is located within VRM Class IV. Class IV allows for major modifications of the characteristic landscape and the level of change in the basic landscape elements due to management activities can be high.

3.20 Noise

Increases in the level of sound (noise) generated from the production and pipeline transportation of oil and gas has occurred in the San Juan Basin over the last several years. These increases are generated primarily from the escalating need to use equipment such as compressors and pumping units, which operate on a continual basis. The increase in noise affects natural resource values and management of a number of agency SDAs, ACECs, research natural areas (RNAs), etc. The proposed Rosa Unit No. 166C action area is located within the Rosa Mesa Wildlife SDA; no noise stipulations apply within this SDA. The proposed Rosa Unit No. 80C action area is located within one mile of a Bald Eagle ACEC; noise stipulations apply to this area.

3.21 Paleontology

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 BLM-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 2008-0 II). The proposed action areas are located within the paleontological rich area of the San Juan Basin of northern New Mexico.

The proposed actions would be assessed individually based on the BLM's PFYC system, known paleontological locality information, existing reports, and data for the area. If preliminary analysis indicates that the proposed actions fall within a Paleontology SDA or have a high probability of impacting paleontological resources, additional surveys, reporting, and stipulations would be required.

The San Jose Formation found within the proposed project areas is not known to contain any paleontological resources. Fossils could occur within or proximate to the proposed action areas.

4.0 Environmental Consequences

Alternative A- No Action Alternative

Under the No Action Alternative, Alternative B for the project would not be realized. There would be no new impacts from oil and gas production to surface resources. The No Action Alternative would result in the continuation of the current land and resource uses in the action areas. This alternative would result in no effects to the resources within the proposed action areas or potential impacts from the proposed actions. Therefore, the No Action Alternative would result in no effect under each resource discussed within this section.

Alternative B -Proposed Action

Under Alternative B (the proposed actions), the proposed actions listed, including site-specific mitigation measures, would occur. For a complete description of the proposed actions see Section 2.2, Alternative B – Proposed Action.

Effects or impacts can either be long term (permanent or residual) or short term (incidental or temporary). Short-term impacts affect the environment for only a limited period of time; the environment reverts to pre-action conditions (usually within one (1) to three (3) years). Long-term effects are substantial and permanent alterations to the pre-existing environmental condition; the effects last longer than three (3) years. Table 4.0 below summarizes the long-term and short-term disturbances resulting from the proposed actions.

TABLE4.0 SUMMARY OF NEW DISTURBANCE- ALTERNATIVE B (PROPOSED ACTIONS)

Facility	Acreage of New Disturbance – Short term	Acreage of New Disturbance – Long term	Total New Disturbance Acreage
Well Pads			
SOC	0	0	0
166C	0.59	0.2	
Gas Pi			
SOC	0	0	
166C	0	0	0
TOTALS			

Potential disturbance resulting from the proposed action has been divided into three categories:

High — As defined in CEQ guidelines (40 CFR 1500-1508), effects that are substantial in severity and therefore should receive the greatest attention in decision-making.

Moderate	Effects that cause a degree of change that is easy to detect, but that do not meet the criteria for significant impacts.
Low	Effects that cannot be easily detected and that cause little change in the existing environment.

4.1 Air Quality

4.1.1 Direct and Indirect Effects

Air Quality

Air quality would temporary be directly impacted with pollution from exhaust emtsstons, chemical odors, and dust that would be caused by motorized equipment used during construction, and by the drilling rig that would be used to drill the wells. Dust dissemination would discontinue upon completion of the construction phase. Air pollution from the motorized equipment would discontinue at the completion of the drilling phase. The winds that frequent the northwestern part of New Mexico generally disperse the odors and emissions. Other factors that currently affect air quality in the area include dust from livestock-herding activities, recreational use, and vehicles on roads.

Over the last 10 years, the leasing of the federal oil and gas mineral estate within the BLM-FFO has resulted in an average of approximately 450 to 500 wells drilled on federal leases annually. These wells would contribute an incremental increase to the total emissions (including GHGs) from oil and gas activities in New Mexico.

Potential impacts of development could include increased airborne soil particles blown from new well pads or roads; exhaust emissions from drilling equipment, compressors, vehicles, and dehydration and separation facilities; and 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 BLM-FFO RMP demonstrated that 522 wells would be drilled annually for federal minerals. Current APD-permitting trends within the BLM-FFO 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 well would not have a measurable effect on climate change due to uncertainty and incomplete and unavailable information; therefore, it 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 well 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 fireplaces), and power plant emissions from the west are also patts of the equation. In August 2006, regional air quality modeling conducted for the Northern San Juan Basin Coal Bed Methane FEfS Project determined that potential cumulative visibility impacts to Federal Prevention of Significant Deterioration (PSD) Class I Areas (Mesa Verde National Park and the Wenimuche 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.

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 action 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 ELM's planning and NEPA documents as appropriate.

4.1.2 Mitigation

The BLM-FFO has been a participant in the Four Comers Air Quality Task Force (FCAQTF) since its inception in 2002, when it was known as the Four Comers Ozone Task Force. Because of the unanswered questions raised by modeling efforts, the FCAQTF has continued to look at air quality issues in the Four Comers region. The FCAQTF is comprised of a broad base of representatives including federal, state, Indian, and local governments; 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. This may include developing new regulations, 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 FEISIRMP and provisions in the ROD for the FEISIRMP 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 COA, which has been in effect since August 1, 2005. To date, NMAQB has made no other such requests.

Currently, development of 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 EISIRMP. The impacts forecast by the RFD are still valid. At the time the 2003 EISIRMP 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 U.S. sources of GHG gas emissions. The inventory identifies the contributions of natural gas and petroleum systems to total CO_2 and C emissions (natural gas and petroleum systems do not produce noteworthy amounts of any of the other GHGs). 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" subactivi ties 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 flaring hydrocarbons and gases at high temperatures in order to reduce emissions of incomplete combustion, requiring that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored, ensuring that compressor engines 300 horsepower or less have NOx emissions limited to 2 grams per horsepower hour, revegetating areas not required for production facilities to reduce the amount of dust, and watering dirt roads during periods of high use in order to reduce fugitive dust emission. The significant threshold for particulate matter of 35 ug/m^3 daily PM2.5 NAAQS is not expected to be exceeded under the proposed action.

The EPA data shows that improved practices, improved 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 BLM-FFO 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 Surface and Groundwater Quality and Quantity

4.2.1 Direct and Indirect Effects

Under the proposed actions (Alternative B), the disruption of area soils and the increase of barren surface would result in augmented surface flows with associated increased sedimentation and total dissolved solids (TDS). Sedimentation, resulting from both wind and water erosion, could be realized downgradient of the proposed actions. The quality and quantity of this surface sedimentation would be dependent upon wind and water events in relation to soil disturbance, the timing and success of reclamation, and erosion control configuration. Under the proposed actions (Alternative B), short- and long-term impacts to surface hydrology quality and quantity would be moderate.

Under the proposed actions (Alternative B), the storage of drilling fluids and improper well casing and cementing represents the potential for seepage of petroleum products to groundwater aquifers, such as the local San Jose Formation. Accidental spill or discharge of drilling and production fluids stored onsite is also a latent hazard, as displaced fluids could migrate to surface

or groundwater resources. With mitigation, short- and long-term effects to groundwater would be moderate under the proposed actions.

4.2.2 Mitigation

Under the proposed actions (Alternative B), the lining of the reserve pit and all other pits, and the berming of storage tanks would prevent fluid seepage into washes, surface water, or shallow groundwater.

Williams would set surface casing at a depth specified by the BLM-FFO to protect shallow groundwater aquifers. Fresh water for drilling and completion would be trucked to the location from permitted sources. Fluids either stored on location or associated with the pipeline would be contained in tanks during all operations. Large, permanent storage tanks(s) would be enclosed within compacted, gravel-covered, earthen berms to contain any potential spills. The swift implementation of mitigation measures outlined for soils, topography, and vegetation would also curtail short- and long-term impacts to surface and groundwater quality and quantity. Re-establishment of perennial vegetation and installation of functional erosion-control devices outlined in BLM BMPs would decrease long-term soil erosion impacts and, consequently, impacts to surface and groundwater resources from the proposed actions.

4.3 Hazardous or Solid Waste Materials

4.3.1 Direct and Indirect Effects

Typical wastes associated with the proposed actions would include trash, sewage, produced water, and produced hydrocarbons. With mitigation, impacts are expected to be low for the short and long term.

4.3.2 Mitigation

During drilling and completion, a trash receptacle and a chemically treated portable toilet would be on the locations 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 pits 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 site is required under the Comprehensive Environmental Response Compensation and Liability Act, 1980 (CERCLA) and under BNLM NTL-3A. The well locations would have an informational sign, as directed under 43 CFR 3160.

4.4 Environmental Justice/Socio-Economics

4.4.1 Direct and Indirect Effects

Local and regional companies may be employed during construction, drilling, and production of the proposed wells and associated facilities. This employment would result in an economic benefit to the local and regional community.

Under the proposed actions, no disruptions or disproportionate negative impacts to any of these communities or groups are anticipated. A moderate short-term increase in socio-economics is anticipated. The long-term increase in socio-economics is expected to be low for the proposed actions.

4.4.2 Mitigation

No disproportionate negative effects to these communities or groups are anticipated; therefore, no mitigation measures are proposed at this time.

4.5 Cultural Resources

4.5.1 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 actions is the increase in human activity or access to the areas 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 actions will have no effect on cultural resources (BLM Report Nos. 2004(IV)l57F and 2005(111)039F). This determination will be attached to the APD.

4.5.2 Mitigation

All BLM-FFO cultural resources stipulations would be followed as indicated in the Cultural Resource Records of Review, attached to the ROW/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 would 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).

In the event of a discovery during construction, the project proponent would 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 would be protected in place until mitigating measures can be developed and implemented acce:>rding to guidelines set by the BLM.

Ther I![O sites @£_ommended as eligible within the proje£t <!!"eas. There are no site-specific mitigation measures for the proposed actions.

4.6 Native American Religious Concerns

4.6.1 Direct and Indirect Effects

The proposed action is not known to physically threaten any TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere or otherwise hinder the performance of

traditional ceremonies and rituals pursuant to AIRFA or EO 13007. There are currently no known remains that fall within the purview ofNAGPRA or ARPA.

4.6.2 Mitigation

No site-specific mitigation measures have been recommended for the proposed actions.

4.7 Federally Listed Threatened or Endangered Species

4.7.1 Direct and Indirect Effects

No federally listed species were observed during field surveys of the proposed action areas. As required under Section 7 of the Endangered Species Act of 1973, the BLM-FFO submitted a Biological Assessment (BA) to the U.S. FWS in association with the BLM-FFO 2003 Draft RMP/Draft EIS. This assessment described the potential impacts on threatened and endangered species, as a result of management actions presented in the BLM-FFO Draft RMP/Draft ElS. In a letter dated October 2, 2002, the USFWS concurred with the BLM-FFO (Consultation No. 2-22-01-389). The USFWS states:

"The U.S. Fish and Wildlife Service (Service) concurs with the BLM's determination in the BA of "may affect, not likely to adversely affect" Knowlton cactus, Mesa Verde cactus, Mancos milkvetch, Colorado pikeminnow and its critical habitat, razorback sucker, bald eagle, mountain plover, Mexican spotted owl and its critical habitat, and the southwestern willow flycatcher."

Under Alternative B (the proposed actions), no further consultation with the Service would be required.

4.7.2 Mitigation

No federally listed species were observed during field surveys of the proposed action areas. If any threatened and/or endangered species were encountered during proposed activities, all activity would cease and the BLM-FFO would be immediately contacted.

4.8 Invasive, Non-Native Species

4.8.1 Direct and Indirect Effects

Under the proposed actions, indirect effects of increased human traffic in the area, especially any interstate traffic, may result in establishment of invasive/noxious weeds. Invasive/noxious plants generally out-compete native species where bare ground is created. Given successful mitigation measures, effects from invasive, non-native species are expected to be low for both the short and long term for the proposed action areas.

4.8.2 Mitigation

To assist in controlling invasive/noxious plants, the proposed action areas would be seeded with certified weed-free seed. It would be Williams Production Company's and Williams Four Comers' responsibility to monitor, control, and eradicate all noxious/invasive weeds within the proposed action area during the life of the project.

4.9 Areas of Critical Environmental Concern

4.9.1 Direct and Indirect Effects

The Rosa Unit No. 80C proposed action area is within one mile of the Bancos No. 5 Bald Eagle ACEC. Because bald eagles are not known to occur within the area during the spring and summer months, construction activities would not affect this species. However, increased noise from compressors (if present) may disturb overwintering bald eagles. With mitigation, effects from the proposed actions are expected to be low in the short term and long term.

4.9.2 Mitigation

To avoid disturbing bald eagles during the winter, construction would take place after March 31st and before November 1st. Bald Eagle ACEC NSA stipulations apply to the Rosa Unit No. 80C proposed action: Noise standards of 48.6 dB(A) Leq would be achieved at established agency receptor points. Each bald eagle ACEC has receptor points at the edge of established "Core Area" inside the "Buffer Area" of the Bald Eagle ACEC. Noise cannot exceed 48.6 dB(A) at any time between 1111 – 3/31 at "Core Area" of ACEC. If a compressor or pump-jack would be placed on site, a 48.6 dB[A] Leq, or lower, noise level would be enforced at designated receptor points. The operator is required to file a sundry notice within 5 days of setting a compressor or pump-jack on location, if the noise source exceeds the noise standard.

The sundry notice would include information on why the compressor is needed, the estimated time the compressor would be in use, and the manufacturer's data (size of unit, horsepower, model type and type of motor). A 1:24,000 (7.5 minute series) map or GIS generated map would be submitted with the sundry. The map would show the proposed compressor location and all noise sensitive areas within a two mile radius of the well location. In addit}on, a 24 hour time weighted average background noise survey may be required.

4.10 Mineral Resources/Geology

4.10.1 Direct and Indirect Effects

Development of the Basin Mancos/Blanco Mesaverde/Basin Dakota reservoirs would result in extraction of a non-renewable resource. Cross-contamination between geologic zones could occur without adequate cementing and casing of the proposed well bore. With implementation of BLM-FFO standard drilling and completion requirements, short- and long-term effects to mineral resources and geology are anticipated to be low.

4.10.2 Mitigation

Under the proposed actions (Alternative B), sufficient well-control equipment and reserve pit volume are necessary to assure control of the wells during drilling and completion operations. Adequate casing, cementing, mud weights, blow-out preventers, and reserve pit volumes are proposed in the APDs to mitigate any potential down-hole impacts.

4.11 Soils

4.11.1 Dire rand Indirect Effects

Soils that would be disturbed would be structurally mixed, displaced, and exposed to the elements of wind and water erosion. In some areas, these soils would also be compacted. Once disturbed, these soils can be subject to increased erosion, dependent upon storm events of water and/or wind. Disturbed areas, especially cut and fill slopes, would be susceptible to wind and water erosion until reseeding has been established (one to two growing seasons). The heaviest amounts

of moderate to very severe erosion sediments (silt loading) into the Navajo Reservoir Watershed would be short-term until revegetation is established.

For the proposed actions, the heaviest amounts of wind and water erosion would be moderate for the short-term. Following installation of erosion structures and vegetation reestablishment, long-term effects to soils would be moderate for the proposed actions. Following construction and drilling, long-term disturbance associated with these projects would be approximately 0.2 acre.

4.11.2 Mitigation

Site-specific drainage and erosion mitigation measures for the well pads and associated facilities are detailed in Section 2.2 Alternative B- Proposed Actions. All areas not needed for production equipment or vehicle travel would be reclaimed. Re-establishment of perennial vegetation and installation of functional erosion-control devices outlined in BLM BMPs would decrease long-term soil erosion effects.

4.12 Watershed/Hydrology

4.12.1 Direct and Indirect Effects

Alternative B (the proposed actions) would affect the Navajo Reservoir Watershed and its hydrology, as discussed in Section 4.2.1 Surface and Groundwater Quality and Quantity - Direct and Indirect Effects. Under Alternative B (the proposed actions), with the implementation of mitigation measures described *in* Section 4.2.2 Surface and Groundwater Quality and *Quantity* – Mitigation, impacts to the watershed and its hydrology would be moderate in the short term and low to moderate in the long term.

4.12.2 Mitigation

Mitigation measures described in Section 4.2.2 Surface and Groundwater Quality and Quantity-Mitigation would be applied to curtail impacts to the watershed and its hydrology.

4.13 Vegetation/Forestry

4.13.1 Direct and Indirect Effects

The Rosa Unit No. 166C proposed action (Alternative B) would result in the disturbance of approximately 0.79 currently undisturbed acre of open sagebrush shrubland habitat. Disturbance would include the removal of all vegetation within the limits of the proposed action area. The proposed Rosa Unit No. 80C would not result in any new disturbance.

During the production phase of these wells, vehicular activity would be restricted to existing access roads, as well as to the proposed well pad locations. Thus, new, long-term disturbance associated with the proposed actions is approximately 0.2 acre. With mitigation, the proposal is projected to have low short-term and long-term effects on area vegetation.

4.13.2 Mitigation

Under the proposed actions (Alternative B), following completion of each well, disturbed areas not needed for operations and vehicular traffic would be immediately re-contoured and seeded with a BLM-FFO-prescribed seed mixture. The establishment or re-establishment of vegetation is expected to take three to five growing seasons, depending on precipitation. The remaining

long-term disturbances would be reclaimed upon final project abandonment as outlined in the approved APDs and COAs.

4.14 Wildlife

4.14.1 Direct and Indirect Effects

The proposed actions would newly disturb approximately 0.79 acre of open sagebrush shrubland habitat within Rosa Mesa SDA. Of this disturbance, approximately 0.2 acre would be long term. No new access road construction would be necessary. Natural gas pipeline ties would be contained on proposed and/or existing well pads.

Effects of oil and gas development on terrestrial flora and fauna can result from dust, noise, increased human activity due to greater road access, and habitat fragmentation (BLM 2003b). Some wildlife species react positively to certain oil and gas activities, some react negatively, and some show no reaction at all. Species would continue to inhabit the area or conversely move out of the area, and populations may increase or decrease depending on the available adjacent forage and habitat present.

Under the proposed actions, vehicular traffic and increased human activity in the areas could have a negative impact due to disturbance and potential road kills to big game and other wildlife species, especially during construction and drilling. Light truck traffic would continue yearlong, at approximately the present level following construction and drilling. There are no published studies of effects of oil and gas development on deer or elk in the San Juan Basin. Recent research in other areas may or may not be applicable. Sawyer et al. (2005) examined winter habitat selection of mule deer before and during development of a natural gas field, in the sagebrush and sagebrush-grassland communities of the Pinedale Anticline Action area of Wyoming. Results of this study recorded mule deer avoidance of otherwise suitable habitats within 2.7-3.7 kilometers of natural gas wells and suggested substantial indirect habitat loss from energy development. Observed shifts in deer distribution as the study progressed were toward less-preferred and presumably less suitable habitats Sawyer et al (2005) conducted their study in an area of extensive rolling sagebrush with little topographic relief, high deer populations, and little oil and gas development. The high level of existing development in the BLM-FFO, as well as the more diverse habitat types and broken topography, make assumptions of similar impacts difficult.

The BLM-FFO contains approximately 633,000 acres of pinon-juniper habitat (BLM 2003b). The woodland habitat may offer greater cover and seclusion for wintering wildlife. Road densities within the BLM-FFO area are already approximately 10 times greater than those in the Wyoming study, yet the area still supports deer and elk populations.

BLM-FFO GIS analysis shows that there are 28,400 miles of roads within the BLM-FFO administr-ative-beundary, with 6,400 miles on public–sHrfaee{unpublished BLM data). The Rosa Unit No. 80C has 9.02 miles of roads within a one-mile radius. The Rosa Unit No. 166C has 8.15 miles of roads within a one-mile radius. The proposed actions would not increase the amount of roads within this one-mile radius, as no new access roads are necessary.

With implementation of proposed mitigation measures, direct and indirect wildlife effects are anticipated to be low for both the short term and long term under the proposed actions.

4.14.2 Mitigation

The proposed Rosa Unit No. 166C action would conform to the requirements of the Rosa Mesa SDA as applicable. Wildlife management prescriptions for this SDA are outlined in the 2003 Farmington Resource Management Plan. Applicable management prescriptions for the SDA are as follows:

Rosa Mesa:

- For new and current oil and gas leases, seasonal timing limitations exist on drilling and construction from December I through March 31 in the area north ofFrances Canyon Wash and south ofCabresto/Bancos Canyons.
- New oil and gas leases are managed under a Controlled Surface Use constraint.
- ROWs are allowed on a case-by-case basis with special management constraints and mitigation.
- Visual Resource Management Class II and IV designations are implemented.
- Key browse species are managed to meet the needs of wintering deer. This includes big sagebrush, antelope bitterbrush, and mountain mahogany.

Bald Eagle ACECs:

- Noise standards of 48.6 dB(A) Leq would be achieved at established agency receptor points (Please refer to section 4.9).

Additional proposed action mitigation measures applicable to wildlife within both proposed action areas include the following:

- All activities would be confined to permitted areas only.
- Only existing roads would be utilized for all proposed action vehicle activities.
- During project operations, any evidence of nesting raptors would be noted and GPS point(s) supplied to the appropriate surface management agency.
- Disturbed areas would be seeded with BLM-FFO seed mixtures. The establishment of vegetation is expected to take three to five growing seasons, depending on precipitation.
- Williams would not permit firearms to be carried by employees or subcontractors, and would not allow harassing or shooting of wildlife.

Under Alternative B (the proposed actions), all construction activities would be confined to permitted areas only. Rapid and permanent vegetation and cover reestablishment would eventually minimize impacts to wildlife. All wildlife hazards associated with construction and operation of the proposed actions would be fenced or contained in storage tanks.

4.15 Migratory Birds

4.15.1 Direct and Indirect Effects

The proposed project would remove approximately 0.79 acre of open sagebrush shrubland habitat within the proposed Rosa Unit No. 166 action area. This would include the removal of five early to mid-sera! stage pifion pines. The diameter at breast height (dbh) of the trees averages approximately 5 inches. These trees provide perches for birds. The survey was conducted outside

of nesting season; therefore, it is unknown if any birds utilize the area for nesting. There would be no new habitat disturbance within the Rosa Unit No. 80C action area.

The loss of sagebrush and pifion pines would result in potential habitat loss. Based on the information available from the North American Breeding Bird Survey routes, it appears that the likelihood of more than one migratory bird nest in the project area is low. No old nests left from the previous breeding season or other evidence of these species was detected during the biological surveys conducted 06 April 2011. The amount of projected habitat removal is negligible when compared to the total amount of available habitat. Actual potential effects on birds in the proposed action areas are difficult to predict. Ongoing studies have shown mixed effects of oil and gas development, including compressor noise, on nesting migratory birds. Frances and Ortega (2006 unpublished report to BLM) found no significant difference in nest density or nest success between sites with or without wellhead compressors. Some species, such as the black-chinned hummingbird and house finch, were more common on sites with compressors while others, such as the mourning dove and spotted towhee, appeared to either avoid or nest further from compressors. Holmes and King (2006) found that the sage sparrow had lower nest survival in an area with ongoing gas development, while the Brewer's sparrow had higher survival rates when compared with populations in an undeveloped control area.

With the implementation of the proposed mitigation measures, effects to migratory birds are anticipated to be low for both the short term and long term for the proposed actions (Alternative B).

4.15.2 Mitigation

The BLM-FFO Interim Management Policy regarding the Migratory Bird Treaty Act (per Instruction Memorandum No. NM-F00-2010-001, dated February 2010) establishes mitigation measures to minimize the possibility of unintentional take of migratory birds. For projects with less than 4.0 acres of vegetative disturbance, should active nests be observed within the proposed action area, construction would cease and a BLM-FFO biologist should be contacted immediately.

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.

4.16 Range

4.16.1 Direct and Indirect Effects

The proposed actions would result in the temporary loss of approximately 0.06 AUM (at an estimated 13.7 acres per AUM). Following successful interim reclamation, it is estimated that O1 7\UM would remain–disturbed-tol' the longtenn-:-Iftheare-a is-successfuHy-1ind immedrate1y - revegetated following initial construction and following final abandonment, the proposed action may benefit livestock grazing by providing additional forage above the existing indigenous rate of production. Impacts to range and grazing livestock are anticipated to be low in both the short and long term.

4.16.2 Mitigation

Under Alternative B, all hazards to livestock and wildlife would be fenced or contained. All project activities would be confined to permit areas only. No livestock improvements would be impacted.

4.17 Special Management Species

4.17.1 Direct and Indirect Effects

Impacts of Alternative B (the proposed actions) would include changes in vegetation composition and a temporary increase in human intrusion into the areas with associated increased noise, dust, and vehicles. Raptor prey from the construction and drilling areas would be displaced until the completion of drilling. Effects to SMS are anticipated to be low in the short and long term under Alternative B (the proposed actions).

4.17.2 Mitigation

No SMS were encountered within the proposed action area. No mitigation measures are proposed.

4.18 Wild Horses and Burros

4.18.1 Direct and Indirect Effects

Project related activities would temporarily disturb wild horses by increasing the amount of noise, traffic, and human presence in the area. The proposed actions would result in the temporary loss of approximately 0.06 AUM (at an estimated 13.7 acres per AUM). Following successful interim reclamation, it is estimated that 0.01 AUM would remain disturbed for the long term. If the area is successfully and immediately revegetated following initial construction and following final abandonment, the proposed action may benefit wild horse grazing by providing additional forage above the existing indigenous rate of production. Impacts to wild horses are anticipated to be low in both the short and long term.

4.18.2 Mitigation

Rapid construction, reclamation, and revegetation would lessen impacts to wild horse populations.

4.19 Visual Resources

4.19.1 Direct and Indirect Effects

The Rosa Unit No. SOC is located in an area designated as VRM 11 in the 2003 RMP. This well would be twined with an existing well and would utilize previously disturbed portions of the existing well pad. During the construction phase of the proposed action, the production equipment associated with the existing well would be removed. After the new well is completed, low profile production equipment would be installed on the new well and, low profile production equipment would replace the old production equipment on the existing well. Although there would be an increase in amount of production equipment on the twinned location, the new low profile equipment may have less of a visual impact to the area than the previously existing single well that did not have low profile equipment. Since the proposed well will be twinned and all production equipment utilized to produce the twinned wells will be low profile and painted the appropriate collor, the current visual qualities of the area are not expected to diminish.

Management objectives for VRM IV would be achieved for the Rosa Unit No. 166C location. With the implementation of BLM-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 long term.

4.19.2 Mitigation

Rapid construction, reclamation, and revegetation would decrease the period of moderate visual impact. Painting of surface equipment Juniper Green-Federal Standard 595a-34127 to blend into the surrounding ecosystem would lessen visual impacts. For safety purposes, some equipment or parts of equipment may be required to be painted appropriate colors. Low-profile equipment would be required for the proposed locations. During interim reclamation and final abandonment/reclamation, the existing cut and fill slopes and flat well pads would be recontoured to the existing construction topography. The goal of final reclamation would be to diminish evidence of cuts, fills, and flat well pad surfaces.

4.20 Noise

4.20.1 Direct and Indirect Effects

Under the proposed actions (Alternative B), during project construction, short-term noise within the vicinity would moderately increase. Noise impacts during the construction phase would result from the operation of vehicles and construction equipment. Not all construction equipment operates continuously, so the average noise level during well pad and pipeline construction is estimated to be 85 dBA. Although modified by topography, the average noise levels decrease below 55 dBA about 1,700 feet from construction sites (SJPLC 2006). Generally, any areas within 1,500 feet of construction would experience temporary noise levels above 55 dBA during daylight hours. Nighttime noise levels are not usually affected, because construction occurs between 7:00 a.m. and 7:00 p.m. Noise during the drilling phase would also be elevated above pre-existing levels. Subject to area topography, typically the noise from a drilling rig is 74 dBA at 200 feet. Noise from drilling rigs would decrease from 60 dBA at 1,000 feet to 50 dBA at 3,000 feet (SJPLC 2006). These levels are experienced for 24 hours per day for the time required to drill and complete the proposed wells.

Under the proposed actions (Alternative B), noise levels would decrease substantially after the well pad and pipeline ties have been constructed and the wells drilled. Sources of operational noise would involve periodic vehicle trips to the well sites and the operation of production equipment. Subject to topography, typical noise from a pumping unit is 61dBA at 100 feet for up to 24 hours per day. Noise from pump jacks would decrease to 55 dBA at 200 feet and 41 dBA at 1,000 feet. The noise from a pump jack is rhythmic, rather than the steady sound of smoothly running equipment. Therefore, although the noise level would be well below the 55-dBA significance threshold, it may be perceived as higher noise levels for some people. Noise from one (1) compressor engine enclosed in a building is about 89 dBA at five (5) feet. Noise from a compressor engine enclosed in a building typically is 69 dBA measured 50 feet from the edge of the building (SJPLC 2006). No pump jacks would be necessary for the proposed wells. Therefore, under the proposed action (Alternative B), a moderate short-term noise increase in both the project and existing road area is anticipated. Given the implementation of the mitigation measures under the proposed actions, during the production phase area noise would be low for the

4.20.2 Mitigation

long-term.

The effects of the proposed actions (Alternative B) that remain after mitigation are residual impacts. Residual impacts of the proposed actions include effects to local air quality by increased combustion emissions as well as changes in site topography, soil constitution, and vegetation composition. Under the proposed actions, combustion emissions may be increased during the production phase of the project. The proposed actions would result in a long-term loss of 0.2 previously undisturbed acre. Under the proposed actions (Alternative B), an un-quantified amount of increased soil loss, erosion, sedimentation, and degradation of surface water quality and quantity would result. Additionally, under the proposed actions (Alternative B), the potential for the loss of cultural materials exists, primarily from indirect human actions.

The proposed actions would alter the landscape and increase visual scarring in the areas of the proposed wells. However, the proposed action occurring within the VRM Class IV area would comply with Class IV requirements. The proposed action location occurring in VRM II area is currently not in compliance with Class II requirements due to the presence of existing production equipment. Under the proposed actions (Alternative B), noise in the vicinity of the proposed wells would increase for the short term. Long-term vicinity noise may also increase, dependent upon the production equipment utilized. To keep all impacts below the level of significance under the proposed actions, implementation of recommended approved APDs and COAs would be necessary, as would compliance with these mitigation measures.

4.23 Cumulative Effects

The leased areas of the proposed actions have been industrialized with oil and gas well development. The surface disturbance for each project that has been permitted has created a spreading out of land use fragmentation. The cumulative impacts fluctuate with the gradual reclamation of well abandonments and the creation of new additional surface disturbances in the construction of new access roads and well pads. The on-going process of restoration of abandonments and creating new disturbances for drilling new wells gradually accumulates as the minerals are extracted from the land. Preserving as much land as possible and applying appropriate mitigation measures will alleviate the cumulative impacts.

Due to the absence of regulatory requirements to measure GHG emissions and the variability of oil and gas activities on federal minerals, it is not possible to accurately quantify potential GHG emissions in the affected areas as a result of approving this application for permit to drill. A general assumption, however, can be made: drilling this well may contribute to GHG emissions.

The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts. However, potential impacts to natural resources and plant and animal species due to climate change are likely to be varied, including those in the southwestern United States. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur due to increased windblown dust from drier and less stable soils. Cool season plant species' spatial ranges are predicted to move north and to high-er-elevations, and extinction of endemic threatened/endangered plants may be accelerated.

Due to loss of habitat or competition from other species whose ranges may shift northward, the population of some animal species may be reduced or increased. Less snow at lower elevations would likely impact the timing and quantity of snowmelt, which, in tum, could impact water resources and species dependent on historic water conditions. Forests at higher elevations in New Mexico, for example, have been exposed to warmer and drier conditions over a ten year period.

4.22 Residual Effects

Under the proposed actions (Alternative B), the BLM-FFO would require sound abatement on any production equipment used during the production phase of the proposed actions. All proposed action activities would be required to comply with the noise standards as established in NTL 04-2 FFO (Appendix C).

The proposed Rosa Unit No. 80C is located within one mile of a designated Noise Sensitive Area (NSA). Noise standards of 48.6 dB(A) Leq would be achieved at established agency receptor points. Each bald eagle ACEC has receptor points at the edge of the established "Core Area" inside the "Buffer Area" of the Bald Eagle ACEC. Noise cannot exceed 48.6 dB(A) at any time between 11/1 and 3/31 at the "Core Area" of the ACEC. If a compressor or pump-jack would be placed on site, a 48.6 dB[A] Leq, or lower, noise level would be enforced at designated receptor points. The operator is required to file a sundry notice within 5 days of setting a compressor or pump-jack on location, if the noise source exceeds the noise standard.

The sundry notice would include information on why the compressor is needed, the estimated time the compressor would be in use, and the manufacturer's data (size of unit, horsepower, model type and type of motor). A 1:24,000 (7.5 minute series) map or GIS generated map would be submitted with the sundry. The map would show the proposed compressor location and all noise sensitive areas within a two mile radius of the well location. In addition, a 24 hour time weighted average background noise survey may be required.

4.21 Paleontology

4.21.1 Direct and Indirect Effects

Although no paleontological resources are known to occur within the proposed action areas, impacts to paleontological resources from the proposed actions implementation could possibly occur. Direct impacts from the proposed actions to fossil localities could result from 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 action areas for recreational acttv1t1es. An increase in human activity in the areas could increase the possibility of unauthorized removal or other alterations to paleontological resources in the areas. Potential impacts to paleontological resources as a result of the proposed actions would be low and long term.

4.21.2 Mitigation

All BLM-FFO paleontological resources stipulations will be followed as indicated in the COAs attached to the APDs. These stipulations may include, but are not limited to, temporary or permanent fencing or other physical barriers, monitoring of earth-disturbing construction, action 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.

Should the trend continue, the habitats and identified drought sensitive species in these forested areas and higher elevations may also be more affected by climate change.

Cumulative impacts or effects are the direct and indirect effects of all past, present and reasonably foreseeable actions within the project areas, regardless of the proponent or land status. Although impacts associated with each project may be insignificant, taken together, their cumulative impact(s) may be significant on a given resource or resources. Cumulative impacts are presented in terms of how the proposed actions would add to the past, present and reasonably foreseeable future development of the Navajo Reservoir sub-watershed.

The proposed action areas are within the Navajo Reservoir Watershed. The foremost past, present and potential future human activity resulting in environmental disturbance in the Navajo Reservoir sub-watershed is oil and gas development. Other human activities within the sub-watershed include big game hunting, general public recreation, and livestock grazing operations. Impacts from these activities on the Navajo Reservoir sub-watershed environment are categorized as low, for the present and future (long-term). Energy development activities can be separated into short and long-term disturbances. Short-term disturbance consists of the area needed for well pad construction, drilling and the pipelines. This acreage is usually reclaimed within one to two years. Long-term acreage disturbance are those areas needed for well production and vehicular travel (roads), estimated at one acre per well location. Some wells are drilled from the same well pad location (twinned), decreasing the long-term surface acreage requirement. For this analysis, it is assumed that reclamation and mitigation measures have been successful, with each past, present and future well representing an estimated 1.00 acre per well.

The Navajo Reservoir sub-watershed contains approximately 378,389 acres with an estimated 1,334 existing oil and gas wells and 7,951 acres of existing disturbance. Given the current NMOCC spacing orders of 18 wells per section, the "twinning" of many Mesa-Verde and Dakota wells, and the reasonable foreseeable development identified in the 2003 PRMP/FEIS, the potential exists for approximately 2,444 wells within the Navajo Reservoir sub-watershed. Therefore, anticipated future development can be estimated at 1,110 additional wells within this sub-watershed. Given that the existing access roads are adequate, this calculates to approximately 9,061 acres of future long-term development (well pads and roads) can be realized in the Navajo Reservoir sub-watershed. The proposed actions, with 0.2 acre of long-term disturbance, would add to the existing and future disturbance by less than 0.001%. This additional impact can be considered low, for the long-term cumulative impact to the Navajo Reservoir sub-watershed.

Within a one-mile radius of the proposed action areas there are 62 well pads; assuming 1.2 acres per well, this totals 74.4 acres of existing long-term disturbance. Within a one-mile radius of the proposed action areas there are 17.17 miles of roads; assuming a 20-foot-wide driving surface, this totals 41.6 acres of existing long-term disturbance. Therefore, there are approximately 116.0 acres of long-term disturbance within a one-mile radius of the proposed action areas. The habitat within this one-mile radius is predominantly on-juniper with scattered sagebrush openings. The proposed actions would not increase the amount of roads within *this* area, as no new access road construction would be required. The proposed actions would increase long-term disturbance in this area by approximately 0.68 percent.

The short-term use of the areas for the proposed actions are not expected to adversely impact or limit the long-term productivity of the land, or nearby lands. There is no irreversible or irretrievable commitment of surface resources that would occur from the proposed actions.

5.0 Consultation/Coordination

The following agencies and individuals contributed to the preparation of this document:

Steven Fuller-LAC
Jim Copeland (pending review)-BLM-FFO
Roger Herrera –BLM-FFO

Nelson Consulting, Inc. has prepared this environmental assessment document to the standards and guidelines set by the BLM-FFO. Selected sections and information within this document were specifically written by the BLM-FFO. This document is the property of the BLM-FFO.

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APPENDIX A

SELECTED LAWS AND REGULATIONS GOVERNING FEDERAL OIL AND GAS DEVELOPMENT

SELECTED LAWS AND REGULATIONS THAT GOVERN FEDERAL OIL AND GAS DEVELOPMENT

rit&W!R:EGWktiot	RESOURCE PROTECTED	AUTHORITY
Clean Air Act (CAA)	Air Quality, Air Emissions and Permits.	New Mexico Environment Department (NMED)
Clean Water Act (CWA) 1977, as amended. Section 404 Permits.	Surface waters of the U.S., crossing/diversion of ephemeral washes	U.S. Army Corps of Engineers
Federal Water Pollution Control Act and Section 404 of the CWA.	Discharges into surface waters from point sources	New Mexico Water Quality Control Commission (NMWQCC)
Storm Water Pollution Prevention Plan (SWPPP), Section 402 oftheCWA	Construction projects disturbing greater than 5 acres. Minimize erosion	USEPA
Safe Drinking Water Act 1974, as amended.	Surface and groundwater	U.S. Environmental Protection Agency (USEPA)
Colorado River Salinity Control Act 1974, amendment of 1984: Public Law 93-320	Mandated Control of Salinity Runoff into the Colorado River Basin	BLM
Federal Land Management and Policy Act (FLPMA) of 1976.	BLM unique areas, ACECs. Issuing of energy related ROWS. Wilderness Areas	BLM
Surface Mining Control and Reclamation Act (SMCRA) of 1977.	Prime and Unique Farm Lands.	Natural Resource Conservation Service (NRCS)
Executive Order 11988 as amended.	Floodplai ns	All Agencies
Executive Order 11990.	Wetlands/Riparian Zones	All Agencies
Wild and Scenic Rivers Act of I968 as amended.	Wild and Scenic Rivers	All Agencies
National Historic Preservation Act of 1966 as amended. Antiquities Act of 1906.	Cultu ral resources	All Agencies
American Indian Religious Freedom Act 1978. Native American Graves Protection and Repatriation Act (NAGPRA) 1990.	Native American Religious Concerns	All Agencies
Endangered S_pecies Act (ESA) 1973 as amended. (Section 7)	Threatened and Endangered plant and animal species	U. S. Fish and Wildlife Service (U.S. FWS)
Bald and Golden Eagle Protection Act	Protection of Eagles	
Migratory Bird Treaty Act	Protection to Migratory Birds, Nests and Eggs.	U.S. FWS
National and New Mexico BLM Instruction Memoranda	BLM and New Mexico State Sensitive Species and Habitat.	BLM
Resource Conservation and Recovery Act (RCRA) of 1976	Use of Hazardous Materials	USEPA
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 660 as amended.	Use and Disposal of listed Hazardous Materials.	USEPA
Executive Order No.22898, February 1994.	Environmental Justice for environmental and health conditions in minority and low-income communities.	All Agencies
Federal Noxious Weed Act 1974, as amended and Executive Order 13112.	Designated Certain Plants as Noxious Weeds.	All Agencies
New Mexico Noxious Weed List	Noxious weeds for the State of New Mexico.	New Mexico Department of Agriculture.
Mineral Leasing Act (MLA) 1929, as amended. Associated Onshore Orders; National, State and Local.	Issue and managed federal oil and gas leases and related transportation pipelines.	BLM

APPENDIXB

SURVEY PLATS

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OIL CONSERVATION DIVISION
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[ ] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

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	72319 / 71599	BLANCO MESAVERDE / BASIN DAKOTA

'Property Cod!!	Property Name	Well Nullber
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'DGRW No.	•operator Name	•uevatlCJn
120782	WILLIAMS PRODUCTION COMPANY	6259'

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UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/Nest line	County
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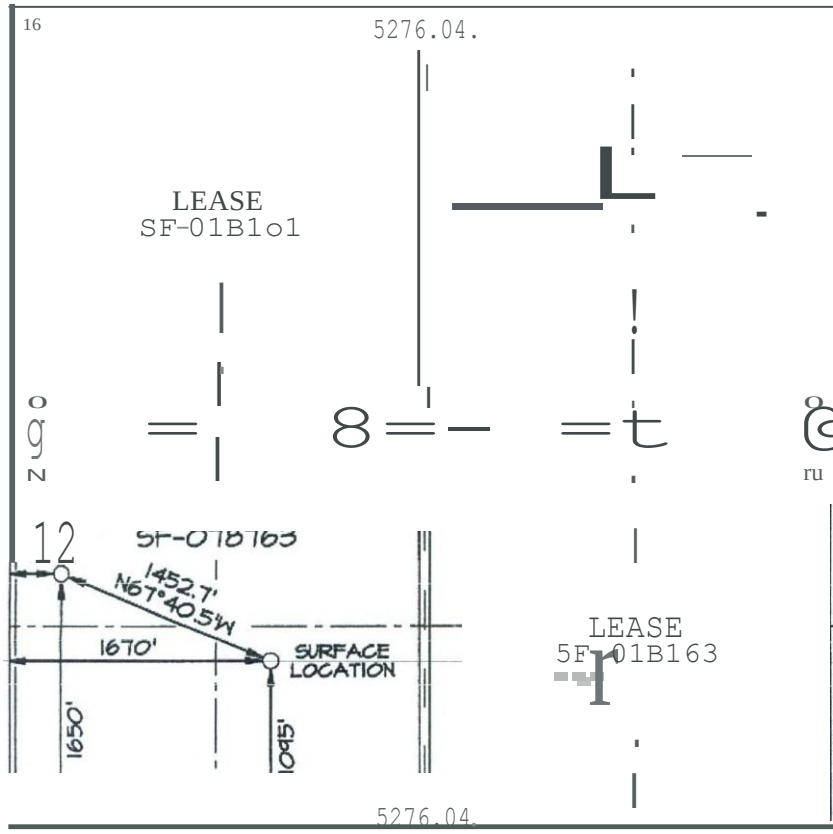

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Signature and Seal of Professional Surveyor

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JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS

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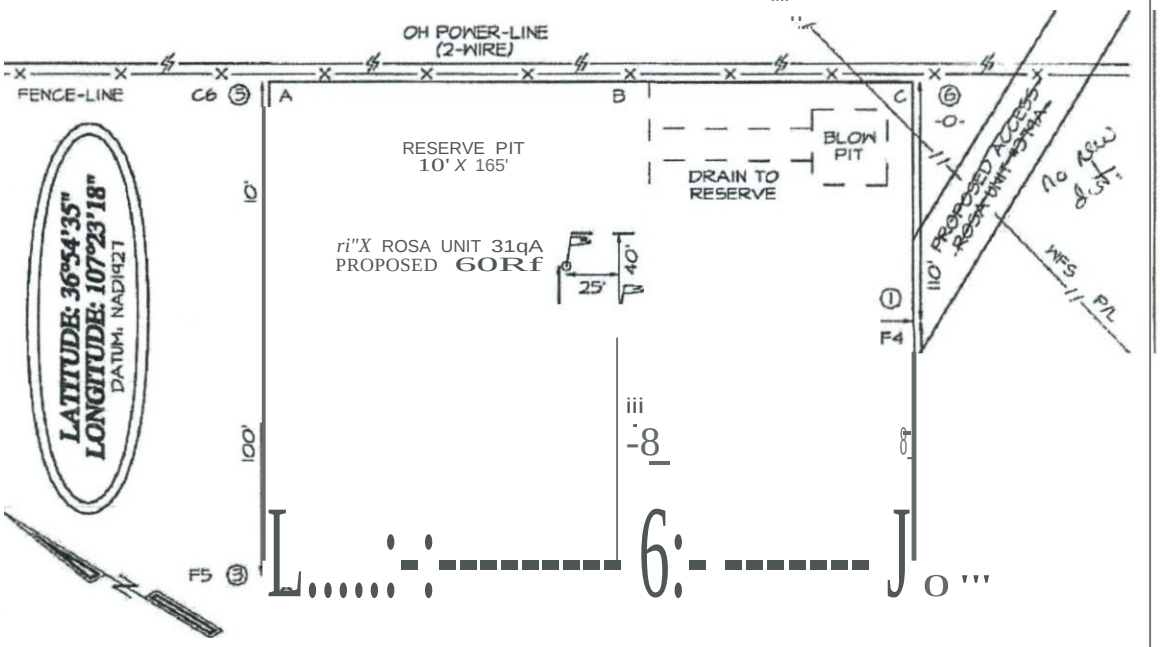

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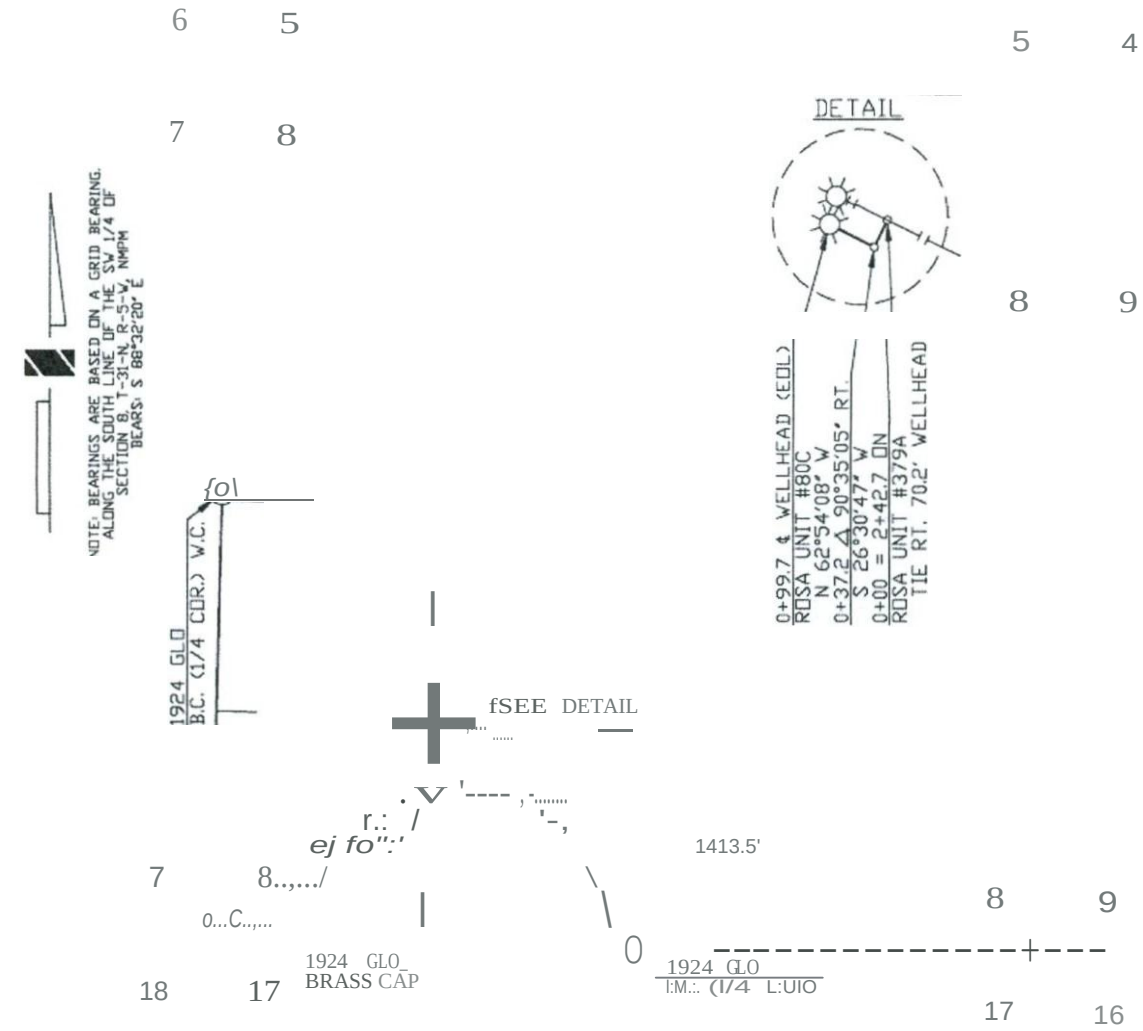

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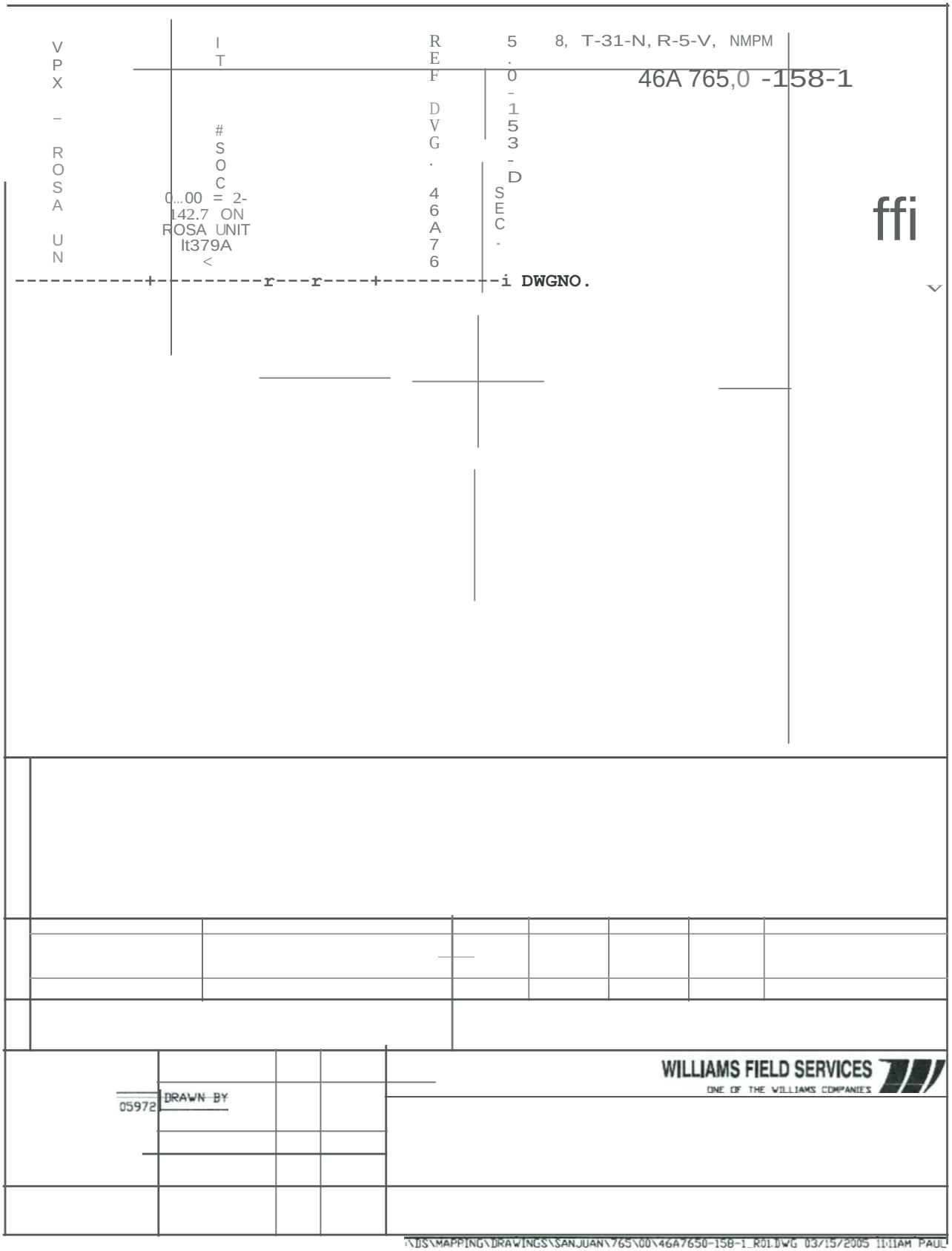
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OIL CONSERVATION DIVISION
1220 South St. Francis Or.
Santa Fe. NM 87505

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[ ] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

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	97232 / 72319 / 71599	BASIN MANCOS / BLANCO MESAVERDE / BASIN DAKOTA

Propei"ty cooe	Property Name	we11 r-uroer
17033	ROSA UNIT	166C

OGRIO No.	Operator Nlllnl!	Elevation
120782	WILLIAMS PRODUCTION COMPANY	6362'

10 Surface Locat1on

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	30	31N	5W		1165	NORTH	1045	EAST	RIO ARRIBA

11 Bottom Hole Location If Different From Surface

A	30	31N	5W	LM	330	NORTH	330	EAST	RIO ARRIBA

232.69 Acres - {N/2)

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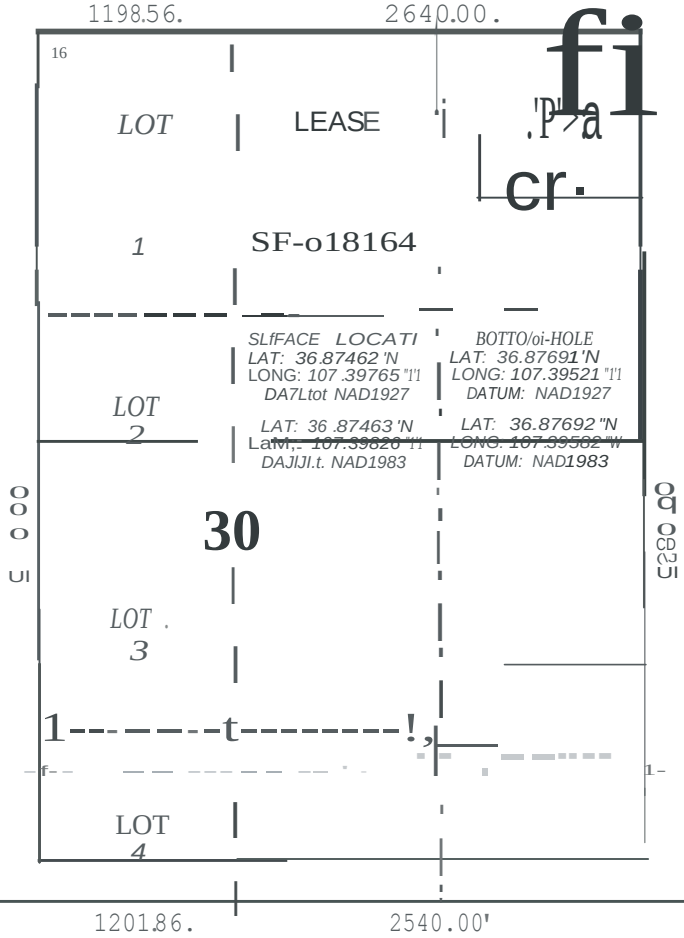

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this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

Signature Date

Printed Name

SURVEYOR CERTIFICATION

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Date of Survey: MARCH 5, 2011

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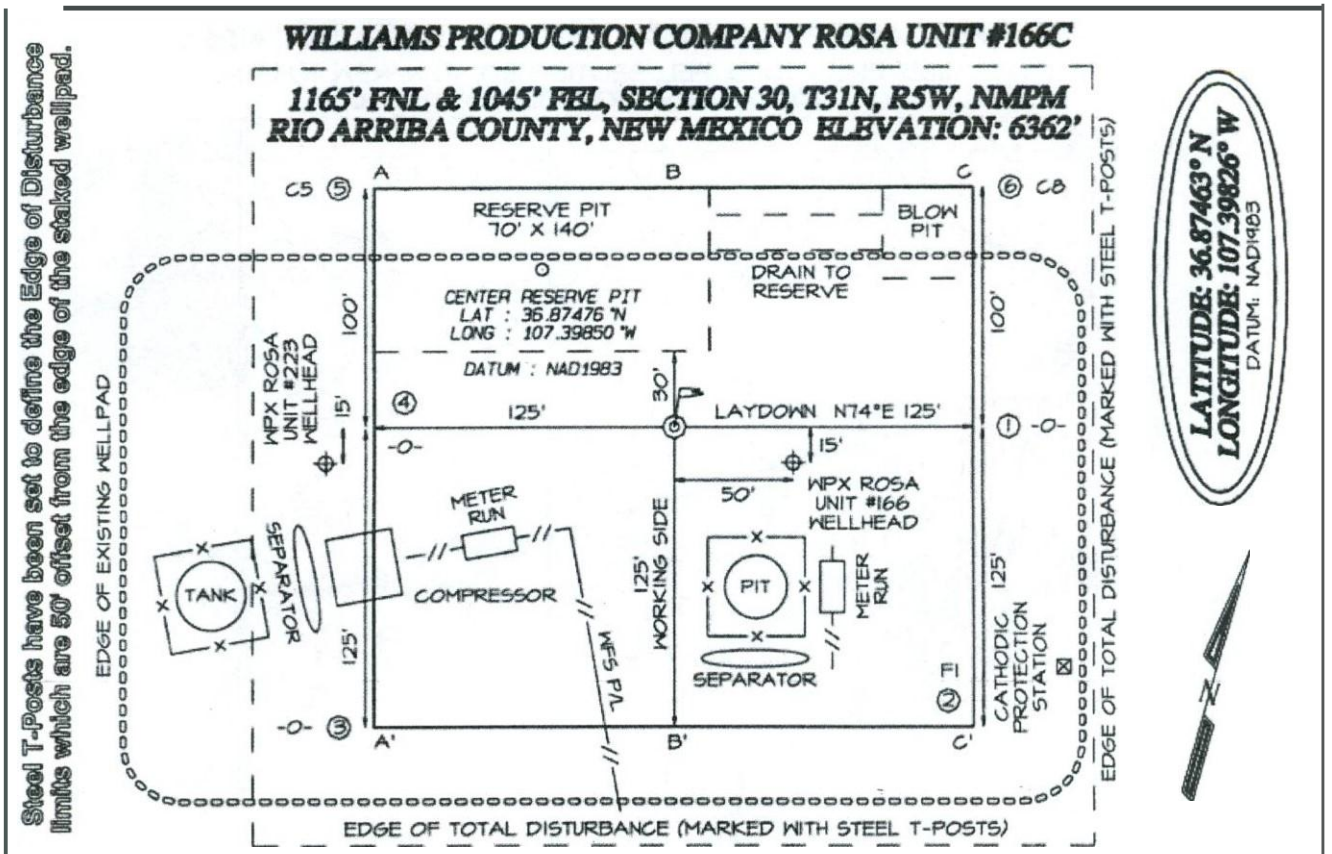
JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS

Certificate Number 15269


WILLIAMS PRODUCTION COMPANY ROSA UNIT #166C
1165' FNL & 1045' FEL, SECTION 30, T31N, R5W, NMPM
RIO ARRIBA COUNTY, NEW MEXICO ELEVATION: 6362'
Steel T-Posts have been set to define the Edge of Disturbance limits which are 50' offset from the edge of the staked wellpad.
LATITUDE: 36.87463° N
LONGITUDE: 107.39826° W
DATUM: NAD1983
RESERVE PIT
70' X 140'
BLOW PIT
DRAIN TO RESERVE
CENTER RESERVE PIT
LAT : 36.87476 °N
LONG : 107.39850 °W
DATUM : NAD1983
LAYDOWN N74°E 125'
WPX ROSA UNIT #223 WELLHEAD
WPX ROSA UNIT #166 WELLHEAD
METER RUN
COMPRESSOR
SEPARATOR
TANK
PIT
WORKING SIDE
CATHODIC PROTECTION STATION
EDGE OF EXISTING WELLPAD
EDGE OF TOTAL DISTURBANCE (MARKED WITH STEEL T-POSTS)
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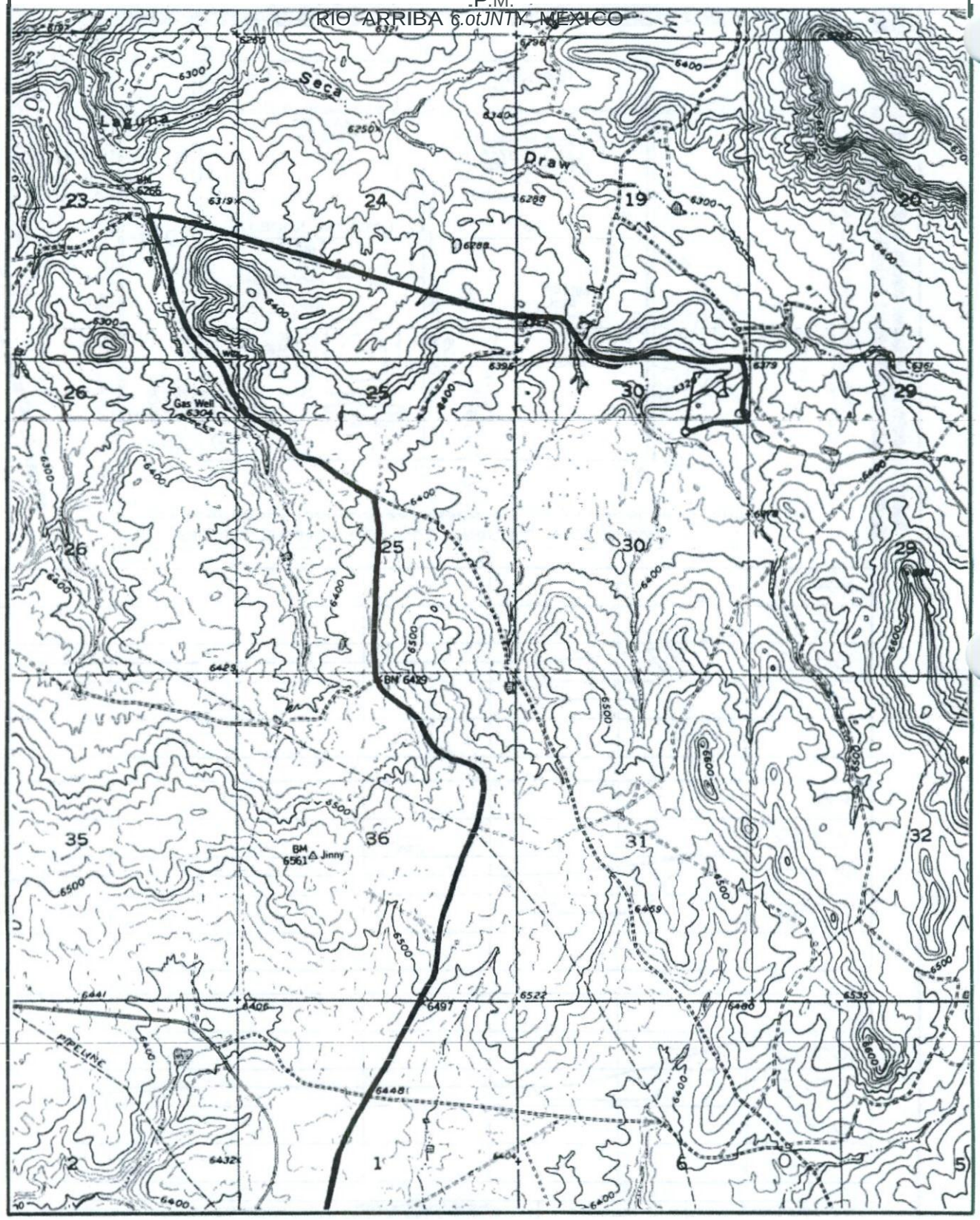

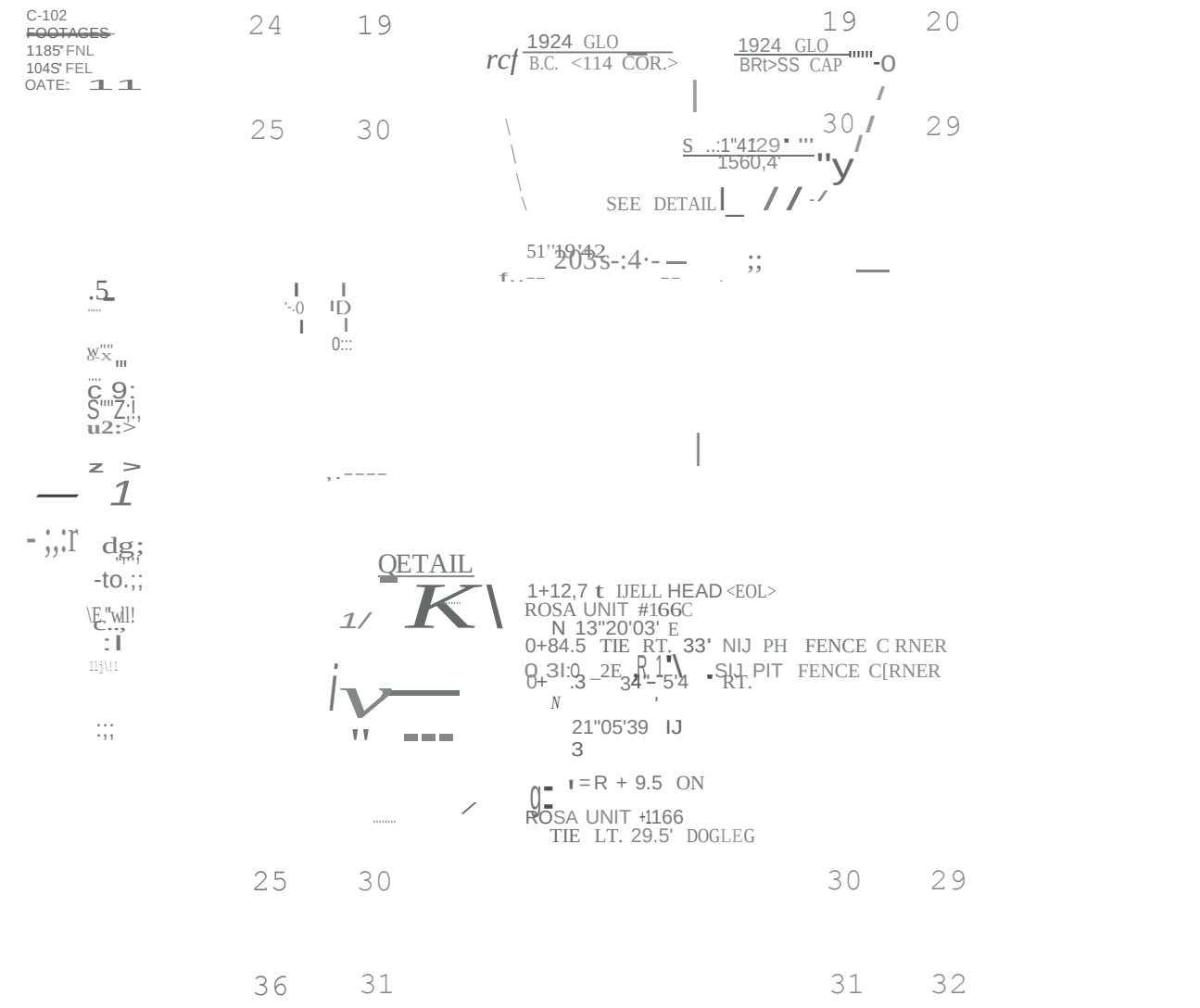

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APPENDIXC

BLM-FFO Noise NTL (04-02 FFO)

Notice to Lessees and Operators on Onshore Oil and Gas Leases Within the Jurisdiction of the Farmington Field Office (FFO) (NTL 04-2 FFO)

Management of Sound Generated By Oil and Gas Production and Transportation

I. Introduction – Increases in the level of sound (noise) generated from the production and pipeline transportation of oil and gas has occurred in the San Juan Basin over the last four years. These increases are generated primarily from the escalating need to use equipment such as compressors and pumping units, which operate on a continual basis. The increase in noise affects natural resource values and management of a number of agency designated special areas [special management areas (SMAs), areas of critical environmental concern (ACECs), research natural areas (RNAs), etc.]. Noise sensitive areas (NSAs) were determined as visitor use areas, wilderness, semi-primitive recreation areas, habitat for threatened or endangered species, raptor nesting/roosting sites, recreational trails and sites where people live and work.

II. Purpose – The Bureau of Land Management (BLM) recognizes solitude (lack of or limited sound) as a part of the natural environment that requires protection and reduction of noise in some instances. The following requirements are for reducing noise levels on federal and Indian oil and gas leases under the jurisdiction of the Farmington Field Office (FFO). The BLM will use adaptive management principles to monitor and adjust implementation of this NTL as additional data becomes available.

III. Noise Sensitive Areas – All or a portion of approximately 61 specially designated areas (SDAs) established through the BLM land use planning process are being identified as noise sensitive areas (NSAs).

IV. Noise Standards – Noise will be measured on the "A" scale, using the attached protocol. The sound level (A scale) must be less than or equal to 48.6 dB(A) over a continuous 24-hour period (i.e., 48.6 dB[A]Leq). This requirement applies to oil and gas lease operations that operate on a continual (>8 hours/day), long-term basis (>1 week in duration). The NTL will not apply to transient operations such as construction, drilling, completion or workover activities or temporary non-oil and gas sound sources. These activities will be handled on a case-by-case basis should a conflict be identified during the permitting process. The NTL does not apply to short-term events such as venting a well, compressor start-ups, etc.

V. Application of Standards within NSAs – Noise control will be receptor- or boundary-focused, as determined by agency management guidelines established for the designated

SMAs, ACECs, or other designations. Receptor-focused control will apply to 45 BLM and 4 USFS NSAs. Receptor-focused areas may include campgrounds, picnic areas, shorelines, etc. Boundary-focused control will include all designated acreage within 7 BLM (refer to the tables table listed below), 3 USFS, and 1 NPS NSAs, in addition to all USBR land around Navajo Reservoir.

Receptor-Focused NSAs

- Noise standards of 48.6 dB(A) Leq will be achieved at established agency receptor points within the NSAs. Established receptors are generally defined as visitor use areas, camp or picnic areas, habitat for threatened or endangered species, archaeological sites, and recreation trails. Receptors may vary in size from a single point source to several acres based on the features and resource components that are being managed for sound. The agency will work with the operator to establish the applicable receptor points. Buffers of 0 to 100 feet from the defined receptor may be established. The SDAs within which receptors will be designated are as follows (***notes areas where stricter standards may apply):

BLM Receptor-Focused NSAs

1.***Andrews Ranch	16. Haynes Trading Post	31. Tapacito and Split Rock
2. ***Bee Burrow	17. Holmes Group	32. ***Toh-la-kai
3. ***Bis sa'ani	18. ***Indian Creek	33. ***Twin Angels
4. BiYaazh	19. ***Jacques Chacoan Community	34. ***Upper Kin Klizhen
5. Blanco Star Panel	20. ***Kin Nizhoni	35. Alien Run
6. ***Casamero Community	21. Margarita Martinez Homestead	36. ***Angel Peak Scenic Area
7. Christmas Tree Ruin	22. Martin Apodaca Homestead	37. Glade Run
8. Church Rock Outlier	23. ***Morris 41	38. ***Navajo Lake Horse Trail
9. ***Crow Canyon	24. Moss Trail	39. Negro Canyon
10. Delgadito-Pueblo Canyons	25. North Road (Segments 1, 2, ***6, 7)	40. Pinon Mesa
11. Dogie Canyon Schools	26. ***Pierre's Site	41. ***Simon Canyon
12. Encinada Mesa-Carrizo Canyon (Gomez Point, Gomez Canyon, Hill Road Ruin)	27. Rockhouse-Nestor Martin Homestead	42. ***Bald Eagle
13. Frances Mesa (Frances Ruin)	28. San Rafael Canyon	43. Reese Canyon
14. Gonzalez Canyon-Senon S. Vigil Homestead	29. Simon Ruin	44. River Tracts
15. Halfway House	30. Superior Mesa	45. Mexican Spotted Owl

USFS Receptor-Focused NSAs

1.***Buzzard Park Campground	3. ***Gasbuggy
2.***CedarSpnngsCampground	4. Carracas Mesa Administrative Site

Boundary-Focused NSAs

- For noise sources located inside NSAs, the standard is 48.6 dB(A) Leq at 400 feet in all directions from the noise source. For noise sources located outside of designated NSAs, the standard of 48.6 dB(A) Leq must be met at the boundaries of

the NSAs. Noise sources located within 400 feet of the NSA boundary will generally be allowed to meet the standard 400 feet from the source. The SDAs that will be boundary-focused NSAs are as follows (***notes areas where stricter standards may apply):

BLM Boundary-Focused NSAs

1. ***Cho'li'i (Gobernador Knob)
2. Dzil'na'oodlii (Huerfano Mesa)
3. FossilForest RNA
4. Carracas Mesa
5. Thomas Canyon (original acreage)
6. ***Ah-shi-sle-pah WSA
7. ***BistijDe-Na-Zin Wilderness

USFS Boundary-Focused NSAs

1. Middle Mesa Raptor Area (prior approval required)
2. Ulibarri Raptor Area (prior approval required)
3. Munoz Canyon Raptor Area (prior approval required)

NPS Boundary-Focused NSA

1. ***Aztec Ruins National Monument

USBR Boundary-Focused NSA

1. All USBR land around Navajo Reservoir

Occupied Dwellings, Residences, and Buildings

- For noise sources involving federal or Indian leases located near occupied dwellings or buildings, the standard of 48.6 dB(A) Leq will be met 100 feet from such structure. Policy will not apply to unoccupied lands but can be enforced when those lands are developed. When oil and gas operations pre-date occupancy, the new resident will be asked to contribute to noise mitigation. For noise sources located within incorporated city or township limits, the standards of that municipal jurisdiction will normally be applied. However, if there isn't a municipal standard, BLM will enforce this NTL for noise sources associated with federal minerals.

Stricter Standards

- Stricter standards may be applied to NSAs identified by a triple asterisk in the tables listed above. In these instances, BLM may need the flexibility to adjust the general noise standard. BLM, USFS, USBR and NPS staffs will work with the operator on a case-by-case basis to achieve an acceptable level of noise mitigation. Factors considered in this process would be: (1) the particular aspects of the area (i.e., lan-dscape, n5]mgra-phr,etc)(2)1e ource-values and--uses;-(3) public values and uses and (4) the extent the 48.6 dB(A) Leq impairs values and uses.

NewNSAs

- In addition to the 61areas listed in the tables, new SMAs, camping, picnic or trail areas may be identified and/or developed by land management agencies. This

policy would be implemented, in and/or near these areas after a 30-day notice to the affected parties, using section VI schedules.

VI. Implementation of NTL – Upon implementation of the NTL, affected operators in or adjacent to NSAs will be provided general ownership maps depicting the NSAs. Detailed descriptions of the NSAs will be maintained and available at local administering agency offices.
With the exception of the NSAs identified by a triple asterisk in the tables, newly installed noise sources that affect NSAs (inside or adjacent to exterior boundaries) must meet the noise standard 60 days from the date the source is set in the field. All major renovation and/or replaced noise sources must meet the standard 60 days from the date the equipment is renovated and/or replaced. A condition of approval will be included with approved Applications for Permit to Drill (APDs) requiring the operator to meet the noise standard for sources at new well locations that are permitted within or adjacent to an NSA. These standards apply to rights-of-way grants.

For existing sources of noise within defined NSAs, within 90 days of approval of the NTL, the operator shall inventory these locations and submit them to the BLM along with a proposed plan for meeting the NTL standard. The compliance plan submitted by the operator must demonstrate compliance of all applicable noise sources within 5 years, incorporating the agency time-frame compliance priority goals. All major renovation and/or replaced noise sources must meet the standard 60 days from the date the equipment is renovated and/or replaced.

VII. Procedures – A subsequent report (SR) Sundry (Form 3160.5) must be submitted to the BLM for approval by the authorized officer (AO) within 5 days of setting the equipment, which exceeds the noise standard and must be mitigated. A notification Sundry is not required for existing and new noise sources that do not exceed the 48.6 dB(A) Leq standard. A copy of the SR should be sent to the appropriate surface managing agency. Prior approval is required before setting a noise source that could affect the threatened or endangered species and raptor NSAs. The notice must include: (1) the location of the proposed noise source [township, range, section, footage or quarter/quarter (i.e., NE/4SE/4)], (2) name of the well location or facility type, (3) type of noise source (i.e., compressor, pumping unit, etc.), (4) serious safety considerations, and (5) any other information required by the AO.

- For existing and new noise sources, the surface managing agency will initially work with the applicant to establish the applicable receptor points to which the NTL standard will apply. In addition, the BLM will work with applicants and use flexibility for mitigation of sound with boundary-focused areas.

- For new noise sources, once a receptor is permanently defined and noted on NSA maps provided by BLM to the operator, the operator must comply with the 48.6 dB(A) Leq standard and provide the BLM with noise level measurements (if needed) within the 60-day period.

For existing noise sources, once a receptor is permanently defined and noted on NSA maps provided by BLM to the operator, the operator must comply with the noise standard according to the schedule of the 5-year plan for existing noise sources. If a new receptor has been defined in an area that has passed the schedule of the 5-year plan, the operator must comply with the noise standard and provide the BLM with noise level measurements (if needed) within 60 days of receiving a 30-day notice for newly defined receptor.

- The standard defined in Section IV or determined during the approval process must be met after the 60-day period. Measurements must be taken following the established protocol at points designated by BLM or other land management agencies.

VIII. Variances- Variances may be granted on a case-by-case basis by the AO. To obtain a variance, a Notice of Intent Sundry (NOI-Form 3160.5) or a letter must be submitted to BLM for approval. Copies of the Sundry or letter should be sent to any appropriate surface managing agency. The sundry or letter must include the same information as an NOI.

IX. Compliance - Failure to comply with the above policy and conditions of approval may result in an assessment for noncompliance being issued pursuant to 43 Code of Federal Regulations (CFR) 3163.1by BLM staff. Any and all instructions, orders, or decisions issued are subject to administrative review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3164 and 43 CFR 4.700.

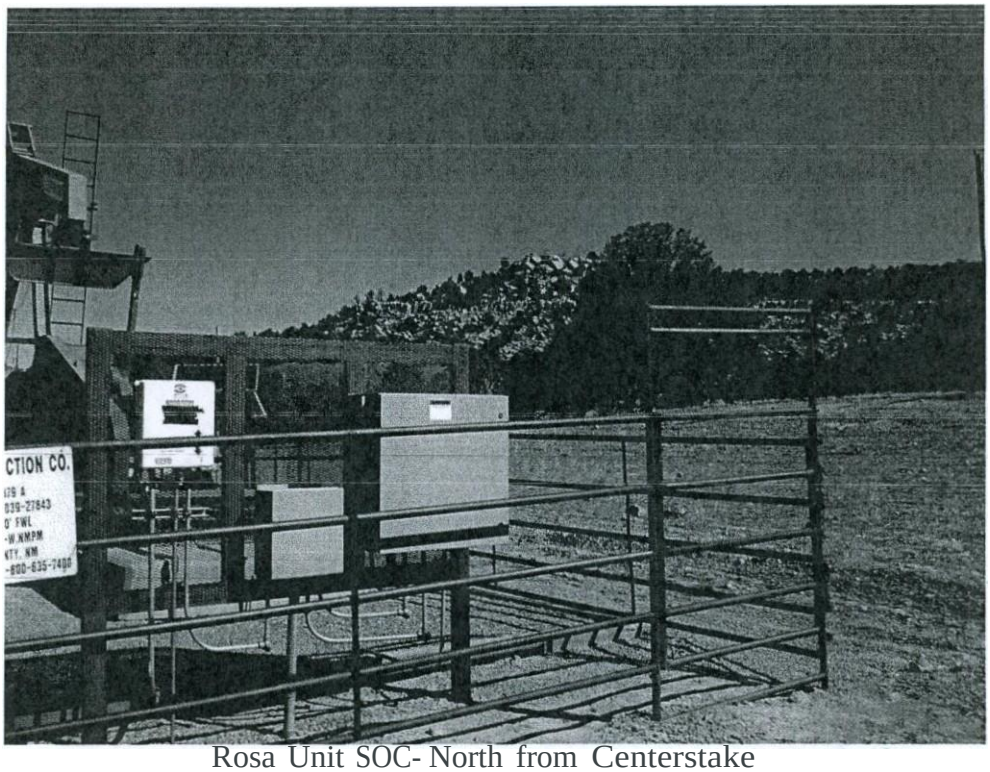
This NTL will be reviewed annually and may be modified based on monitoring and current results of implementation, a changing environment, and evolving technologies.

APPROVED: Date _____

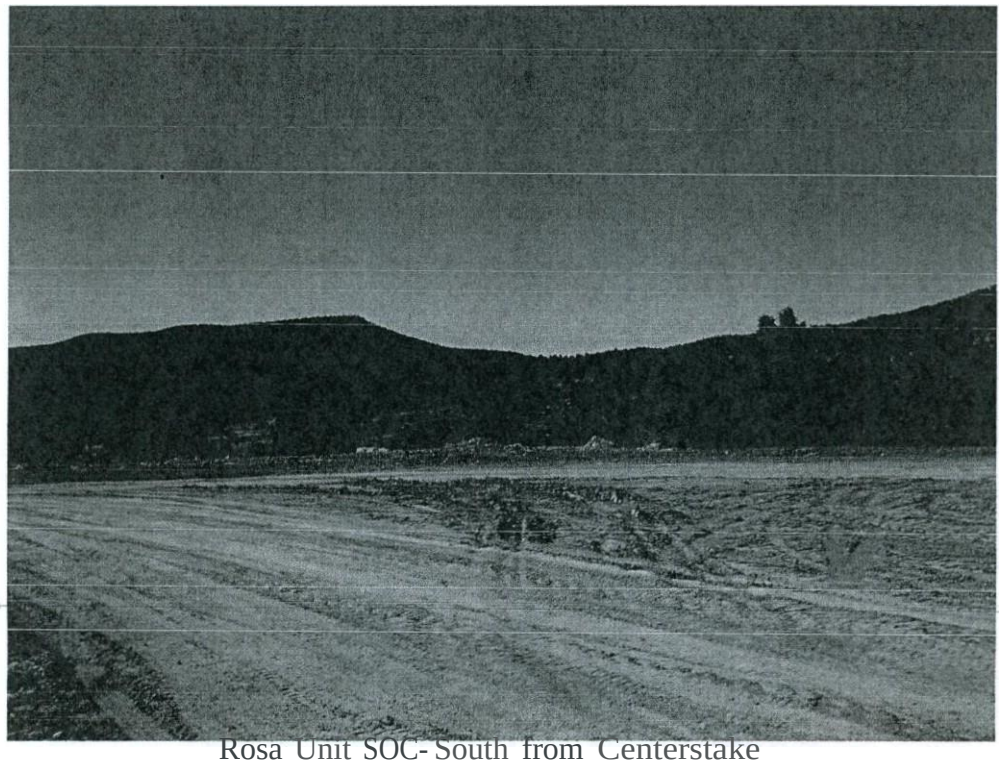
_____
Farmington Field Manager

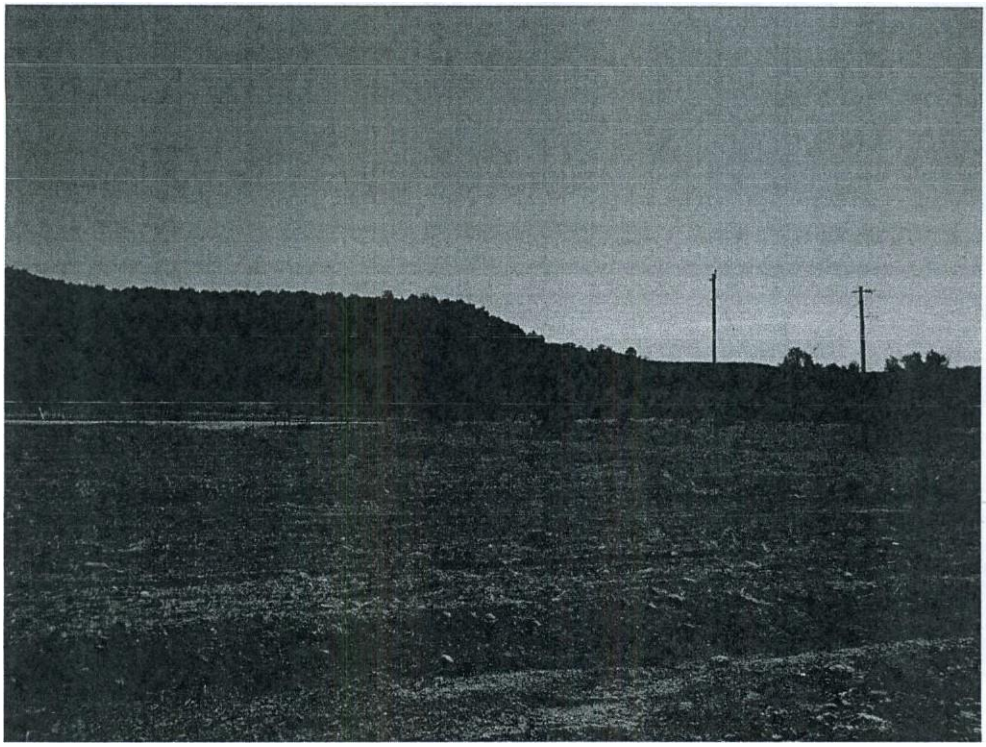
APPENDIXD

PHOTOGRAPHS OF PROPOSED ACTION AREAS

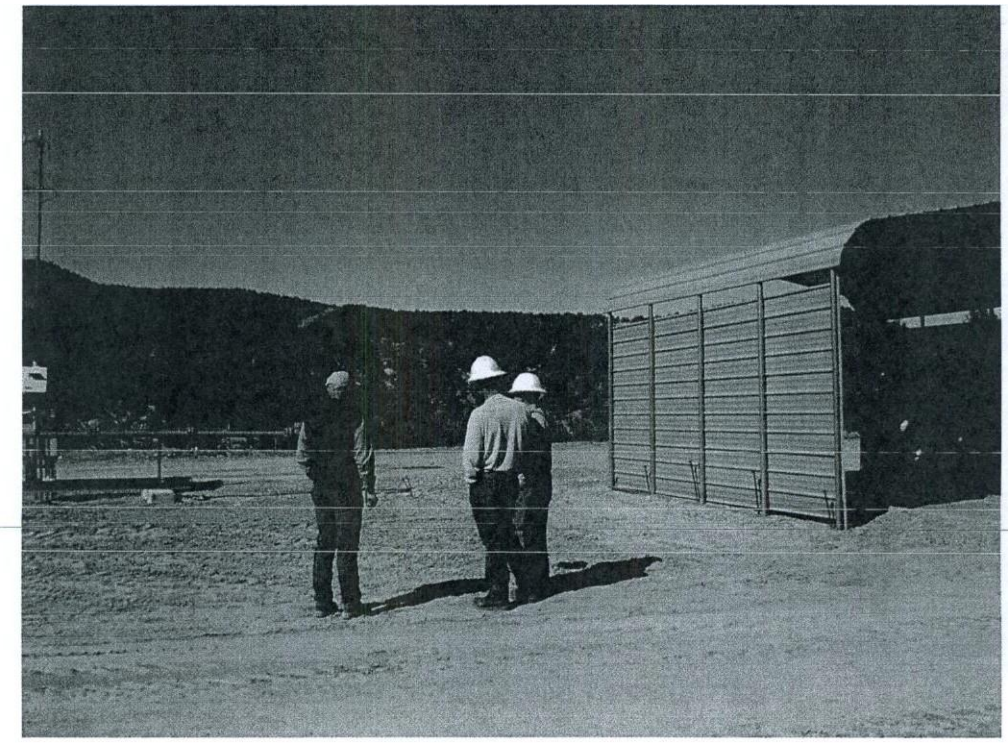


Rosa Unit SOC- North from Centerstake


Rosa Unit SOC- South from Centerstake

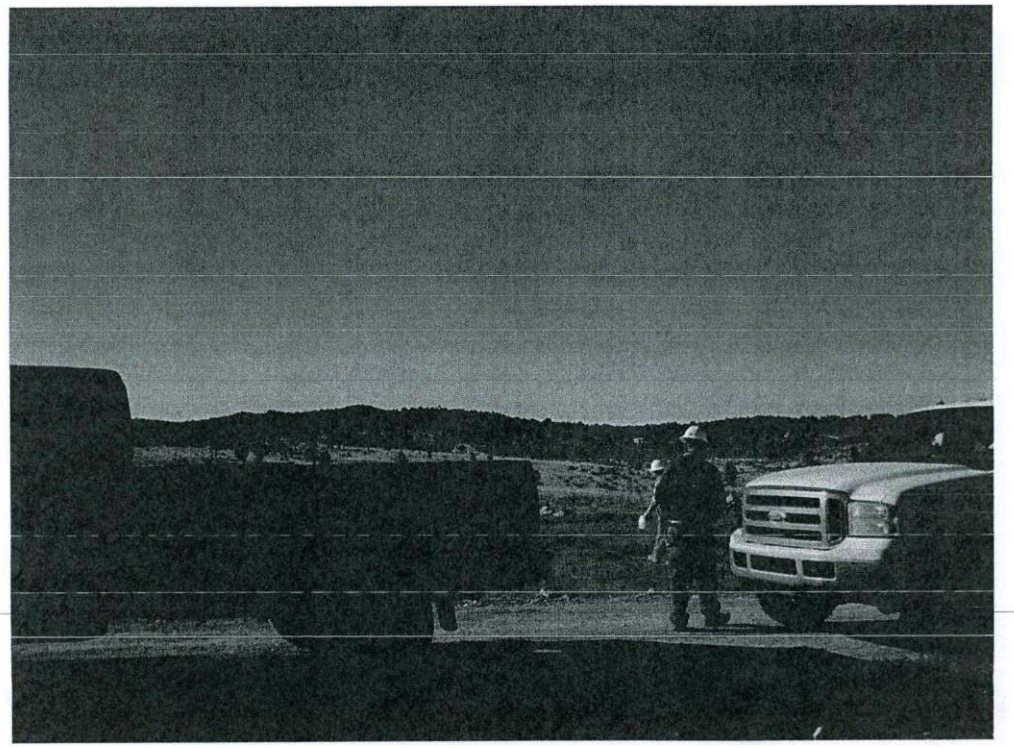


Rosa Unit SOC-East from Centerstake

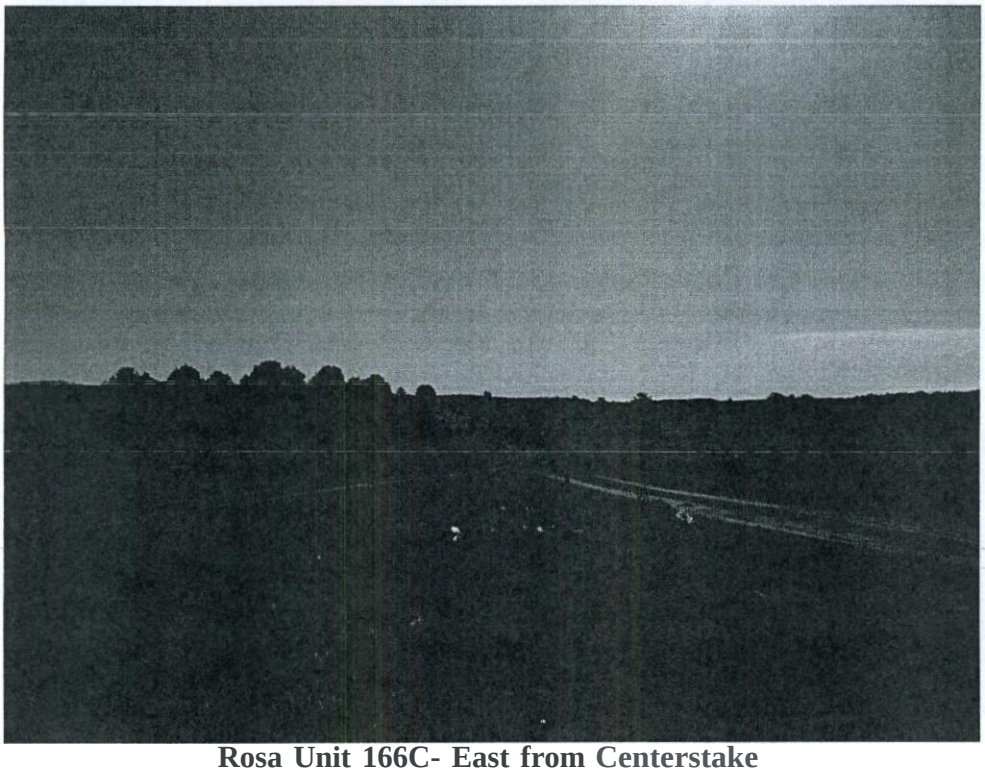


Rosa Unit SOC-West from Centerstake

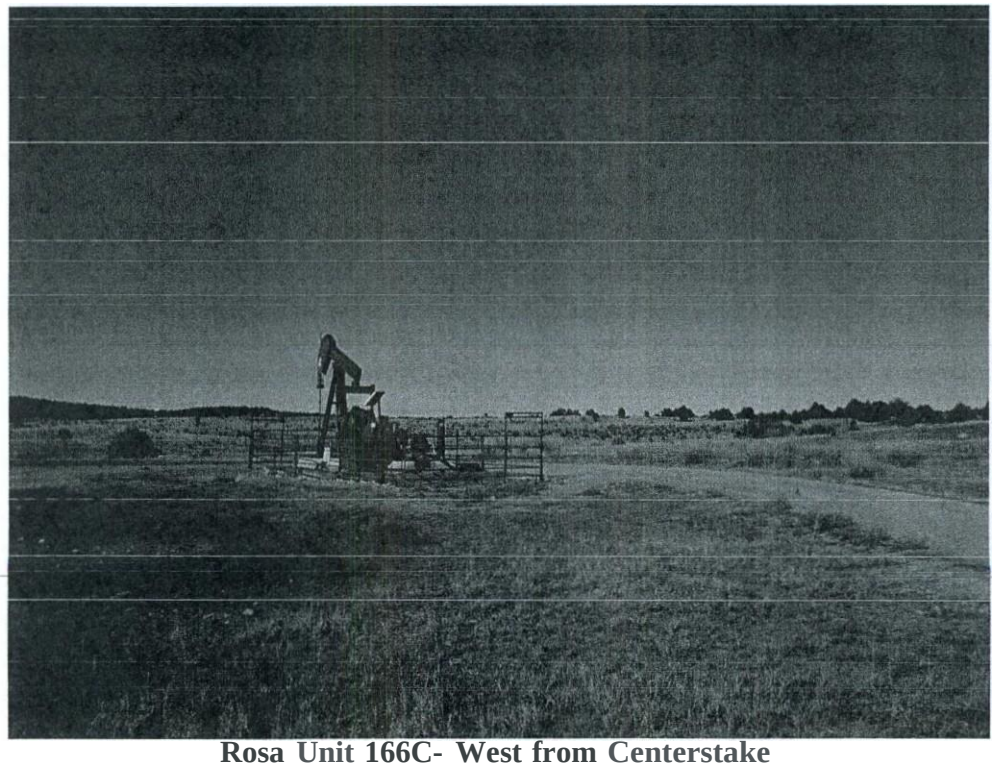
Rosa Unit 116C- North from Centerstake



Rosa Unit 166C- South from Centerstake



Rosa Unit 166C- East from Centerstake



Rosa Unit 166C- West from Centerstake

APPENDIXE

BIOLOGICAL SURVEY REPORT

BIOLOGICAL SURVEY REPORT

For the Proposed:

Rosa Unit Nos. SOC and 166C
Well Pads & Pipeline Ties

Sponsored by:

Williams Production Company, LLC
Williams Four Corners, LLC Aztec,
New Mexico

Prepared By:

Nelson Consulting, Inc
Durango, Colorado

RIO ARRIBA COUNTY, NEW MEXICO

TABLE OF CONTENTS

PROJECT DESCRIPTION 2
Location 2
Disturbance..... Error! Bookmark not defined. Off-Site Methods 5
Survey Methods..... S
ACTION AREA 5
Proposed Action Area 5
Physical Description of Area 5
Topography, Terrain, & Geology 5
Biological Description of Area 6
BLM Areas of Critical Environmental Concern and Specially Designated Areas..... 7
SURVEY RESULTS..... 7
Federally Listed Threatened and Endangered Species..... 7
BLM-FFO Special Management Species (SMS)..... 7
DISCUSSION 8
RECOMMENDED MITIGATION MEASURES..... 9
CERTIFICATION..... 9
LITERATURE CITED 11
APPENDIX A..... 11
APPENDIX B..... 15
APPENDIX C..... 17
APPENDIX D..... 29
APPENDIX E 31

WILLIAMS PRODUCTION COMPANY, LLC &
WILLIAMS FOUR CORNERS, LLC
PROPOSED
Rosa Unit Nos. SOC and 166C
WELL PADS AND PIPELINE TIES

The purpose of this report is to evaluate the potential for federally listed threatened, endangered, and candidate species to occur within the proposed action areas and also to evaluate the potential for Bureau of Land Management (BLM) Special Management Species, to occur within the proposed action areas. The BLM defines an action area as any area that may be directly or indirectly impacted by a proposed action. This report is prepared in accordance with the BLM's biological survey guidelines and is intended to provide the agency with information to make determinations of effect on species with special conservation status.

PROJECT DESCRIPTIONS

Williams Production Company, LLC (Williams) has Applications for Permit to Drill (APDs) with the Bureau of Land Management, Farmington Field Office (BLM-FFO) for a Blanco Mesaverde/Basin Dakota gas well (Rosa Unit No. 80C) and a Basin Mancos/Blanco Mesaverde/Basin Dakota gas well (Rosa Unit No. 166C). These wells would be twinned with existing Rosa Unit well pads. The proposed actions would include the construction, drilling, production, and fmal abandonment of these wells and associated well pads, and the construction, operation, and final abandonment of two natural gas pipeline ties. Williams Four Corners, LLC has two right-of-way (ROW) applications with the BLM-FFO for the associated natural gas pipeline ties, which would be necessary to deliver natural gas from the wells into the existing pipeline infrastructure.

Locations

The surface associated with the proposed actions is managed by the BLM-FFO.

The Proposed Rosa Unit No. SOC action area is located in the San Juan Basin of northwestern New Mexico, approximately 27.4 miles northeast of the town of Blanco. The proposed action area is plotted on the Bancos Mesa Northwest, New Mexico, 7.5-minute United States Geological Service (USGS) quadrangle map (see Appendix B). All of the proposed action activities would take place within the previously disturbed area of the existing Rosa Unit No. 379A well pad.

Directional drilling would be utilized. The surface location for the Rosa Unit SOC would be 1095 feet from the south line (FSL) and 1670 feet from the west line (FWL) of Section 8, Township 31 North, Range 05 West, New Mexico Principal Meridian (NMPM), Rio Arriba County, New Mexico. The bottom hole location would be 1650 feet FSL and 330 feet FWL of Section 8..

The proposed Rosa Unit No. 166C action area is located in the San Juan Basin of northwestern New Mexico, approximately-25.5_miles_north.easLoLthe town_of.Blanco. The proposed action area is plotted on the Gomez Ranch, New Mexico, 7.5-minute USGS quadrangle map (see Appendix B). Most of the proposed action would take place on the previously disturbed areas of the existing Rosa Unit No. 166 well pad.

Directional drilling would be utilized. The surface location for the proposed action area would be 1165 feet from the north line (FNL) and 1045 feet from the east line (FEL) of Section 30, Township 31 North, Range 05 West, NMPM, Rio Arriba County, New Mexico. The bottom hole location would be 330 feet FNL and 330 feet FEL of Section 30.

Disturbance

Disturbance acreage and construction details for the proposed actions (Alternative B) have been separated below into two sections (Tables 2.1 - 2.2). Combined disturbance totals for both proposed actions have been tabled in Table 2.0.

TABLE 2.0- ALTERNATIVE B COMBINED DISTURBANCE

Project Component	Previous/ Existing Disturbance Acreage	New Disturbance Acreage	Totals
2 Well Pads	3.14	0.79	3.93
2 Gas Pipeline Ties	0.19	0	0.19
TOTALS	**3.33**	**0.79**	**4.12**

Proposed Rosa Unit No. 80C

The maximum, permitted disturbance associated with this proposed action would be approximately 1.42 acres under the assumption of a 40-foot wide pipeline right-of-way (ROW) grant. There would be no new disturbance. The approximate acreage of disturbance associated with this proposed action is summarized in Table 2.1, below. Survey plats are provided in Appendix E.

TABLE 2.1

Well Pad	1.33	0	1.33
Gas Pipeline Tie	0.09	0	0.09
TOTALS	1.42	0	1.42

Well Pad (1.33 acres)

Alternative B would take place entirely within the existing footprint of disturbance from the Rosa Unit 379A well pad. Clearing the existing well pad is necessary to provide space for a drilling rig, completion rig, and other heavy equipment to access and drill the proposed well. The Rosa Unit No. 80C proposed well pad would measure 245 feet by 210 feet. There would be no construction zone. Existing disturbance within the proposed action area from existing well pad is 1.33 acres. There would be no new disturbance.

The maximum cut and fill measurements do not apply to this location, as it would be located on an existing level well pad.

Access Road

.The existing access .roacLto existing._RosalJllit we1Ll'•h_379A would M usedJo ac_ee s the proposed action area. No new access road construction would be necessary.

Gas Pipeline Ties (0.09 acre)

Once the proposed well is completed, 99.7 feet of associated pipeline route would be constructed, connecting the proposed Rosa Unit No. 80C to the existing Rosa Unit No. 379A pipeline. The pipeline would have a 40-foot-wide ROW. The maximum disturbance resulting from the pipeline tie would total 0.09 acre. The proposed pipeline tie would be contained on the proposed and/or existing well pad. There will be no new disturbance resulting from the installation of the pipeline tie.

For a detailed description of design features and construction practices associated with this proposed action, refer to the subject APDs on file at the BLM-FFO, Farmington, New Mexico. Recommended mitigation measures would be implemented as Conditions of Approval (COAs) to the APDs.

Proposed Rosa **Unit** No. 166C
The maximum, permitted disturbance associated with the proposed action would be approximately 2.7 acres under the assumption of a 40-foot wide pipeline right-of-way (ROW) grant. Actual new disturbance would be approximately 0.79 acre. The approximate acreage of disturbance associated with this proposed action is summarized in Table 2.2, below. Survey plats are provided in Appendix E.

TABLE 2.2

Project Component	Previous/ Existing Disturbance Acreage	New Disturbance Acreage	Totals
Well Pad	1.81	0.79	2.6
Pipeline Tie	0.1	0	0.1
TOTALS	**1.91**	**0.79**	**2.7**

Well Pad (2.6 acres)
The proposed action would include the expansion of an existing well pad using a D-8 bulldozer. Clearing for the well pad is needed to provide space and a level surface for a drilling rig, completion rig, and other heavy equipment to access and drill the proposed well. The Rosa Unit No. 166C proposed well pad would measure 225 feet by 250 feet with a 50-foot construction zone perimeter, for a total of approximately 2.6 acres. The proposed well pad would overlap an existing well pad and access road. Existing disturbance within the proposed action area from existing well pad, Rosa Unit No.166, would be 1.81 acres. Actual acreage of new disturbance would be 0.79 acre.

The maximum cut would be 8 feet on the northeastern corner (No. 6). The maximum fill would be 1 foot on the southeastern corner of the proposed well pad (No.2).

Access Road
The existing access road to existing Rosa Unit No. 166 would be used to access the proposed action area. No new access road construction would be necessary.

Pipeline Tie (0.1 acre)
Once the proposed well is completed, an associated pipeline route would be constructed, connecting the proposed Rosa Unit No. 166C to the existing Rosa Unit No. 166 pipeline. Rosa--l:Jnit-No.,--I-66G-would have 112.7–f-eet-of-asSGG-iated–pipeline.

The pipeline tie would have a 40-foot-wide ROW. The maximum disturbance resulting from the pipeline tie would total 0.1 acre. The proposed pipeline tie would be contained on the proposed and/or existing well pad. There will be no new disturbance resulting from the installation of the pipeline tie.

For a detailed description of design features and construction practices associated with the proposed action, refer to the subject APDs on file at the BLM-FFO, Farmington, New

Mexico. Recommended mitigation measures would be implemented as COAs to the APDs.

METHODOLOGY

Off-site Methods

Prior to conducting fieldwork, Nelson Consulting, Inc. (NCI) compiled a list of federally listed species and BLM Special Management Species (SMS) with potential to occur in Rio Arriba County. Lists were obtained from the following sources:

Species	Source
Federally Listed Threatened & Endangered Species	U.S. Fish and Wildlife Service Southwest Region (http://www.fws.gov/southwest/es/NewMexico/SBC intro.cfm)
BLM SMS	BLM-FFO T&E Biola ist

On-site Survey Methods

Pedestrian surveys of the proposed action areas were conducted by Cindy Lawrence (Nelson Consulting, Inc.) on April 05, 2010. Weather conditions were clear and cool (40 F) with winds from 0 to 5 miles per hour. The survey encompassed the proposed well pad locations and construction zones (if applicable). The surrounding areas were surveyed using binoculars to detect nests, raptors, or past signs of raptor use. Digital photos were taken of the proposed action areas (Appendix C), and all wildlife species, and all dominant plant species observed, were recorded (Appendix D).

ACTION AREA

Proposed Action Area

The proposed action areas include two proposed well pads with surrounding construction zones (if applicable).

Physical Description of Area

Topography, Terrain, & Geology

The geology of the proposed action areas is of the Tertiary San Jose Formation, which consists of a sequence of interbedded sandstones and mudstones.

Proposed Rosa Unit SOC:

Topography slopes to the west and southwest from the proposed location off an adjacent precipitous slope for approximately 0.1 mile into Cabresto Canyon. Elevation is 6259 feet. Cabresto Canyon flows approximately 1.2 miles north-northwest directly into Navajo Reservoir.

Proposed Rosa Unit 166C:

Topography is gently rolling with a slope to the west into a well-defined drainage that is within 50 feet of the proposed location. Elevation is 6,362 feet. This drainage flows north-northwest for approximately 1.12 miles into Laguna Seca Draw. Laguna Seca Draw flows into Navajo Reservoir approximately 3.0 miles to the west.

Soils

The Soil Conservation Service (now the Natural Resource Conservation Service [NRCS]) has surveyed the soils in the proposed project area. Complete soil information is available in the Soil Survey of Rio Arriba County Area, New Mexico, developed by the

United States Department of Agriculture, NRCS. Soils of the proposed action areas are mapped as the Orlie fine sandy loam, 1 to 8 percent slopes (Rosa Unit No. 80C) and the San Mateo sandy loam, 0 to 3 percent slopes (Rosa Unit 166C).

Proposed Rosa Unit No. SOC:
Orlie fine sandy loam is found on valley sides and mesa tops. This soil ranges from well drained to somewhat excessively drained on valley sides and hillsides. The parent material primarily consists of alluvium and eolian material derived from sandstone and shale. This soil has a deep structure (greater than 60 inches to underlying rock), which is moderately permeable. Available water capacity is very high with a moderate shrink-swell potential. This soil is moderately susceptible to water erosion. The major use of this soil type is livestock grazing. The potential plant community is characterized by western wheatgrass, Indian ricegrass, needle and thread, galleta, and big sagebrush.

Proposed Rosa Unit No.166C:
San Mateo sandy loam is found in valley floodplains. The parent material is alluvium derived from sandstone and shale. The typical profile is 3 inches of brown, sandy loam; 3 to 8 inches of pale brown, fine, sandy loam; 8 to 15 inches of pale brown, sandy loam; 15 to 46 inches of brown, clay loam; and 46 to 60 inches of pale brown, clay loam. The available water capacity is high, the permeability is moderately slow, and the soil is moderately sodic. Potential for water erosion is slight. The major use of this soil type is livestock grazing with a potential plant community of alkali sacaton, western wheatgrass, galleta, bottlebrush squirreltail, and four-wing saltbush.

Biological Description of Area

Habitat & Vegetation

The vegetation within the proposed action areas is composed of two community types: mature pinon-juniper woodlands and open sagebrush shrubland. Pinon-juniper wood lands and big sagebrush areas on Rosa Mesa have been manipulated in the past to enhance forage for both livestock and wildlife.

The Rosa Unit No. SOC's proposed location is on an existing well pad. The existing reclaimed well pad surface has yet to meet revegetation success parameters. Ground cover ranges from 0 to 30 percent. New grasses were beginning to emerge and had been heavily grazed at the time of the early April survey onsite. Cheatgrass was detected. Habitat surrounding the existing well pad is piiion-juniper woodland community. Vegetation within this community is typically composed of a pinon-juniper *(Pinus edulis – Juniperus osteosperma, J monosperma)* overstory. Common understory shrubs and grasses include big sagebrush *(Seriphidium tridentatum)*, broom snakeweed *(Gutierrezia sarothrae)*, rabbitbrush *(Chrysothamnus* spp.), four-wing saltbush *(Atriplex canescens)*, galleta *(Hilaria jamesii)*, Indian ricegrass *(Achnatherum hymenoides)*, blue grama *(Bouteloua gracilis)*, squirreltail *(Elymus elymoides)*, three-awn *(Aristida longiseta)*, and western wheatgrass *(Pascopyrum smithii)*. Yucca *(Yucca angustissima)*, agave *(Agave* sp.), and prickly pear cactus *(Opuntia* spp.) are present. Common forbs include Russian *thist e-(-8alsola iberica)*, cryptantha– (E'ryptantha– sJr.), and-–wooly- plantain *(Plantago patagonica)*. Ground cover varies from 25 to 35 percent. Where this community has been previously altered for livestock and wildlife grazing, the tree overstory has been diminished and the browse species have been increased. Crested wheatgrass *(Agropyron cristatum)* is common.

The Rosa Unit No. 166C's proposed location is on an existing well pad. Dominant flora species detected within the reclaimed well pad surface include crested wheatgrass, blue grama, and Russian thistle. Reclamation has been successful with ground cover ranging from 20 to 85 percent. Habitat surrounding the existing well pad is open sagebrush

shrubland. This habitat is typically composed of very scattered pinon and juniper trees, with the dominant species being big sagebrush. Other shrub species include rabbitbrush species and broom snakeweed. Forb species include daisy *(Erigeron* sp.), goosefoot *(Chenopodium* sp.), alyssum *(Alyssum* sp.), hairy golden aster *(Heterothica villosa)*, and redstem filaree *(Erodium cicutarium).* Grasses include Indian ricegrass, galleta, western wheatgrass, cheatgrass *(Bromus tectorum)*, and blue grama. Ground cover varies from approximately 25 to 45 percent. Where this community has been previously altered for livestock and wildlife grazing, crested wheatgrass is common.

BLM Areas of Critical Environmental Concern (ACECs) and Specially Designated Areas (SDAs)

The proposed Rosa Unit No. 166C action area is located within the Rosa Mesa Wildlife SDA. The proposed Rosa Unit No. 80C action area is located within one mile of a Bald Eagle ACEC.

The Rosa Mesa Wildlife SDA encompasses 69,762 acres. Of this, 47,375 acres are on public land and 61,406 acres have federal minerals. This area is heavily used by mule deer during the winter. Their distribution is often dependent upon the severity of the winter and human activities. During hard winters, the deer push further south, beyond the boundaries of the currently identified critical big game habitat.

The management goal of Rosa Mesa Wildlife Area SDA is "to protect and preserve wildlife habitat" (BLM 2003b).

The Rosa Unit No. 166C proposed action area is located 0.4i mile to the south-southwest of Bancos No.5 Bald Eagle ACEC.

SURVEY RESULTS

Federally Listed Threatened and Endangered Species

The United States Fish and Wildlife Service (USFWS) lists five Threatened and Endangered species, and three Candidate species with potential to occur in Rio Arriba County, New Mexico. Lists of these species with their conservation status, habitat requirements, and potential to occur in the proposed action areas can be found in Table 1.0 of Appendix A.

No federally listed species or associated habitats were observed during the biological surveys of the proposed action areas.

BLM-FFO Special Management Species (SMS)

Ten BLM-FFO SMS have the potential to occur in Rio Arriba County, New Mexico. Lists of these species with their conservation status, habitat requirements, and potential to occur in the proposed action areas can be found in Table 2.0 of (Appendix A).

Based on habitat found within the proposed action areas, four BLM-FFO SMS have the potential to occur in the proposed action areas:

- Bald eagle *(Haliaeetus leucoeephalus)*-- ––
- Golden eagle *(Aquila chrysaetos)*
- Peregrine falcon *(Falco peregrinus)*
- Prairie falcon *(Falco mexicanus)*

No SMS were observed within the proposed action areas during the biological surveys.

Raptor Nesting

According to the BLM-FFO's latest geographic information system (GIS) raptor nest data, no active or historic raptor nests have been recorded within one-third mile of the proposed action

areas.

The following tables indicate the distance from the proposed action areas to the nearest recorded raptor nests for the peregrine falcon, golden eagle, and prairie falcon.

Rosa Unit Nos.	Approximate Distance to Nearest Recorded Peregrine Falcon Nest
80C	15.5 miles West ofPAA
166C	15 miles West ofPAA

Rosa Unit Nos.	Approximate Distance to Nearest Recorded Golden Eagle Nest
80C	18 miles West ofPAA
166C	16 miles West-southwest ofPAA

Rosa Unit Nos.	Approximate Distance to Nearest Recorded Prairie Falcon Nest
80C	26 miles Southwest of the PAA
166C	25 miles West-southwest ofPAA

Wildlife
Mule deer *(Odocoileus hemionus)* and elk *(Cervus elaphus)* sign were detected on both proposed locations during the onsite surveys.

The following avian species were detected during field surveys:

Rosa Unit No. SOC:
American robin *(Turdus migratorius),* Townsend 's solitaire *(Myadestes townsendi),* common raven *(Corvus corax),* and house finch *(Carpodacus mexicanus).*

Rosa Unit No. 166C:
Sage sparrow *(Amphispiza belli),* common raven, and rock wren *(Salpinctes obsoletus).*

No prairie dog burrows were observed; no colonies are recorded within the vicinity of the proposed action areas.

Livestock
Livestock (cattle) sign was observed within the proposed action areas at the time of the biological survey. Wild horse sign was prevalent throughout the proposed action areas.

Noxious Weeds
No federally listed noxious or invasive weed species were observed within the proposed action areas. Cheatgrass, a state-listed noxious weed species, was present on the proposed locations. Russian thistle was detected on the proposed locations. Though this is not a listed species, it can ou.tcampet plant_ppulations in disturbed areas.

DISCUSSION
The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Executive Order 13186 (EO) was signed on January 10,2001 directing executive departments and agencies of the federal government to take certain actions to further implement the MBTA. Section 3 of the EO directed each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement, within two years, a Memorandum of Understanding (MOU) with the USFWS that shall promote the conservation of

migratory bird populations. Section 3(c) of the EO states that the MOU shall recognize that the agency may not be able to implement some elements of the MOU until such time as the agency has successfully included the elements in that agency's formal planning process (such as revision of agency land management plans), including public participation and NEPA analysis as appropriate.

A Natonal MOU between the BLM and the USFWS was signed on April 12, 2010. Included in the MOU is the stipulation that the BLM evaluate effects of projects on migratory birds. The BLM should identify where take may have a measurable negative effect on populations, focusing first on species of concern, priority habitats, and key risk factors. The BLM will then implement approaches to lessen such take.

The Rosa Unit No. 166C proposed action would remove approximately 0.79 acre of previously undisturbed open sagebrush shrubland habitat. This would include approximately five early to mid-sera!stage pifion pines within the Rosa Unit No. I66 proposed action area. The diameter at breast height (dbh) of the trees averages approximately 5 inches. These trees provide very limited shade for wildlife and provide perches for birds. The survey was conducted outside of nesting season, therefore, it unknown if any birds utilize the area for nesting. There would be no new ground disturbance within the Rosa Unit No. 80C action area.

RECOMMENDED MITIGATION MEASURES

Management prescriptions related to oil and gas development in the Rosa Mesa Wildlife Area SDA include the following:

- For new and current oil and gas leases, seasonal timing limitations exist on drilling and construction from December I through March 31 in the area north of Frances Canyon Wash and south of Cabresto/Bancos Canyons.
- New oil and gas leases are managed under a Controlled Surface Use constraint.
- ROWs are allowed on a case-by-case basis with special management constraints and mitigation.
- Visual Resource Management Class II and IV designations are implemented.
- Key browse species are managed to meet the needs of wintering deer. This includes big sagebrush, antelope bitterbrush, and mountain mahogany.

The BLM-FFO Interim Management Policy regarding the Migratory Bird Treaty Act (per Instruction Memorandum No. NM-F00-2010-001, dated February 2010) establishes mitigation measures to minimize the possibility of unintentional take of migratory birds. For projects with less than 4.0 acres of vegetative disturbance, should active nests be observed within the proposed action area, construction would cease and a BLM-FFO biologist should be contacted immediately.

All construction activities would be confined to permitted areas only. Rapid and permanent vegetation and cover reestablishment would minimize impacts to migratory birds and other wildlife species. All hazards associated with construction and operation of the proposed action would be fenced or contained in storage tanks.

The proposed Rosa Unit No. 80C is located within one mile of Bancos No. 5 Bald Eagle ACEC, a designated Noise Sensitive Area (NSA). Noise standards of 48.6 dB(A) Leq would be achieved at established agency receptor points. Each bald eagle ACEC has receptor points at the edge of the established "Core Area" inside the "Buffer Area" of the Bald Eagle ACEC. Noise cannot exceed 48.6 dB(A) at any time between 11/1 and 3/31 at the "Core Area" of the ACEC. If a compressor or pump-jack would be placed on site, a 48.6 dB[A] Leq, or lower, noise level would be enforced at designated receptor points. The operator is required to file a sundry notice within 5 days of setting a compressor or pump-jack on location, if the noise source exceeds the noise

standard.

The sundry notice would include information on why the compressor is needed, the estimated time the compressor would be in use, and the manufacturer's data (size of unit, horsepower, model type and type of motor). A 1:24,000 (7.5 minute series) map or GIS generated map would be submitted with the sundry. The map would show the proposed compressor location and all noise sensitive areas within a two mile radius of the well location. In addition, a 24 hour time weighted average background noise survey may be required.

CERTIFICATION

To the best knowledge of NCI, the proposed action, with the successful implementation of mitigation measures, would not violate any provisions of the Endangered Species Act of 1973, as amended. Conclusions are based on actual field examinations and are correct to the best of my knowledge.

Signature of Field Biologist:-- = ->--'! "'/::.. — — **Date:** 04/19/11

!Ms. Cindy Lnl'r ntt
Nelson Consulting, Inc.
835 East Second Avenue, Suite 250
Durango, Colorado
970-375-9703

APPENDIX A

Table 1.0 U. S. Fish and Wildlife Service Federally Listed Species with the Potential to Occur in Rio Arriba County, New Mexico

Table 2.0 BLM-FFO Special Management Species

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TABLE 3.1: FEDERALLY LISTED (USFWS} THREATENED, ENDANGERED, AND CANDIDATE SPECIES WITH POTENTIAL TO OCCUR IN RIO ARRIBA COUNTY, NEW MEXICO

Species	Federal Status	Habitat	Potential to Occur in Proposed Action Areas (PAAs)
		FISH	
Rio Grande cutthroat trout *(Oncorhynchus clarki virgina/is)*	Candidate	Small streams and lakes at high elevations (7,500 - 10,750 feet)	DOES NOT OCCUR: No streams within the PAAs or within the immediate vicinity ofPAAs
Rio Grande silvery minnow *(Hybognathus amarus)*	Endangered	Streams with slow to moderate current over silty or sandy substrate; depth of stream typically less than 50 em Current known distribution: perennial sections of Rio Grande and associated canals	DOES NOT OCCUR: No streams within PAAs or within the immediate vicinity of the PAAs
Roundtail chub *(Gila robusta)*	Candidiate	Rocky runs, rapids, and pools of creeks and small to large rivers.	DOES NOT OCCUR: No streams within the PAAs or within the immediate vicinity ofPAAs
		BIRDS	
Interior least tern *(Sterna anti/larum)*	Endangered	Lakes and rivers with sandy beaches and mudflats; Nesting: riverine sandbars or salt flats Winters: out of region	DOES NOT OCCUR: No lake or river margins with suitable habitat within PAAs or within immediate vicinity ofPAAs
Mexican spotted owl *(Strix occidenta/is Iucida)*	Threatened with Critical Habitat	Old growth or mature forests with complex structural components (uneven aged stands, high canopy closure, multi-storied levels, high tree density), preferring canyons with riparian or conifer habitats Nesting: trees, cliff ledges, or caves	DOES NOT OCCUR: No structura lly complex forests or riparian/conifer canyons within the PAAs or within immediate vicinity of the PAAs
Mountain plover *(Charadrius montanus)*	Proposed	High plains/short-grass prairie, plowed fields, and desert tablelands; commonly found in prairie dog towns.	DOES NOT OCCUR: No short-grass prairie, plowed fields, tablelands, or prairie dog towns occur within the PAAs or within the immediate vicinity ofthe PAAs
Southwestern willow flycatcher *(Empidonax traillii extimus)*	Endangered with Critical Habitat	Breeding: Dense, riparian habitats Winters: out of region	DOES NOT OCCUR: No riparian areas within PAAs or within immediate vicinity of PAAs
Yellow-billed cuckoo *(Coccyzus americanus)*	Candidate	Breeding: tall cottonwood, mature willow riparian, or deciduous woodlands; moist thickets; orchards; or overgrown pastures Winters: out of region	DOES NOT OCCUR: No cottonwood, riparian, or deciduous woodlands; moist thickets; orchards; or overgrown pastures within PAAs or within the immediate vicinity of the PAAs
		MAMMALS	
Black-footed ferret *(Muste/a nigripes)*	Endangered	Grasslands, steppe, and shrub steppe; closely associated with prairie dog colonies (preferably	DOES NOT OCCUR: No prairie dog burrows within PAAs or within the immediate

Species	Federal Status	Habitat	Potential to Occur in Proposed Action Areas (PAAs)
		colonies larger than 80 hectares)	vicinity of PAAs
New Mexican meadow jumping mouse *(Zapus hudsonius luteus)*	Candidate	Sedge-forb-willow zones along pennanent streams, large wet meadows within river floodplains, narrow riparian zones along irrigation ditches.	DOES NOT OCCUR: No riparian habitat occurs within the pAAs or within the immediate vicinity ofPAAs
AMPHIBIANS			
Jemez Mountains salamander *(Plethodon neomexicanus)*	Candidate	Mixed conifer habitat with abundant rotted logs and surface rocks; vegetation is dominated by Douglas-frr, spruce, . ponderosa pine, white fir, w1th occasional as en.	DOES NOT OCCUR: No mixed conifer forest habitat occurs with the PAAs or within the immediate vicinity of the PAAs.

APPENDIXB

PROJECT MAPS

Figure 1: Project Area Map
Williams Production Company, LLC
Rosa Unit No.s 080C and 166C
T31N R5W Sections 8 and 30
Rio Arriba County, New Mexico

Figure 2: Vicinity Map Williams Production Company, LLC Rosa Unit No.s 080C and 166C T31N R5W Sections 8 and 30 Rio Arriba County, New Mexico

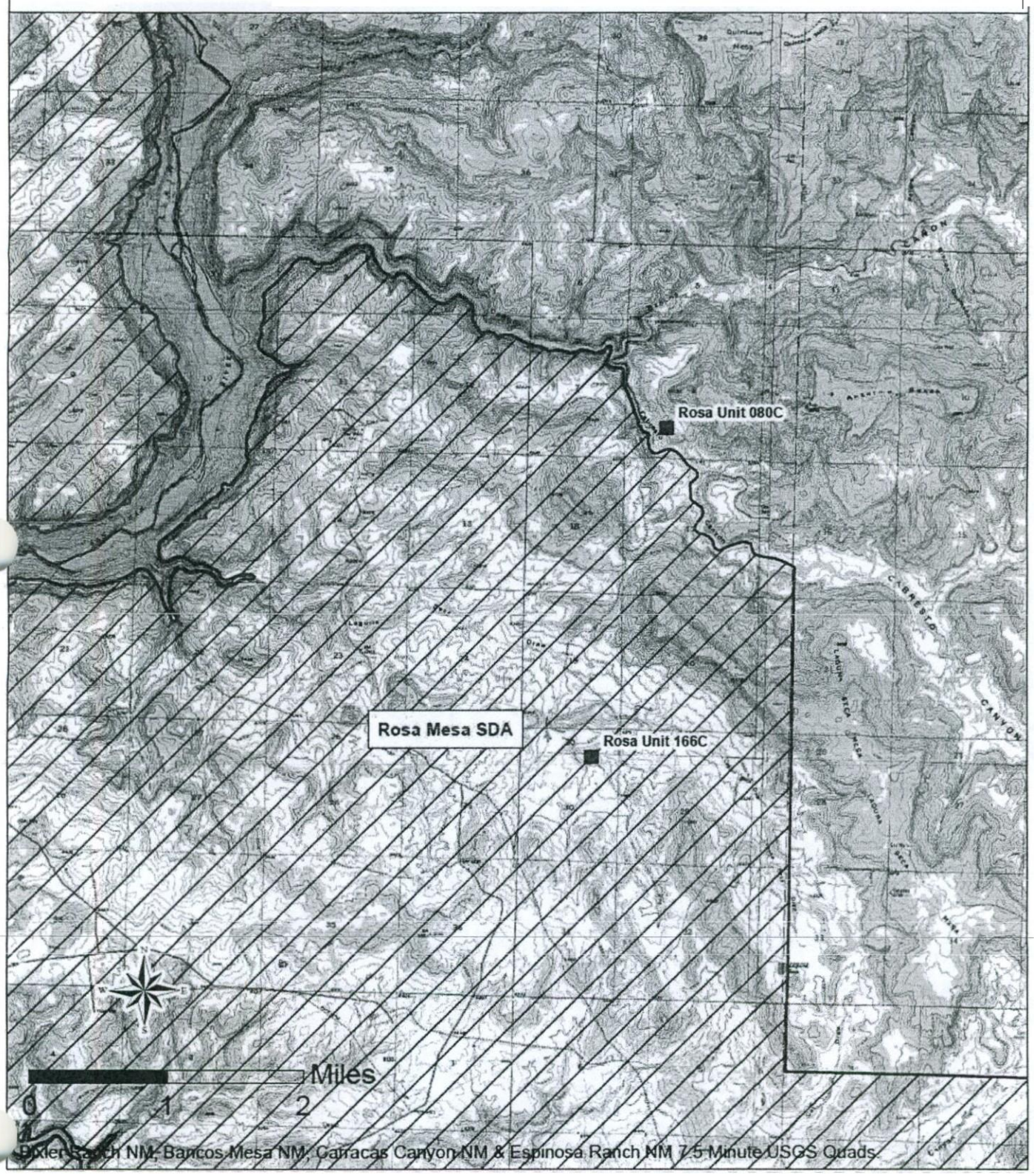
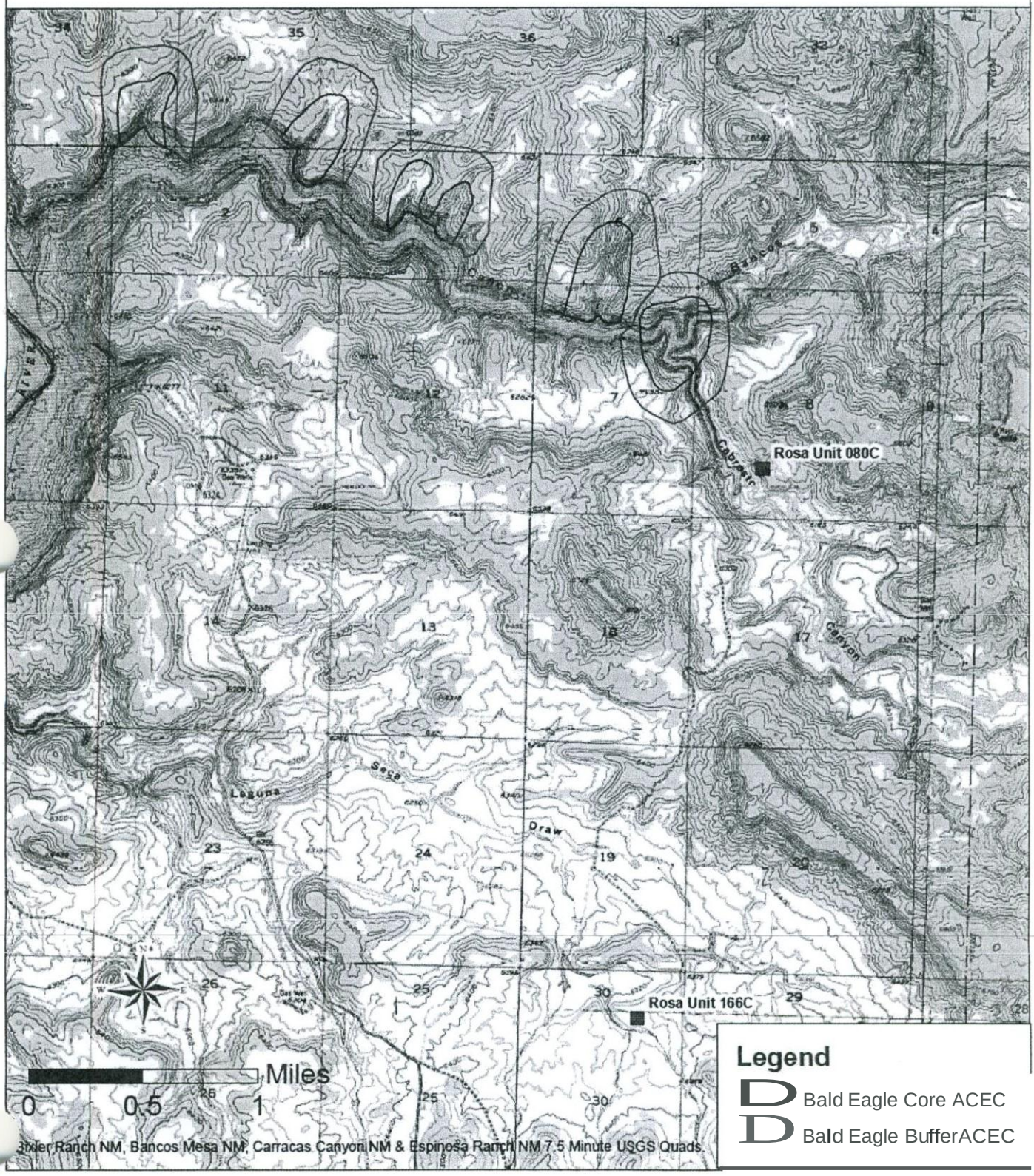
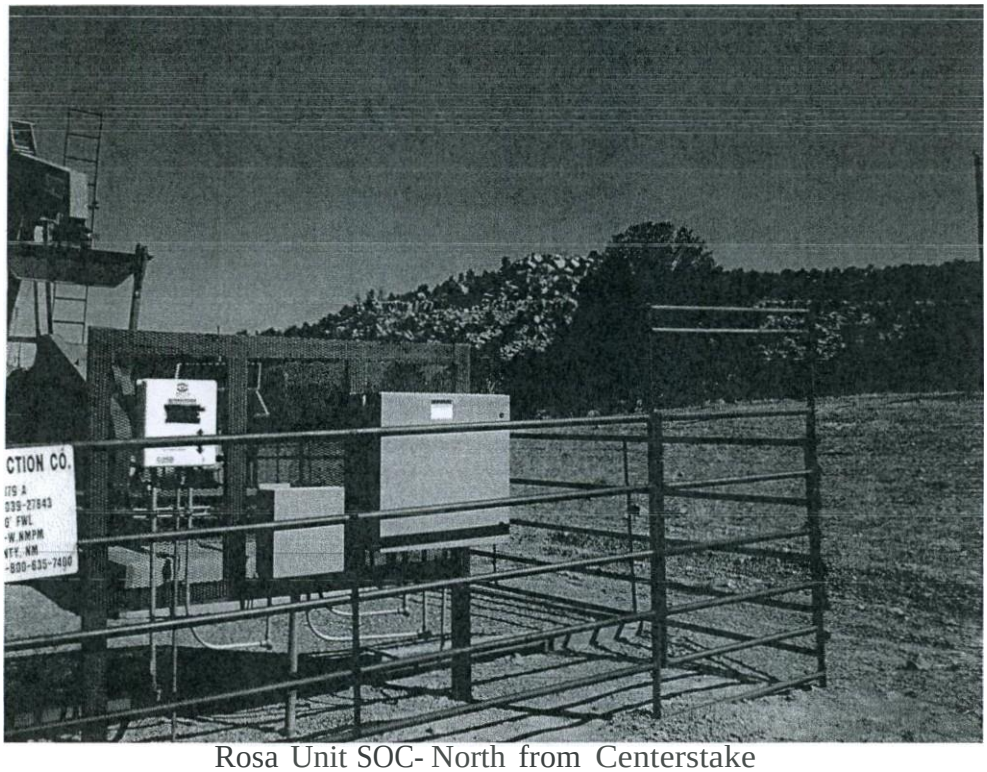


Figure 3: Orthophoto Map Williams Production Company, LLC Rosa Unit No.s 80C and 166C T31N R5W Sections 8 and 30 Rio Arriba County, New Mexico

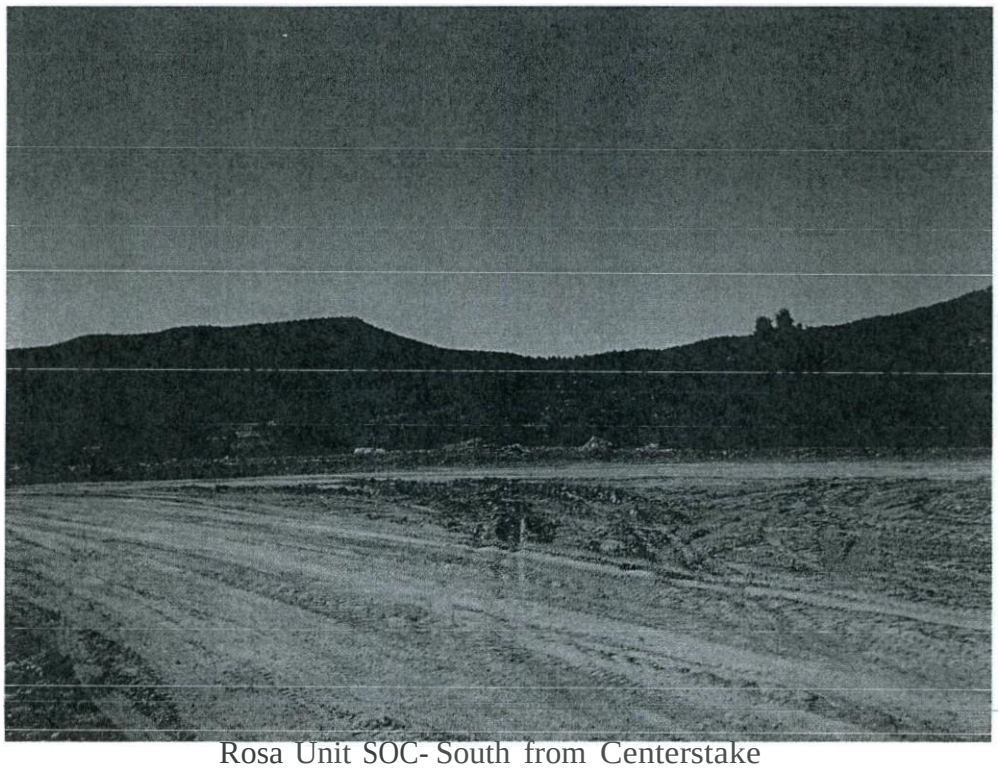
Figure 4: Core Bald Eagle Areas of Environmental Concern
Williams Production Company, LLC
Rosa Unit No.s 080C and 166C
T31N RSW Sections 8 and 30
Rio Arriba County, New Mexico

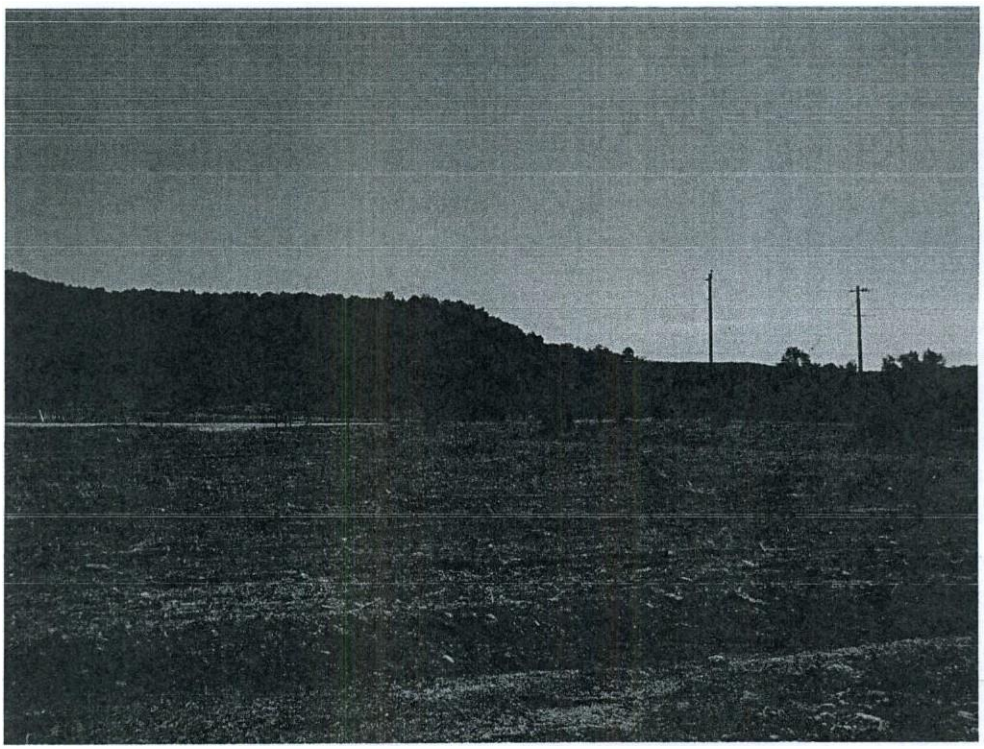


APPENDIXC
PHOTOGRAPHSOFSURVEYAREA

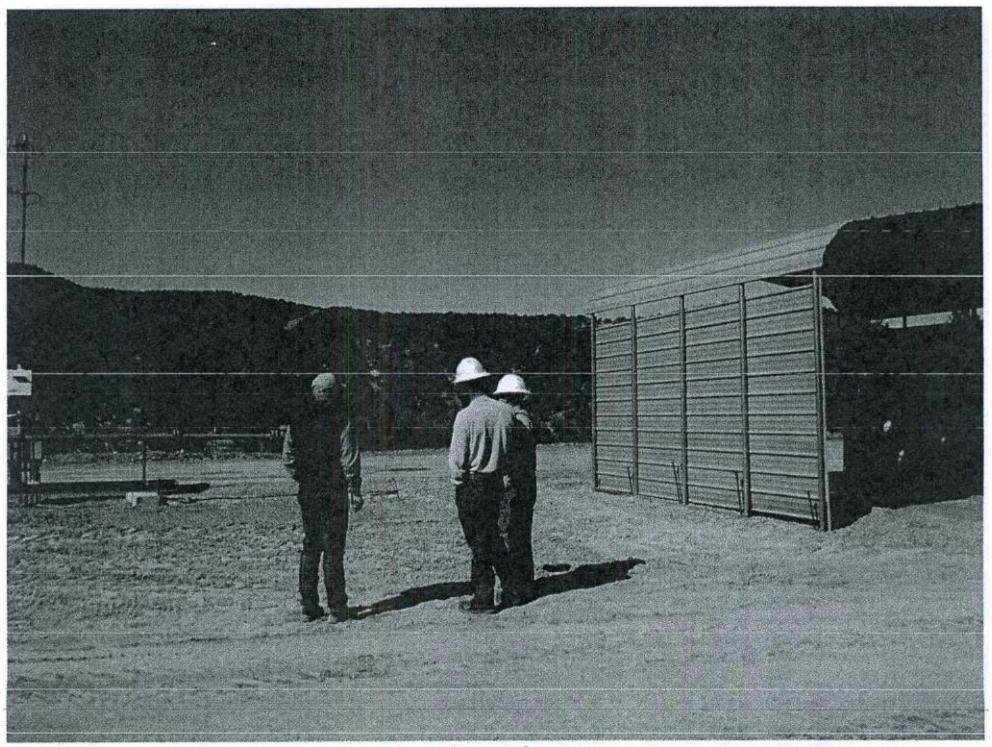


Rosa Unit SOC- North from Centerstake


Rosa Unit SOC- South from Centerstake

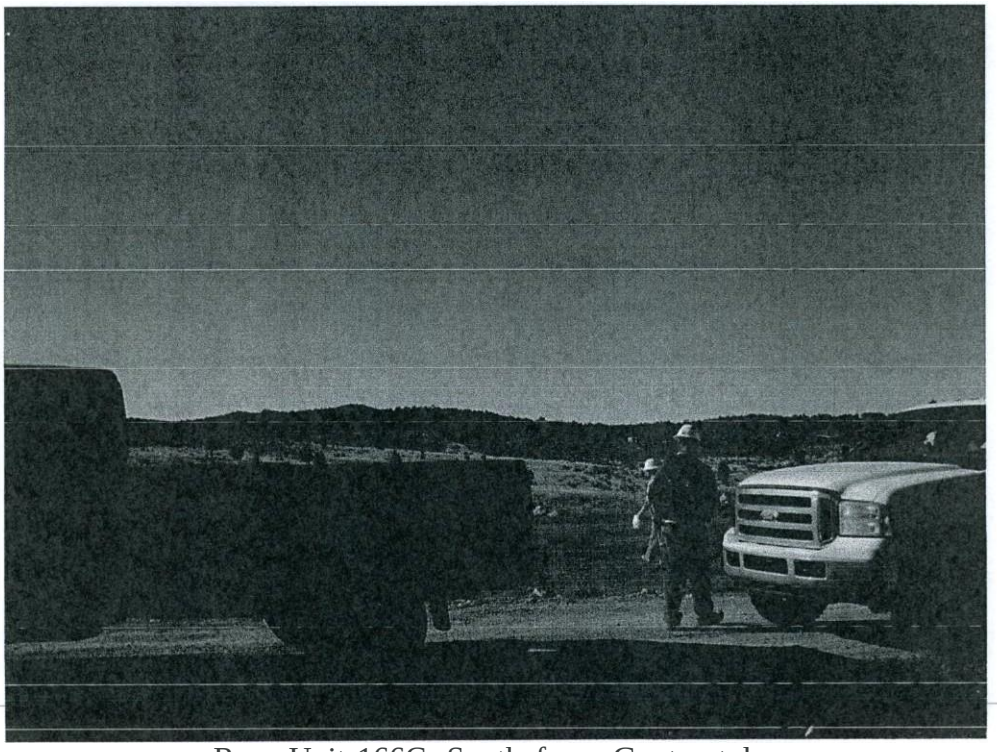


Rosa Unit SOC-East from Centerstake



Rosa Unit SOC-West from Centerstake

Rosa Unit 116C- North from Centerstake



Rosa Unit 166C- South from Centerstake

Rosa Unit 166C- East from Centerstake

Rosa Unit 166C- West from Centerstake

APPENDIXD

FLORA AND FAUNA
OBSERVED IN THE PROPOSED ACTION AREAS

DOMINANT PLANTS AND WILDLIFE OBSERVED IN THE PROPOSED ACTION AREAS

GRASSES *Brornus tectorurn*	Cheatgrass
Agropyron cristatum	Crested wheatgrass
Bouteloua gracilis	Bluegrama
Sporobolus cryptandrus	Sand dropseed
FORBS	
Verbena bracteata	Prostrate vervain
Gutierezia sarothrae	Broom snakeweed
Sa/sola iberica	Russian thistle
SHRUBS	
Artemisia tridentata	Big sagebrush
Chrysotharnnus spp.	Rabbitbrush
TREES	
Pinus edulis	Pinon pine
BIRDS *Corvus corax*	Common raven
Myadestes townsendi	Townsend's solitaire
Turdus migratorius	American robin
Carpodacus rnexicanus	House finch
Arnphispiza belli	Sage sparrow
Salpinctes obsoletus	Rock wren
MAMMALS	
Odocoileus hemionus	Mule deer (scat)
Cervus e/aphus	Elk (scat)

APPENDIXE

SURVEY PLATS

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PO Box 1980. Hobbs. NM 88241-1980

D1str1ct ▮▮
"O Drawer 00. Artes1a NM 88211-0719

01Str1Ct III
1000 R1o Brazos Rd.Aztec. 1+1 67410

D1str1ct IV
PO Box 2086, Santa Fe. NM 67504–2008

State of New Mexico
Ener<JV, Mir1rals & Nl!t.t.ral Ano.rces

OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

Form C-102
Rev ised February 21. 1994
Instruct1ons on baCk
Submit to Approprtate District Ofhce
State Lease – 4 Cop1es
Fee Lease – 3 Cop1es

[ ] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	'1-'ool Name
	72319 / 71599	BLANCO MESAVERDE / BASIN DAKOTA

•Property Code	Property Name	Well Nunber
17033	ROSA UNIT	BOC
OGRIO .	**'Operator Name**	**'E levatlon**
120782	WILLIAMS PRODUCTION COMPANY	6259'

10 Surface Locatio

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
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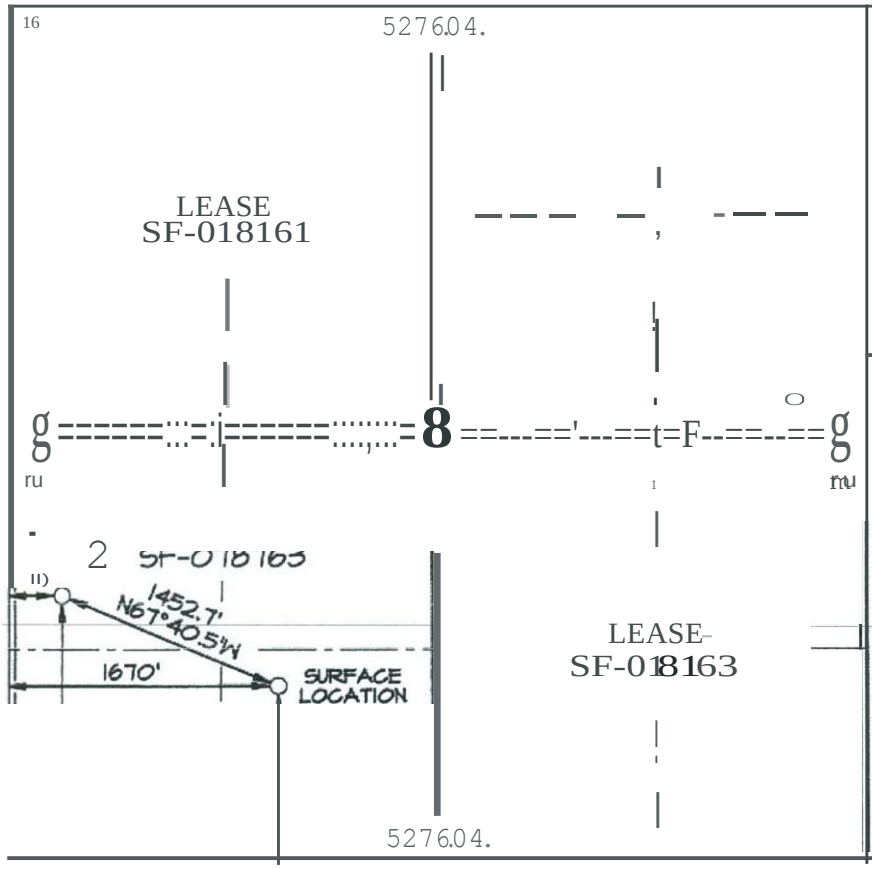
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



17 OPERATOR CERTIFICATION

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Signature

Pr1nted Name

Title

Date

SURVEYOR CERTIFICATION

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Date Rev1sed: MAY 3. 2006
Survey Date: FEBRUARY 9. 2005

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15259

W1LUAMS PRODUCIJON COMPANY ROSA UNJ:I' I/80C
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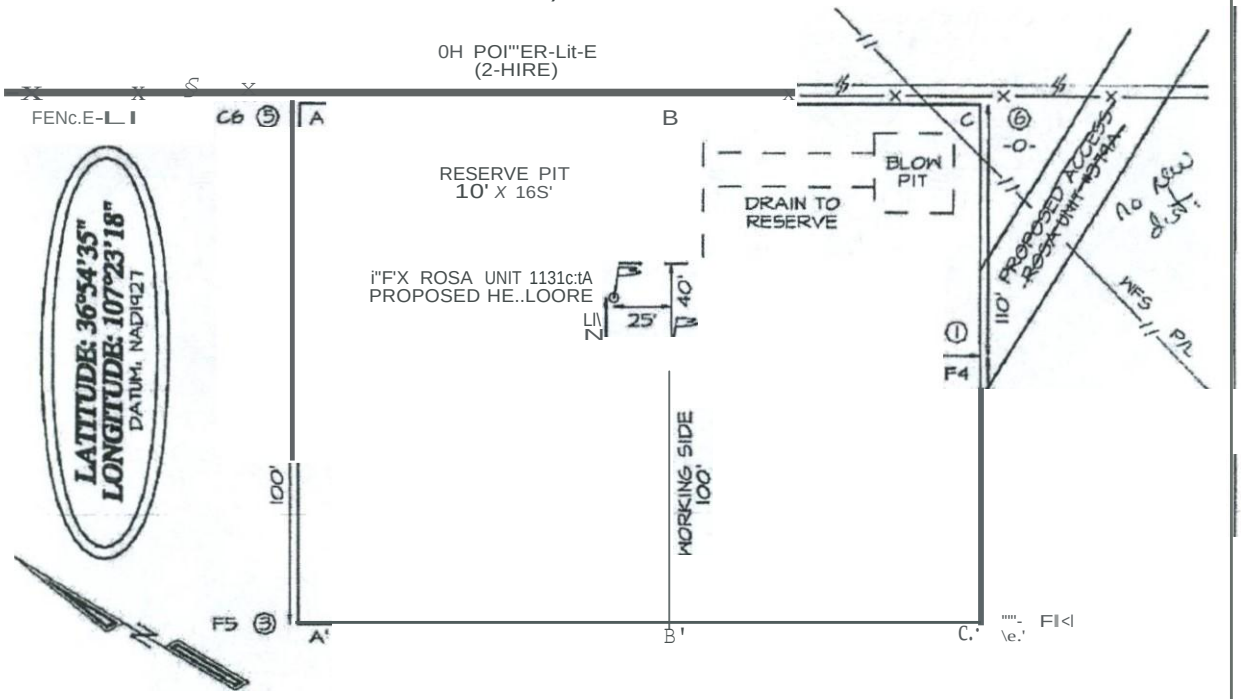

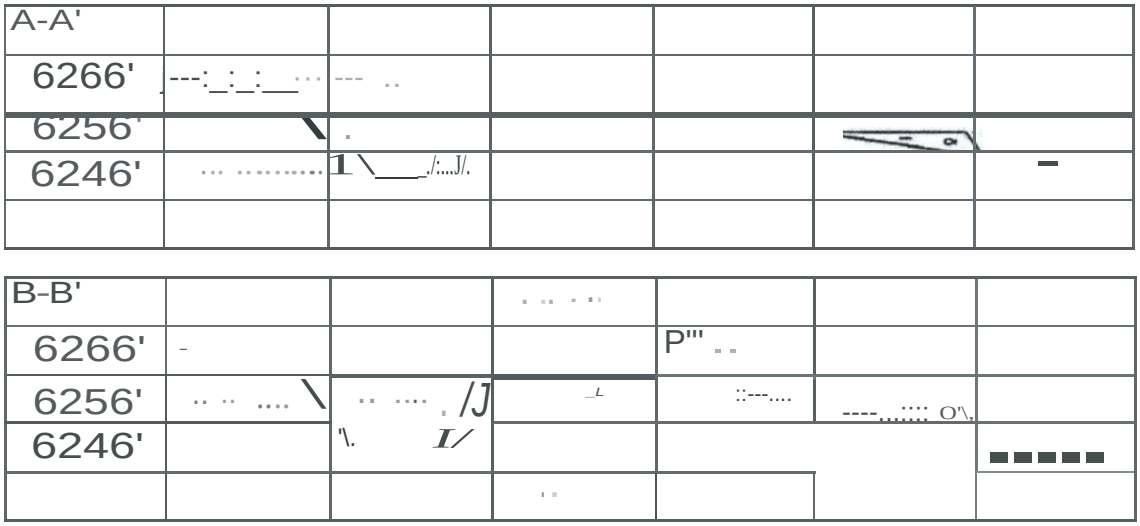

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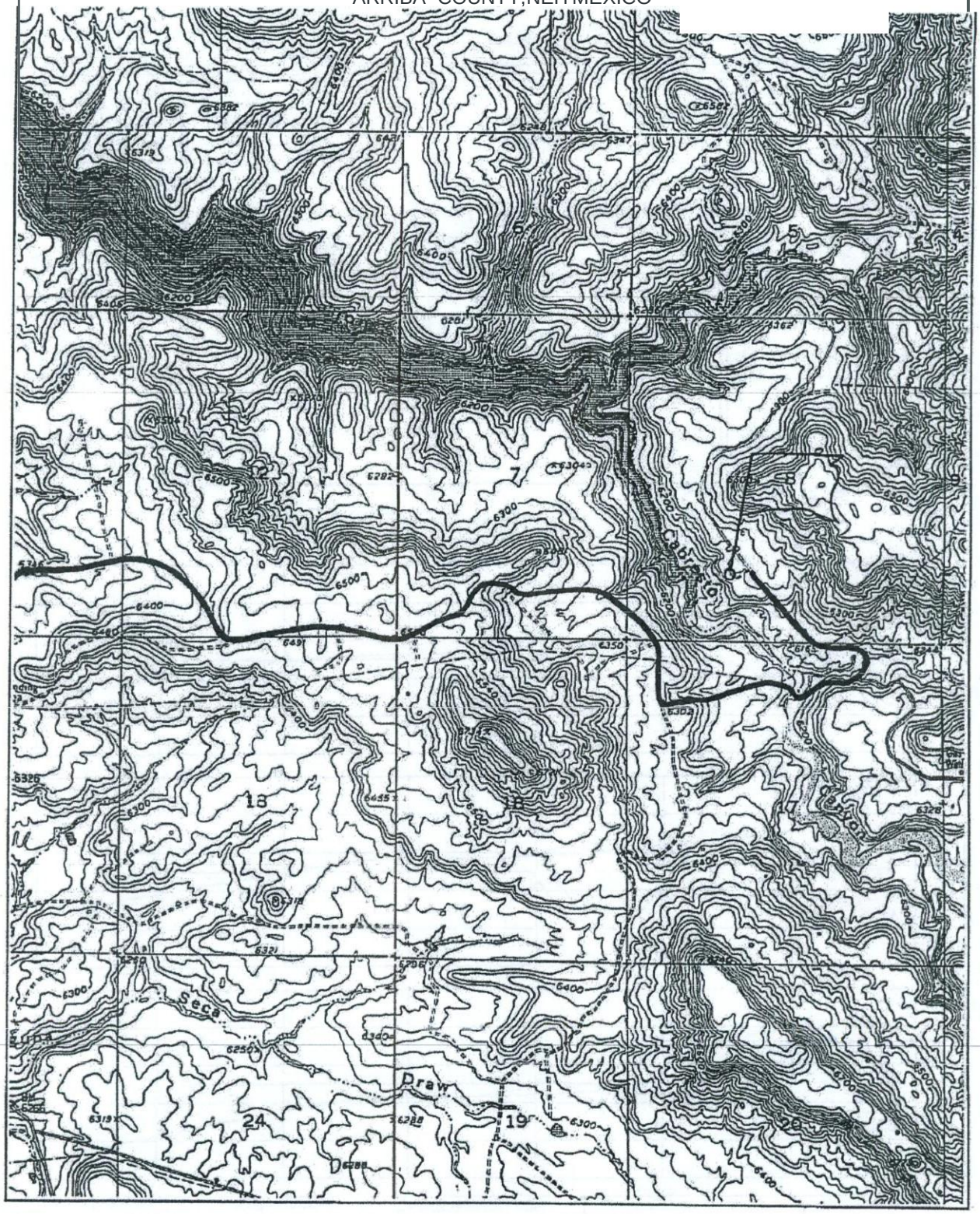

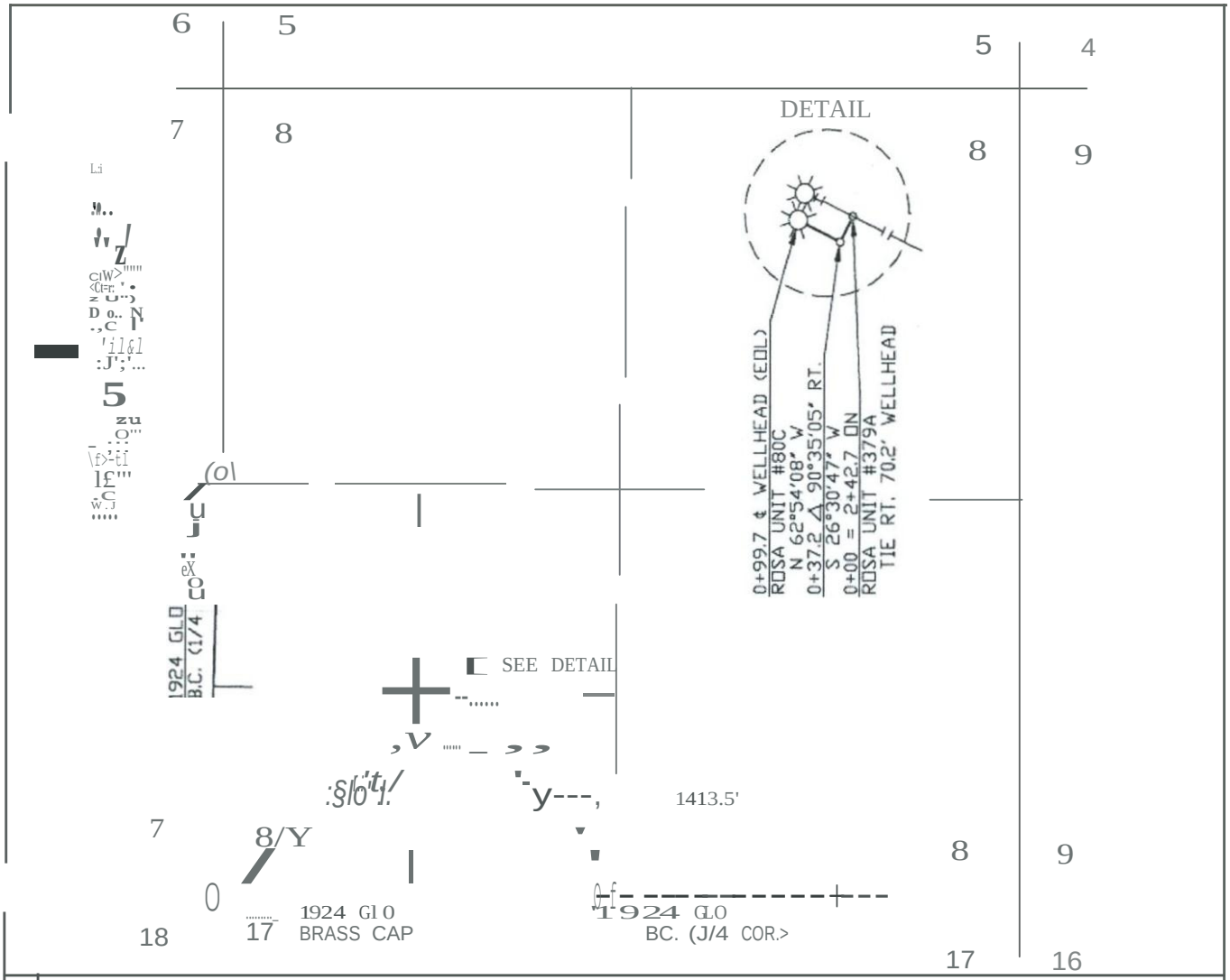

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COUNTY• RIO ARRIBA

WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES

SAN JUAN GATHERING SYSTEM
VPX – ROSA UNT BOC
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<REF 0\/G. 46A765.0-153-D
SEC. 8, T-31-N, R-5-V, NMPM

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OlStrlct Ill
1000 R1o Brazos Rd _ Aztec, NM 87410

01Str1Ct IV
1220 S. St. Frenc1s 0" _ Sl!nta Fe. NM 67505

State of New Mexico
Energy. 1-hnerals & Natlrel ReSOll"ces Department

OIL CONSERVATION DIVISION
1220 South St. Franc is Or.
Santa Fe. NM 87505

Form C-102
ReVlSed October 12, 2005
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State Lease - 4 COotes
Fee Lease - 3 C0()1es

[ ] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API "lJmber	Pool cooe	'Pool Name	
	97232 / 72319 / 71599	BASIN MANCOS / BLANCO MESAVERDE / BASIN DAKOTA	
Property Cooe	PrOI)erty Name		Well ruroer
17033	ROSA UNIT		166C
OGRIO No.	'Operator Name		'Elevat1on
120782	WILLIAMS PRODUCTION COMPANY		6362'

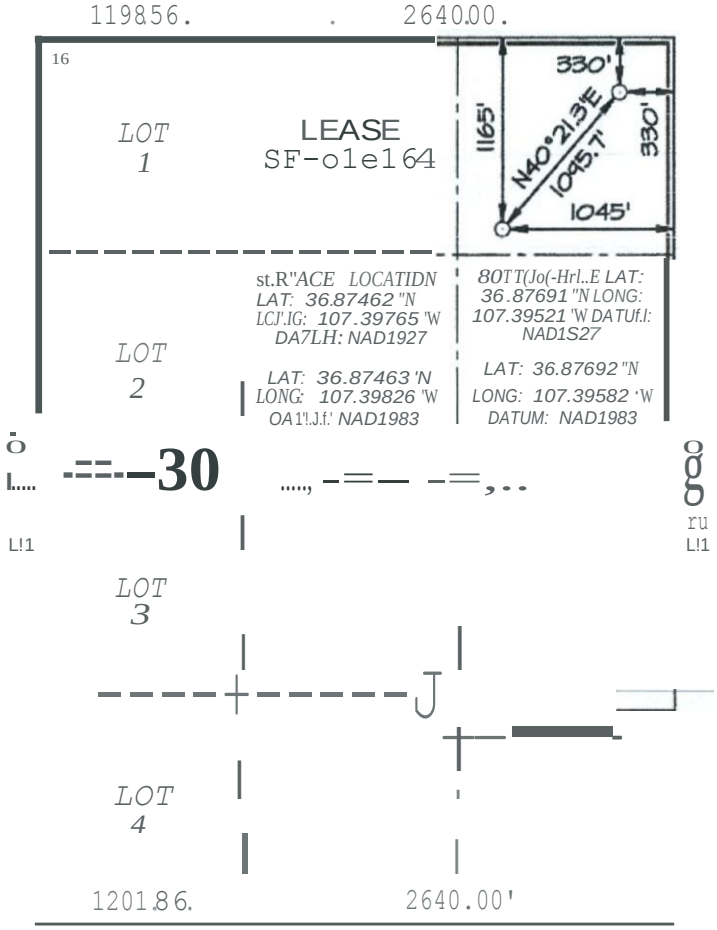
10 Surface Locat10n

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/!loutll In	Feet from the	East/West line	County
A	30	31N	5W		1165	NORTH	1045	EAST	RIO ARRIBA

11 Bottom Hole Location If Oifferent From Surface

no.	S.,;	;	LDt	fRt fraa tre	Norlft/SOUtll Iw			RIO
				330	NORTH	330	EAST	
!•Dod....., A<roo			N.Joint IftflJl	CIlrB>I-call				
232.69 Acres - (N/2)								

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



17 OPERATOR CERTIFICATION

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

Signature Date

Printed Name

SURVEYOR CERTIFICATION

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

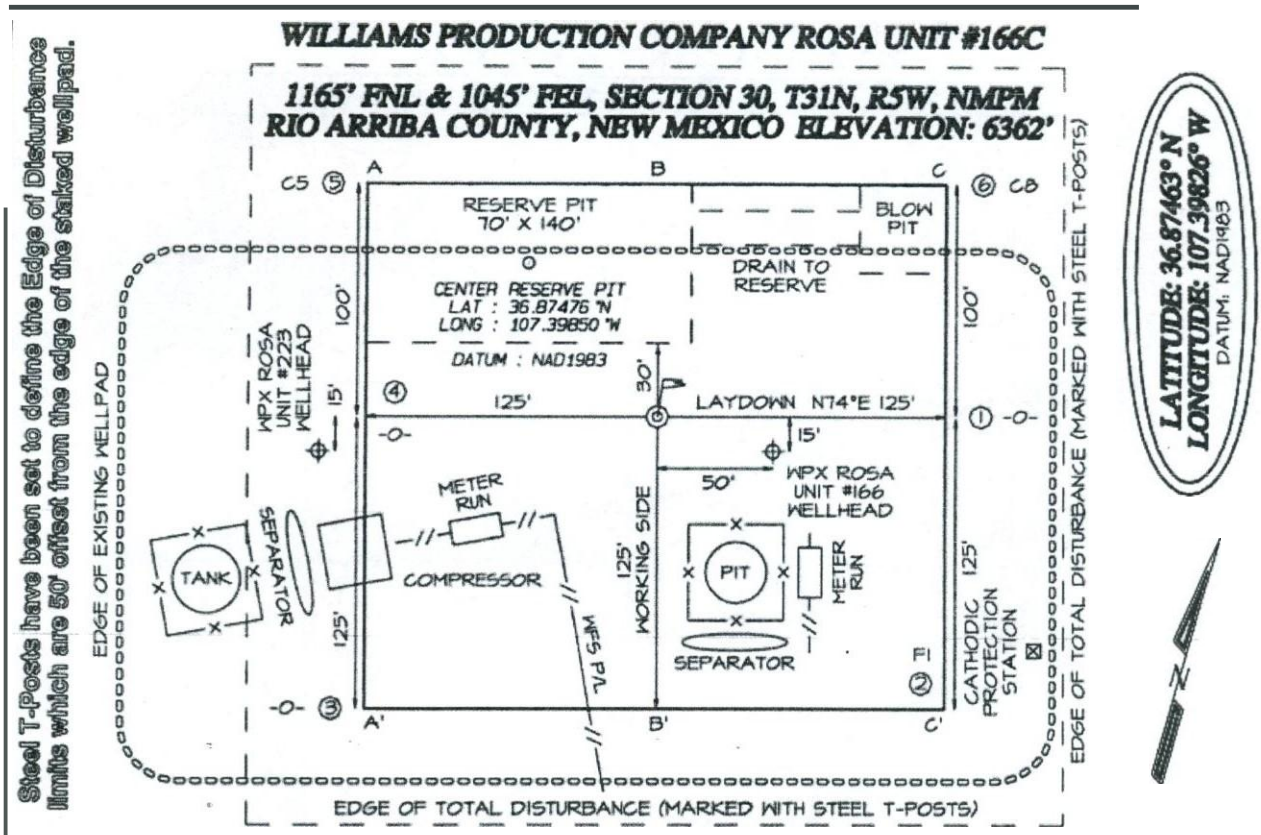
Date of Survey: MARCH 5. 2011

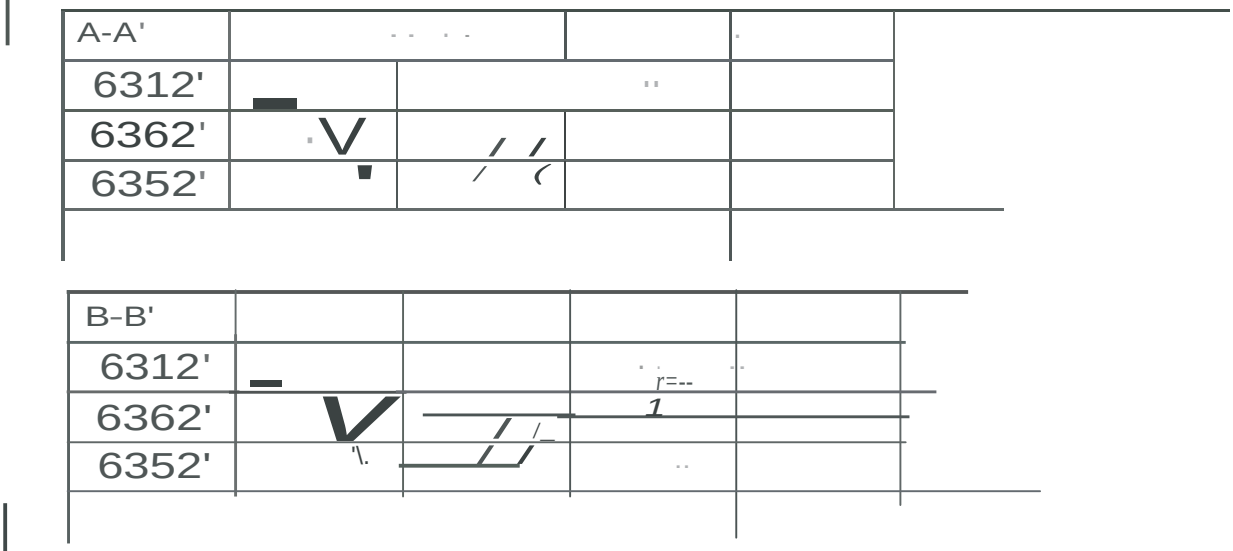
Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

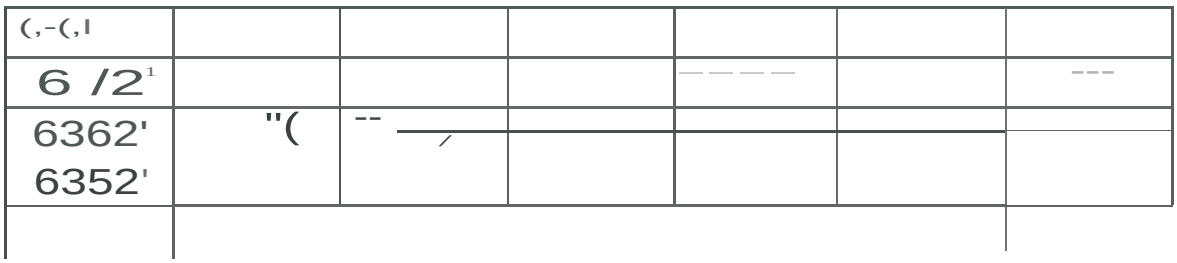
JASON C. EDWARDS

Certificate Number 15269


WILLIAMS PRODUCTION COMPANY ROSA UNIT #166C
1165' FNL & 1045' FEL, SECTION 30, T31N, R5W, NMPM
RIO ARRIBA COUNTY, NEW MEXICO ELEVATION: 6362'
Steel T-Posts have been set to define the Edge of Disturbance limits which are 50' offset from the edge of the staked wellpad.
LATITUDE: 36.87463° N
LONGITUDE: 107.39826° W
DATUM: NAD1983
RESERVE PIT
70' X 140'
BLOW PIT
DRAIN TO RESERVE
CENTER RESERVE PIT
LAT : 36.87476 °N
LONG : 107.39850 °W
DATUM : NAD1983
LAYDOWN N74°E 125'
WPX ROSA UNIT #223 WELLHEAD
WPX ROSA UNIT #166 WELLHEAD
METER RUN
COMPRESSOR
SEPARATOR
TANK
PIT
WORKING SIDE
CATHODIC PROTECTION STATION
EDGE OF EXISTING WELLPAD
EDGE OF TOTAL DISTURBANCE (MARKED WITH STEEL T-POSTS)
EDGE OF TOTAL DISTURBANCE (MARKED WITH STEEL T-POSTS)


A-A'
6312'
6362'
6352'

B-B'
6312'
6362'
6352'

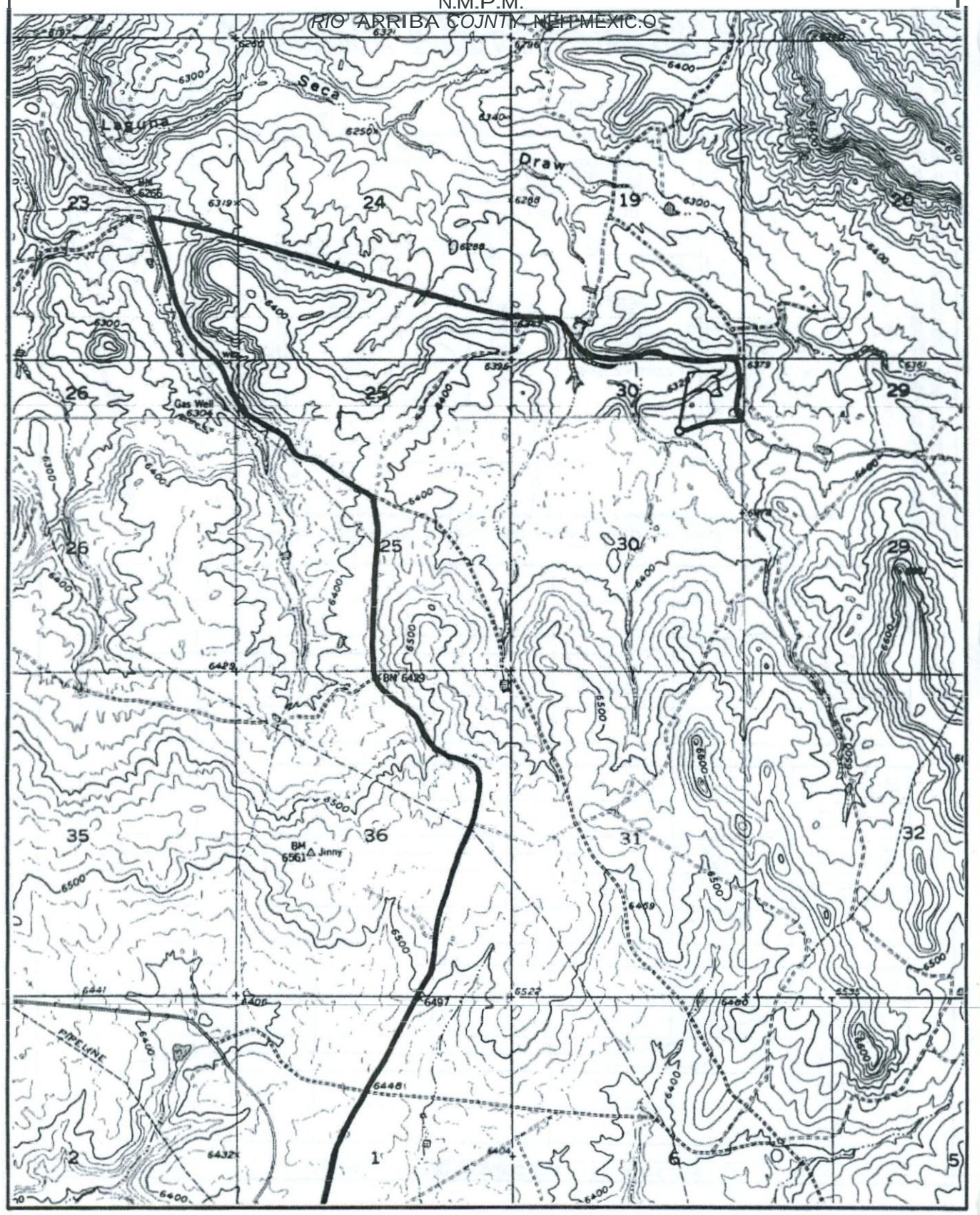

6362'
6352'

IU..IAMS **PUC:.TION C:.OMP'ANY'** UNIT **•166C:.**

I165' FNL **4** 1045' FEL, SEC.TION *30,* T31N, RSH,

N.M.P.M.

RIO ARRIBA *COJNTY,* NEH MEXIC.O



C.102
FOOTAGES:
1165' FNL
1045' FEL
DATE: 03-0!>-11

24 19 19 20

1924 GLD
B.C. <114 CDR.>

1924 GLD
BR SS CAP

25 30 30 29

S 41°41'29" W
1560.4'

SEE DETA[L

2035.4

DETAIL

1+12 7 t \JELL HEAD <EDL>
ROSA UT #166C
N 13°20'03' E
0+84.5 TrE RT. 33" N'vl PIT FENCE C RNER
03f:g 2E R·14 S'vl PIT FENCE C[RNER
0+ 34• 54 RT.
N ? 1"0?' 9' V
0+ R +J>
ROSA UNIT #166
TrE LT. 29.5" DOGLEG

25 30 30 29

36 31 31 32

SUJJIVISIIII	IM(JI	FEET	MW	ACRES	R!!liS	R.O.V. 1/IJ
0+-00 TO tH2.7	BUREAU D> LAND MANAGEMENT	112.7	0.021	0.103	6.830	-40"

NO.	PATE	)Y	IIESCQIPHON	V.O.NI:I jCHI(. AP?,	NO.	DATE	y	OESCR!PT!OI	II.D.N!J, (CHI<. APP,
1	IO'IJ8111I	MB	SSUED FOR REV!EV	PB					

INFO

R/'W t•
N'WC t•
METER t•

DRAFTING	BY	DATE
DRA'WN BY	MB	04/18/II
CHECKED BY	PB	04/18/II
APPROVED BY		

DESIGNED BY

STATE• NE'W MEXJCO
COUNTY• IHD ARRIBA

WILUAMS ?R !R

SAN JUAN GATHERING SYSTEM
'w'PX – ROSA UNIT tt166C
0+00 = 0+29.5 O"J ROSA UNIT 1:1166
<REF. D'w'G. 49A765.0-31-D

SCIILE: 1"=1000'

ffi £V

SURVEYED: 03/0:5/11 **ENGINEER BY DATE**

PRQJ, APPROVED 1.1.O. NO.

SEC. 30 - T-31 N. R.5-W. NMPM

IOWGNO: 49A 765,0 -68-1

1

T•\DS\"'AP?[NG\D'?I'IJ!NGS\SANJU'''''\76:>\00\-49'17650-68-I_R01,DIG 0 /18/2011 U•30APAULB