

**ENVIRONMENTAL ASSESSMENT**

**BLM EA# CO-800-2004-00-38 EA**

**Secord 1 and 1X Wells, Access Road and Pipeline**

**CDX Gas LLC**

**Secord No. 1 Well Pad Surface Location: Township 34 North, Range 6 West, SUL,  
NMPM**

**Section 17U: 1508 feet from South Line and 1217 feet from West Line**

**Secord No. 1X Well Pad Surface Location: Township 34 North, Range 6 West, SUL,  
NMPM**

**Section 17U: 1405 feet from South Line and 1156 feet from East Line**

**Access Road and Pipeline Location: Township 34 North, Range 6 West, SUL, NMPM  
Section 17U SW $\frac{1}{4}$**

**And**

**Section 18U S $\frac{1}{2}$**

**U. S. Department of the Interior  
Bureau of Land Management**

**U. S. Department of Agriculture  
U. S. Forest Service  
San Juan National Forest**

**Planning Unit: San Juan Public Lands Center  
Columbine Field Office/Ranger District**

**La Plata County Colorado**

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CDX Gas LLC

Secord 1 and 1X Wells, Access Road and Pipelines

## **CHAPTER 1 – DESCRIPTION OF PROPOSED ACTION**

### **1.1 Introduction**

CDX Gas LLC (CDX) has filed two applications for permits to drill (APDs) with the San Juan Public Lands Center of the Bureau of Land Management (SJPLC) for two connected natural gas wells, an associated access road and two pipeline ties. The proposed project, the Secord proposed action, would include the construction, drilling, production and final abandonment of two Basin-Fruitland Coal Bed Methane Wells, the Secord No. 1 and No. 1X, with an 8,368.35-foot access road (approximately 1.58 miles), and associated natural gas and water pipelines each approximately 4,971.02 feet in length. All surface disturbances would be on private land. However, the proposed wells are planned to drain a combination of private and federal minerals.

This environmental assessment (EA) will describe the pre-existing environment and assess impacts of the Secord proposed action and any viable alternatives to the proposed action. The effects of the proposed construction, operation, maintenance and final abandonment will be analyzed for site-specific direct and indirect impacts. Impact analyses for cumulative impacts will be presented. All impact analyses will be presented assuming implementation of the mitigation measures presented in the Secord proposed action. Impact analyses are presented to identify potential significant impacts, which may occur even with the appropriate application of and compliance with mitigation measures (Conditions of Approval (COAs)). This EA is not a decision document, but provides information needed to the Authorized Officer to determine whether the Secord proposed action or any alternative to the Secord proposed action may have significant effects, requiring an Environmental Impact Statement.

### **1.2 Purpose and Need**

The purpose and need for the Secord proposed action is to permit CDX to develop existing lease rights to Basin Fruitland Coal Bed Methane (CBM) within approximately 640 acres of Section 17U, T. 34N., R. 6 W., South of Ute Line (SUL), New Mexico Principal Meridian (NMPM), La Plata County, Colorado. The purpose and need for the proposed access road and gas pipeline tie is to access and to transport produced CBM gas into an existing pipeline infrastructure. The proposed water pipeline would allow for disposal of produced water, a byproduct of Fruitland CBM development. The Secord proposed development is needed to produce national energy resources, as well as generate revenue for CDX.

### **1.3 Conformance with Land Use and Forest Plans**

The SJPLC issued the Draft Environmental Impact Statement for the Northern San Juan Basin Coal Bed Methane Project in June of 2004 (Draft Northern EIS 2004). The Secord proposed action is within the Draft Northern EIS study area. This document analyzed CBM development on U.S. Forest Service, Bureau of Land Management, State of Colorado and private lands within a designated area north of the Southern Ute Indian Reservation in southwestern Colorado. In April of 1992, the San Juan National Forest completed the HD Mountains Coalbed Methane Gas Field Development Project Final Environmental Impact Statement and associated Record of Decision (HD FEIS/ROD). This U.S. Forest Service and Bureau of Land Management document analyzed proposed Basin Fruitland CBM development for 33 site specific drilling locations within the HD Mountains of the San Juan National Forest. The Secord proposed action is situated on private land within the HD FEIS/ROD study area. The site specific location of the Secord proposed action was not analyzed in the HD FEIS/ROD. However, analyses and decisions from the HD FEIS/ROD are directly applicable because of the drainage of federal minerals proposed by the Secord proposed action. In August 2000, the San Juan Field Manager/Forest Supervisor issued a Notice to Lessees (NTL) No. CO-SJNF-2000-01, "...establishing interim guidance for development of the Fruitland Coal Bed Methane reserves..." while

maintaining management decision options during a period of continuing studies. The Secord proposed action is in compliance with this NTL.

The Secord proposed action is in conformance with the Bureau of Land Management (BLM) 1985 San Juan/San Miguel Resource Management Plan and the 1991 San Juan/San Miguel Resource Management Plan Amendment/Final Environmental Impact Statement. The actions proposed by CDX are within the guidelines set forth in the San Juan National Forest Land and Resource Management Plan (USDA 1983) and as well as the 1992 HD FEIS/ROD. The Secord proposed action would be subject to SJPLC reviews, COAs and decisions.

## **1.4 Proposed Action**

### **1.4.1 Project Description and Location**

The two Secord wells, access road, two pipelines and associated facilities are proposed to be developed within the San Juan Basin of southwestern Colorado, approximately 13 miles north of the Colorado/New Mexico boarder and approximately 4½ miles southeast of Bayfield, Colorado (Appendix A, Figure 1.0). The Secord proposed action is located entirely on private surface. Under a communitization agreement (CA) between the fee mineral owners and the federal government, U.S. Department of the Interior (SJPLC), the Secord proposal would produce and drain a combination of fee and federal Basin Fruitland CBM gas reserves within approximately 640 acres of Section 17U, T. 34N., R. 6W., SUL, NMPM. The proposed Secord No.1 Well would have a surface location at 1508 feet from the south line (FSL), 1217 feet from the west line (FWL), of Section 17U, T. 34N., R. 6W., SUL, NMPM (Figure 2.0). The proposed Secord No. 1X Well would have a surface location at 1405 feet from the south line (FSL), 1156 feet from the west line (FWL), of Section 17U, T34N, R6W, SUL, NMPM (Appendix A, Figures 2.0, 3.0 and 4.0). The wells are at approximately 7,221 feet in elevation located on an east, northeastern facing slope. The proposed wells would utilize an existing road and a proposed new road for access to La Plata County Road 523. This specific access route has been requested by the private surface owners. The proposed pipelines would partly parallel the access road and partly be independent of the proposed access road, as requested by the landowners. Construction and drilling of the project is planned for the fall of 2004 or the spring of 2005.

The proposed wells would be drilled to the Basin Fruitland Formation to drain and produce Basin Fruitland CBM utilizing horizontal drilling technology. Two wells would be drilled approximately 120-feet apart. The Secord 17U-34-6 No. 1 would be the “production well” and the Secord 17U-34-6 No. 1X would be the “service well”. The service well would be used to drill the horizontal laterals of the production well. The service well would then be temporarily abandoned and only used to repair or clean out the production well horizontal laterals. The service well would not be used to produce CBM gas.

The production well would be drilled first with a deviation to the northeast, away from the service well. The deepest coal seam would be cavitated at a proposed total depth of 3,256 feet. Completion of one coal seam is anticipated; however other seams may be completed at a later date. Drilling and completion of the production well is expected to take approximately 15 to 25 days. The drilling rig would then be moved to drill the service well. The service well would be drilled vertically to approximately 1,000 feet. The well would then be drilled laterally for approximately 2,500 feet, to intersect the cavity of the production well (Appendix A, Figure 5.0). Horizontal laterals would then be drilled as shown in Figure 6.0 of Appendix A. Flaring of the wells is not anticipated. However, for worker safety, flaring of formation gas during the final drilling and completion may be necessary. Drilling of the service well and associated laterals is anticipated to take approximately 20 to 30 days.

### 1.4.2 Project Construction

The proposed well pad location would be located entirely within a previously disturbed and abandoned well location. The existing well pad includes an approximate 300-foot (north to south) by 150-foot (east to west) level irregular shaped leveled surface (Appendix A, Figure 7.0). An irregular shaped cut slope (approximately 300 feet by 50 feet) is located on the east side of the pad. An asymmetrical fill slope would be along the west side (approximately 100 feet by 200 feet). The existing maximum cut is three-feet in the northeast corner and the maximum fill is five-feet in the southwestern corner. Only the brush on the existing well pad would be cleared to provide a working surface for the drilling rig and other heavy equipment necessary to drill the wells. The well location contains approximately 1.83 acres of existing surface disturbance. The reserve pit would be located in the previous reserve pit area, in the southwestern corner and would be lined with an impervious 12-mil plastic nylon reinforced liner. A flare pit would be located to the north of the reserve pit. All pits would be fenced as set forth in the 13-point surface use plans of the Secord APDs (Appendix B). Cut material from the reserve pit would be stockpiled on the location. The top 6-inches of topsoil would be stockpiled for redistribution during reclamation.

Approximately 5,407.8 feet (1.02 miles) of existing, private road would be utilized to access the well site. As requested by the landowners to avoid proximity to existing residences, a new access road would be constructed for approximately 2,960.59 feet. The entire access road would have a maximum width of 20 feet with a 15-foot running surface (Appendix A, Figure 8.0). The new road would cross the Reservoir Canyon drainage with three 36-inch culverts, as specified by the landowners (Appendix A, Figure 9.0). One 36-inch culvert would be installed in a smaller, side-drainage crossing, north of the Reservoir Canyon crossing. Nine-inch diameter fiber logs would be placed downstream of all culverts. These would be removed when the disturbed soils surrounding the culverts have been fully revegetated. Fiber and rock would be placed over any fill required to be place in the Reservoir Canyon crossing. Rock would be placed below all culverts to avoid erosion from flowing water. As requested by the landowners, two gates and cattleguards would be installed. The construction, road surfacing, maintenance and abandonment of the existing and new access roads would meet the specification of the landowners.

An approximate 4,971.02-foot, 6-inch or less diameter steel gas pipeline would be laid below ground, tying to an existing pipeline at the existing BP America location (Harper Gas Unit 01-18/FT/No.1) in the SE¼ SW¼ of Section 18U, T. 34N., R. 6W. SUL, NMPM. A water pipeline for the disposal of produced water would be laid in the same ditch as the gas pipeline. The pipelines would be laid within the existing 20-foot disturbance of the existing access road; except the western approximate 900.29 feet of the pipelines, which would not parallel either the existing or proposed access road (Appendix A, Figure 9.0). Immediately east of the tie-in at the BP America location, the pipelines would bore the Bayfield Irrigation Ditch, with a five-foot minimum clearance below the bottom of the irrigation ditch. From the BP America well site, gas would be transported into a Red Cedar gathering pipeline. From the BP America well location, produced water from the Secord well would be trucked to an approved disposal site. The approximate Secord proposed action acreage is summarized in Table 1.0 below.

**Table 1.0: Acreages for the Proposed Secord 1 and 1X Wells, Access Road and Pipelines.**

<b>Project Component</b>	<b>New Disturbance Acreage</b>	<b>Existing Disturbance Acreage</b>	<b>Total Acreage</b>
Well Pad	0	1.83	1.83
New Access Road	1.36	0	1.36
Existing Access Road	0	2.48	2.48
Pipeline	0.41	0	0.41
<b>TOTALS</b>	<b>1.77</b>	<b>4.31</b>	<b>6.08</b>

The proposed action would utilize a total of 6.08 acres, of which approximately 4.31 acres has been previously disturbed and approximately 1.77 acres of which is new disturbance. During the well production phase, all disturbed areas except the access road running surface and approximately 0.78 of an acre for production equipment on the well pad would be reclaimed and reseeded. Approximately 1.46 acres would remain disturbed on the well pad and the access road. Following final well abandonment, the entire well pad and access road would be reclaimed as outlined by the landowners.

During the construction, drilling and completion phase, heavy equipment and light vehicle traffic would use La Plata County Roads 521, 524 and 523, as well as the private access roads as shown on Figure 10.0 of Appendix A, to access the drilling site. Traffic would include a drilling rig, large tractor-trailers, construction equipment, water trucks, drilling and production equipment and supplies, tanks and several light pick-ups. Fresh water used for drilling would be obtained from a commercial well in the Town of Ignacio. Water for drilling below the surface casing would be obtained from the existing Penrose No. 1 and the Anderson No. 1 wells (Fruitland CBM production wells). Water hauling routes are shown on Figure 10.0 of Appendix A.

#### 1.4.3 Surface Restoration

Immediately upon completion of the wells, all fluids would be removed from the reserve pit and all materials not needed for production removed from the site. All disturbed areas not needed for production or the running surface of the access road would be reclaimed as specified by the landowners. This reclamation would include, but is not limited to recontouring disturbed areas to as near original contours as possible, installation of water-bars, top soil redistribution and reseeded. The Natural Resources Conservation Service (NRCS), Durango, Colorado has recommended the seed mixture listed below in Table 1.1, at a rate for broadcast seeding. CDX would follow NRCS and landowner specifications for reseeded. CDX would control noxious weeds on all areas within the Secord proposed action at the direction of the landowners, La Plata County Extension Service, and in cooperation with the SJPLC.

**Table 1.1: Natural Resources Conservation Service Recommended Seeding Mix and Rates for the Secord No. 1 and No. 1X Well Pad, Access Road and Pipeline.**

Species	(A) Required PLS* Rates per acre (100%)	(B) % of Species in Mixture	PLS Seeding rate per species/acre (A) x (B) = (C)
Hard Fescue	4	20%	0.8 PLS
Intermediate Wheatgrass	20	20%	4 PLS
Meadow Brome	22	20%	4.4 PLS
Pubescent Wheat	18	20%	3.6 PLS
Smooth Brome	13	20%	2.6 PLS

\* Pure Live Seed (PLS)

#### 1.4.4 Project Operation, Maintenance and Final Abandonment

During well production, a well head, heater/treater, housed or fenced meter-run and water storage facilities would be on location. All equipment over ten (10) feet in height would be located on the “cut side” or east side of the well pad to limit visual impacts to residences. Although not anticipated, if a pumping unit or compressor is required it would have a hospital grade muffler and sound boarding to meet all La Plata County noise regulations. If any engines are required, any emissions would comply with the State of Colorado air permitting and regulations. Storage tanks may be required. If liquid storage tanks are on location, they would be fenced and contained within a containment dike of sufficient capacity, at a minimum, to contain the entire contents of the largest tank. All tanks would be fenced to landowner and/or SJPLC specifications. All permanent facilities would be painted Juniper

Green-Federal Standard 595a-17127 within six months of well completion. Facilities requiring compliance with the Occupational Safety and Health Act (OSHA) would be painted as required by law.

After well production begins, normal maintenance would be required. Personnel would visit the site once a day for safety and production purposes. Telemetry would also be used to monitor the well. Occasionally well bore maintenance may be required to retain economic production. A work-over drilling rig would be moved to the site, for down-hole repairs. Surface impacts of a work-over rig would be similar to those described for drilling. The estimated economic production phase of the well is 20 to 30 years.

When the well is no longer commercially viable, both wells would be abandoned under SJPLC regulations and as specified in the landowners' agreements for surface restoration. Surface equipment would be removed, except for aboveground well bore markers. Underground pipelines would be purged, plugged and left in place. All disturbed areas not needed for another purpose would be recontoured and revegetated to landowner specifications.

#### **1.4.5 Project and Public Safety**

CDX would comply with the use and disposal of hazardous materials as regulated primarily under the Resource Conservation and Recovery Act (RCRA) of 1976 (42 U.S.C. 6901, et seq.), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended (42 U.S.C. 9601, et seq.), and the Toxic Substances Control Act (TSCA) of 1976, as amended (15 U.S.C. 2601, et seq.). Most substances and wastes generated at oil and gas facilities and pipelines are exempt from hazardous materials regulations under the RCRA, although some materials associated with well construction and production, and pipeline activities are classified as hazardous and regulated by the U. S. Environmental Protection Agency (EPA) and Department of Transportation (DOT). No extremely hazardous substances (40 CFR 355) would be used during the proposed action. Hazardous substances that may be found at the site may include minimal quantities of materials that may be necessary for drilling, welding or gluing, and flammable or combustible substances fuels and acids/gels (corrosives) associated with vehicles and the drilling and welding processes. These hazardous materials may include oil, fuel, hydraulic fluid, drilling fluids, and coolants. No chemicals subject to reporting under the Emergency Planning and Right-to-Know Act of 1968, would be used, produced, stored, transported or disposed of in association with the proposed action. CDX would have available at the project site, current Material Safety Data Sheets (MSDS) for all chemicals, compounds and/or substances which would be used during any phase of the proposed action. The notification of releases such as natural gas, natural gas liquids, produced water and petroleum, outside the facility site is required under the CERCLA and under the national BLM Notice to Lessees (NTL)-3A. Non-hazardous solid waste generated at the proposed project area would be stored in appropriate containers and disposed of at an approved facility on an as needed basis. Human solid and liquid wastes would be generated primarily during the drilling and construction phases of the project and would be contained within portable facilities at the site. No H<sub>2</sub>S (hydrogen sulfide gas) is anticipated. Production fluids would be stored on site in the lined reserve pit. CDX would implement BMPs (Best management practices) and "good housekeeping practices" including spill control measures, to minimize the potential impacts from hazardous and non hazardous wastes.

CDX has conducted water quality, quantity and flow sampling for three water wells within a one-mile radius of the proposed Basin Fruitland wells. If an issue arises with any of these three water wells during the production phase of the project, CDX would retest water quantity, quality, depth and flow of these private water wells. CDX may be requested by the State of Colorado and/of the SJPLC to participate in any investigations concerning water well issues within a one mile radius of the proposed Second wells.

Complete details of the proposed construction, drilling, operations, maintenance and abandonment procedures are contained within the eight-point drilling plans and the 13-point surface use plans of the Secord No.1 and No. 1X APDs. All aspects of the Secord proposed action including construction, drilling, operations, maintenance and abandonment would be done in accordance with applicable federal, State of Colorado and La Plata County laws and regulations, as well as specifications of the February 27, 2004 Surface Use Agreement between CDX and the landowners.

## **1.5 Alternatives**

### **1.5.1 Proposed Action**

Refer to Section 1.6 above for a detailed description of the Secord Proposed Action.

### **1.5.2 No Action Alternative**

The no action alternative would be to deny CDX's submitted APDs. Neither fee or federal Basin-Fruitland CBM gas within 640 acres of Section 17U T.34N., R.6W., SUL, NMPM would be produced. This would deny CDX their existing lease rights to produce oil and/or gas within Section 17U, T. 34N., R. 6W. NMPM. Because CDX has a legal federal oil and gas lease, denial of lease development is not legal or discretionary. The no action alternative provides a reference, enabling decision makers to compare the magnitude of environmental effects of the alternatives. The no action would result in the continuation of current land and resource uses in the Secord proposed action area.

### **1.5.3 Proposed Action Alternatives**

The 1992 HD FEIS analyzed the production and drainage of Basin Fruitland CBM reserves within section 17U T. 34N., R. 6 W., SUL, NMPM via the drilling of two conventional (vertical) CBM wells within this section. The HD FEIS assumed conventional drilling and completion methods at 320-acre spacing, to drain the 640 acres within Section 17U. The ROD for the HD FEIS approved proposed CBM wells in the SE $\frac{1}{4}$  NW $\frac{1}{4}$  and the NW $\frac{1}{4}$  SE $\frac{1}{4}$  of Section 17U, T. 34N., R. 6 W., SUL, NMPM. An alternative to drill two wells within section 17U could result in at least two times the surface impacts, compared to the Secord proposed action. Specific surface impacts of drilling either two CBM wells in section 17U would be dependent upon specific drill pad, access road and pipeline locations. Currently, there are few roads in the SE $\frac{1}{4}$  NW $\frac{1}{4}$  and the NW $\frac{1}{4}$  SE $\frac{1}{4}$  of Section 17U, and these areas contain steep and rough topography. To drill and produce two CBM wells within these portions of section 17U would obviously result in greater surface resource impacts than the Secord proposed action. Therefore this alternative has not been carried forward for further analyses or consideration in this document.

In 2000, the Colorado Oil and Gas Conservation Commission (COGCC) permitted an additional CBM well to be drilled on each 320-acre spacing unit within the low production areas of the Basin Fruitland Formation in Colorado (COGCC Order 112-157), including the Secord proposed action area. Thus, four wells per section could potentially be drilled to drain the CBM gas of the Basin Fruitland Formation, within the Secord proposed action area. Again, the topography within Section 17U becomes rugged and steeper in the eastern portion of the section, relative to the Secord proposed action area. This alternative to access, drill and produce four CBM wells within Section 17U, utilizing conventional technology would clearly result in more extensive surface resource impacts relative to the Secord proposed action. Therefore this alternative was not been carried forward for further analyses or consideration in this document.

## **CHAPTER 2 – AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES / MITIGATION MEASURES**

### **2.1 Introduction / Standards for Public Land Health**

To comply with the Council on Environmental Quality (CEQ) requirements of analytic and concise environmental documents (40 CFR 1502.2); only those resources identified as affected by the Secord proposed action are addressed. In 1997, the Colorado Bureau of Land Management approved Standards for Public Land Health. These Standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. The Standards describe the conditions needed to sustain public land health and relate to all users of the public lands. The Standards are addressed in the appropriate Affected Environment/Environmental Consequences sections. The Secord proposed action has been assessed for all Standards. All impact analyses are presented assuming implementation of the mitigation measures presented in the Secord proposed action, the eight-point drilling plans and the 13-point surface use plans of the Secord APDs.

### **CRITICAL ELEMENTS**

#### **2.2 AIR QUALITY**

##### **2.2.1 Affected Environment**

The air quality of a geographical area is controlled primarily by the magnitude and distribution of pollutant emissions and regional climate. The transport of pollutants from specific source areas is strongly affected by local topography. In the mountainous western United States, topography is particularly important in channeling pollutants along valleys, creating upslope and down slope circulations which entrain airborne pollutants and block the flow of pollutants toward certain areas. In general, local effects are superimposed on the general weather regime and are most important when the large-scale wind flow is weak.

The Colorado Department of Public Health and Environment (CDPHE), Air Pollution Control Division and the Air Quality Control Commission (AQCC) administer air quality regulations within the State of Colorado. The project lies within the Four Corners Interstate Air Quality Control Region. Major emission sources within the San Juan Basin include electrical power generation stations, oil and gas refineries, compressor stations and vehicle emissions. Emission sources within the immediate project area include vehicle emissions, small engines, wood burning from private sources and various dust generating sources such as gravel pits, farming, and travel on dirt roads. Major emissions include carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>). No areas within this region are reported to have exceeded Ambient Air Quality Standards as defined in the Clean Air Act of 1972, as amended (EPA and CDPHE-AQCC, 2004). However, it should be noted that no established ambient standards are in place for VOCs or NO<sub>x</sub>, important precursors to ozone formation. However, portions of the general area appear to be approaching non-attainment for ozone.

##### **2.2.2 Environmental Consequences/Mitigation**

Vehicle traffic emissions, construction and reclamation activities for the Secord proposed action would increase dust levels during construction and reclamation of the project. Rapid establishment of vegetation cover on disturbed areas would minimize impacts from blowing dust. Dust control on the existing and proposed access roads would be done at the request and under the specifications of the landowner. Emissions from producing gas wells can be classified as one of three general emission types; fugitive emissions, vented emissions or combustion emissions. Fugitive emissions are leaks emitted from sealed surfaces such as packings and gaskets, or leaks from underground pipelines. Vented emissions are releases by design or operational practice such as dehydrator reboiler vents, maintenance practices such as blow downs, and gas operated pneumatic device vents. Combustion

emissions are exhaust emissions from combustion sources such as compressor engines, burners, and flares. Air quality permits for oil and gas operations are required if emission sources exceed designated Colorado State and/or Federal standards. No air quality permits are anticipated for the Secord proposed action.

The Draft Northern EIS analyzed existing as well as proposed cumulative air quality impacts for the San Juan Basin of southwestern Colorado and northwestern New Mexico (including tribal, southwestern Colorado and northwestern New Mexico reasonably foreseeable emission sources). The most complete air quality monitoring data available within this area as well as the area of the Secord proposed action is from the Southern Ute Indian Tribal operated station near Ignacio, Colorado, approximately 7½ miles south, southwest of the Secord proposed action. Measurements recorded at Ignacio, Colorado since 1987 show that maximum pollutant concentrations are well below applicable Colorado and National Ambient Air Quality Standards (NAAQs) for most pollutants, although maximum concentrations of ozone approaching the federal standard have been recorded (Draft Northern EIS, 2004). Under the both the Draft Northern EIS proposed action (Alternative 1) and the Draft Northern EIS agency preferred alternative (Alternative 1A), significant air quality impacts would not occur. No violation of applicable tribal, state or federal air quality regulations or standards are expected as a result of direct or indirect CBM development related air pollutant emissions (Draft Northern EIS, 2004). The Secord proposed action would theoretically lessen the cumulative reasonably foreseeable emissions from those emissions analyzed in the Draft Northern EIS by decreasing the number of CBM wells required to drain the CBM resources within Section 17U; from either two or four CBM wells to one CBM well. Therefore, the Secord proposed action would not add cumulatively to air quality related CBM emissions for the San Juan Basin as analyzed in the Draft Northern EIS; but should serve to slightly decrease the cumulative air emissions related to CBM extraction over the long term, within the San Juan Basin.

### **2.3 AREAS OF CRITICAL ENVIRONMENTAL CONCERN**

Areas of Critical Environmental Concern (ACECs) are specially designated areas of BLM administered lands which contain special and/or unique resources. These areas are managed to protect or enhance the values of the resources. The Secord proposed action is not in or near any BLM designated ACECs or U.S. Forest Service special areas (Draft Northern EIS 2004, USDI 1983, 1985 and 1991, and HD FEIS/ROD 1992).

### **2.4 CULTURAL RESOURCES**

#### **2.4.1 Affected Environment**

The area of the Secord proposed action has a predicted high cultural site density (Draft Northern EIS 2004 and HD FEIS 1992). Cultural history of the region spans time from the Paleo-Indian Period to the present, with a few prehistoric sites in the vicinity. Sites of the Archaic Period, the Ancestral Puebloan Period (formally known as the Anasazi Period), the Ute and the Navajo Periods are found in the vicinity. As early as the 1700's southwestern Colorado was explored by Euro-Americans. Later Euro-American sites primarily represent farming and ranching, as well as the towns that evolved to supply service needs of the settlers. The HD Ranch began livestock operations in the area of the Secord proposed action during the 19<sup>th</sup> century. Spring Creek Archaeological District, established in 1983 for its high density of archaeological sites, is located near the mouth of Spring Creek, approximately three miles to the south of the Secord proposed action area. La Plata Archaeological Consultants conducted a Class III Cultural Resources Survey for 22.6 acres for the well pad, access road, pipelines, and associated buffer zones on October 14, 2003. No cultural resources were located.

#### **2.4.2 Environmental Consequences/Mitigation**

The Secord proposed action would not affect any known historic properties, sacred sites, traditional use areas, or traditional cultural properties. If any sites were encountered during construction, the

contractor would immediately stop all construction activities and notify the SJPLC. The SJPLC would then document the site, and evaluate its eligibility for inclusion on the National Register of Historic Places. Should a site be evaluated as eligible for inclusion on the National Register of Historic Places, it would be treated in the proper manner to mitigate any effects to the site from project activities, according to the guidelines set by the SJPLC and the Colorado State Historic Preservation Officer (SHPO). A potential indirect effect from the Secord proposed action is the increase in human activity in the area. This increases the possibility of irretrievable loss of information pertaining to the cultural past of the project region. The access through private lands limits general public access, and therefore the total number of people with legal access to the Secord proposed action area. CDX is responsible for informing all personnel and sub-contractors of the legal penalties associated with destroying, disturbing or collecting historic or archaeological resources.

## **2.5 ENVIRONMENTAL JUSTICE**

### **2.5.1 Affected Environment**

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 environment effects of program, policies, or activities on minority or low-income populations. The vicinity around the Secord proposed action contains minority populations include Native Americans, Hispanics and Caucasians. Approximately 10.4 percent of the residents in La Plata County are living at or below the poverty level, which is a higher average than the 8.9 percent for the State of Colorado (Draft Northern EIS,2004). Some of these populations may live in the vicinity of the Secord proposed action.

### **2.5.2 Environmental Consequences/Mitigation**

The Secord proposed action would not disrupt or impact any of these communities or groups. The Secord proposed action may positively impact private mineral owners by providing mineral royalties, and positively benefit private surface landowners by providing surface damage compensations. The Secord proposed action may also positively affect local, State of Colorado and federal government agencies and programs by contributions to the energy and mineral impact assistance fund grants, severance taxes and mineral royalties. No disproportionate negative impacts to minority or low-income populations are anticipated from the Secord proposed action.

## **2.6 PRIME OR UNIQUE FARMLANDS**

No prime or unique farmlands have been identified in the Secord proposed action area.

## **2.7 FLOODPLAINS (Includes information related to Standard 2)**

No floodplains have been identified in the Secord proposed action area.

## **2.8 INVASIVE, NON-NATIVE SPECIES**

### **2.8.1 Affected Environment**

Executive Order 11312 Invasive Species-1999, the Federal Noxious Weed Act of 1974, the Colorado State Undesirable Plant Management Act (CRS 35-5.5-115 [1996 Suppl.]) and the La Plata County Undesirable Plant Management Plan all mandate the control and management of noxious weeds, both of federal and private property. Russian knapweed (*Centaurea repens*) and spotted knapweed (*C. maculosa*) State of Colorado and La Plata County listed noxious weeds known to occur in the Los Piños River drainage. Additionally, bindweed (*Convolvulus arvensis*), Canada thistle (*Cirsium arvense*), saltcedar (*Tamarix spp*) and musk thistle (*Carduus nutans*) are listed by the State of Colorado as species of management concern (USDI 2002) and are known to occur in the Secord proposed action area. Bindweed, saltcedar and musk thistle were observed during the on-site inspections of the Secord proposed action on March 31 and May 5, 2004.

### **2.8.2 Environmental Consequences/Mitigation**

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 has been created. To minimize the spread of noxious weeds, CDX would be required to wash all equipment prior to entering the Secord proposed action area. The specifications for equipment washing would be set by the SJPLC. To assist in controlling noxious and invasive weeds, the Secord proposed action area would be reseeded with certified weed-free seed. It would be the CDX's responsibility to monitor, control and eradicate all listed invasive/noxious weeds within the project area during the life of the Secord proposed action, at the direction of the landowners, La Plata County Extension Service and in cooperation with the SJPLC.

## **2.9 Migratory Birds (Includes information related to Standard 3)**

### **2.9.1 Affected Environment**

A wide variety of songbirds and neo-tropical migratory birds use the region and potentially the Secord proposed action area. Executive Order 13186 Migratory Birds: Responsibilities of Federal Agencies To Protect Migratory Birds (2001), and the Migratory Bird Treaty Act of 1918 (16 USC 703-711) federally mandate the protection of migratory birds, their nests and eggs. In addition to those birds listed as threatened, endangered or candidate species under the Endangered Species Act (ESA), the U.S. Fish and Wildlife Service (USFWS), Birds of Conservation Concern (BBC) has listed birds of conservation concern for Bird Conservation Region 16, the Southern Rockies/Colorado Plateau (December 2002). The USFWS recommends that federal agencies consult the BBC lists relative to all federal actions. The 29 bird species contained within the BCC list for Region 16 partly overlaps those species protected under the ESA, and the U.S. Forest Service Region 2 and Colorado BLM Sensitive Species lists. Two species on the BBC list for Region 16, Gunnison sage-grouse and yellow-billed cuckoo are also candidate species under the ESA. These species are discussed and analyzed relative to the Secord proposed action in the Secord Biological Assessment. A number of BCC Region 16 species are also listed on the U.S. National Forest Region 2 Regional Forester's Sensitive Species (November 2003) list and the BLM Colorado State Director Sensitive Species list (March 2002). Those bird species contained within the U.S. Forest Service Region 2 and Colorado BLM Sensitive Species lists were considered and/or analyzed in detail relative to the Secord proposed action in the Secord Biological Evaluation. These BCC species are the golden eagle, short-eared owl, ferruginous hawk, Lewis' woodpecker, gray vireo, piñon jay, Virginia's warbler, black-throated gray warbler and the sage sparrow.

Two field investigations of the Secord proposed action area were conducted; on March 31 and May 5, 2004. These field investigations surveyed all areas within the Secord project area proposed to be disturbed, those areas that have been previously disturbed and an associated buffer zone surrounding all proposed action components. Plant and animal species observed during these two field inspections are listed in Appendix D. Two of the BBC listed species; piñon jays and one golden eagle were observed during the field investigations. Based on habitat requirements of the BBC Region 16 listed species and the field inspections of the Secord proposed action area; potentially suitable habitat occurs for five (5) BCC listed species; golden eagle, piñon jay, Virginia's warbler, black-throated gray warbler and sage sparrow. Detailed analyses for these species are contained in the Secord BE.

Based on habitat requirements of the BBC Region 16 listed species and the field inspections of the Secord proposed action area, the remaining 18 BCC Region 16 listed species not analyzed in the Secord BA or the Secord BE are not expected to occur within the Secord proposed action area. These 18 species are northern harrier, Swainson's hawk, peregrine falcon, prairie falcon, snowy plover, mountain plover, solitary sandpiper, marbled godwit, Wilson's phalarope, flammulated owl, burrowing owl, black swift, Williamson's sapsucker, Bendire's thrasher, Crissal thrasher, Sprague's pipit, Grace's warbler and chestnut-collared longspur. The BBC listed species for Region 16, their habitats and

anticipated effects of the Secord proposed action on these species is presented in Table 2.1 below.

**Table 2.1 Migratory Birds of Conservation Concern (BBC) Region 16 List**

Species	Designation	Habitat	Determination of Effect of the Secord Proposed Action
Golden eagle	BCC <sup>1</sup> , FS Sensitive <sup>2</sup>	Open habitats including grasslands, sagebrush, farmlands and tundra	No nesting habitat in PAA <sup>4</sup> - No Impact - Secord BE <sup>5</sup>
Northern harrier	BCC, BLM <sup>3</sup> , FS Sensitive	Ponderosa pine, aspen, and spruce-fir forests	No Impact - No ponderosa pine, aspen or spruce-fir in PAA
Swainson's hawk	BCC	Arid grassland, desert and agricultural areas with scattered trees and shrubs. Breeds in cottonwood galleries	No Impact - No cottonwood galleries or other habitat in the PAA No Impact
Ferruginous hawk	BCC, BLM, FS Sensitive	Winter migrant only; grasslands and semi-desert shrub	Not expected in PAA. No nesting habitat in PAA. No Impact - Secord BE
Peregrine falcon	BBC, FS Sensitive	Cliffs and often in association with riparian areas	No cliffs or riparian areas in PAA - No Impact
Prairie falcon	BCC	Cliff faces in open country; compete with peregrines and golden eagles for nest sites	No cliffs in PAA - No Impact
Gunnison sage-grouse	BCC, FS Sensitive	Healthy, extensive sagebrush community	No healthy, extensive sagebrush community in PAA- No Impact - Secord BA <sup>6</sup>
Snowy plover	BCC	Riverbanks, sand dunes or coral beaches	No riverbanks, sand dunes or coral beaches in PAA - No Impact
Mountain plover	BCC	Short-grass prairie and plains	No Short-grass prairies or plains in PAA- No Impact
Solitary sandpiper	BCC	Muskegs, lakes and muddy shores	No muskegs, lakes or muddy shores in PAA - No Impact
Marbled godwit	BCC	Prairie grasslands and meadows around lakes, coastal wetlands and beaches	No prairie grasslands or meadows around lakes, coastal wetlands or beaches in PAA - No Impact

Wilson's phalarope	BCC	Freshwater marshes with shallow, open water and low vegetation	No freshwater marshes with shallow, open water and low vegetation in PAA - No Impact
Yellow-billed cuckoo	BCC, ESA candidate species	Older riparian forests with dense understory	No older riparian forests with dense understory in PAA - No Impact - Second BA
Flammulated owl	BCC, FS Sensitive	Open ponderosa pine forests; dry montane conifer or aspen forests, often with dense saplings	No ponderosa, conifer or aspen in PAA - No Impact
Burrowing owl (western)	BCC, FS Sensitive	Prairie dog burrows; grasslands, shrublands and deserts	No prairie dog towns in PAA - No Impact
Short-eared owl	BBC, FS Sensitive	Open habitats including grasslands, marsh edges, shrub-steppe, and agricultural lands	No grasslands, marsh edges, shrub-steppe or agricultural lands in PAA - No Impact - Second BE
Black swift	BBC	Mountains and coastal cliffs	No mountains or coastal cliffs in PAA - No Impacts
Lewis' woodpecker	BBC, FS Sensitive	Open pine forest, riparian, and piñon-juniper woodlands	No open pine forest, or riparian areas associated with piñon-juniper woodlands in PAA - No Impact - Second BE
Williamson's sapsucker	BCC	Conifer forests, often mixed with aspen from 7,000 – 10,700 ft.; aspen is an essential element	No conifer forests with mixed aspen in PAA - No Impact
Gray vireo	BCC on BLM only	Mesas, steep hillsides, canyons, and wide valleys where junipers are grow spaced apart; grasses, sagebrush, and desert scrub flourish among the juniper; 3,000 to 5,000 ft. elevation	PAA elevation at 6,900 ft. and higher -No Impact - Second BE
Piñon jay	BCC	Thrive in piñon-juniper woodlands	PAA would not remove any suitable habitat - No Impact - Second BE
Bendire's thrasher	BCC	Sonoran Desert scrub	No Sonoran Desert scrub in the PAA - No Impact
Crissal thrasher	BCC	Dense underbrush near desert streams or edges of canyon chaparral in lower deserts	No dense underbrush near desert streams or edges of canyon chaparral in lower deserts in PAA - No Impact

Sprague's pipit	BCC	Short-grass prairie habitat	No short-grass prairie habitat
Virginia's warbler	BCC	Thrive in piñon-juniper woodlands	PAA would not remove any suitable habitat - No Impact - Secord BE
Black-throated gray warbler	BCC	Almost exclusive to mature piñon-juniper woodlands	PAA would not remove any piñon/juniper habitat - No Impact - Secord BE
Grace's warbler	BCC	Montane stands of pine or mixed pine forests	No montane stands of pine forests in PAA - No Impact
Sage sparrow	BCC on BLM only	Large, low-elevation stands of big sagebrush or mixed big sagebrush and greasewood	Approximately 1.77 acres of suitable habitat would be removed; no nests observed during field inspections; with only an incremental habitat loss - No Impact - Secord BE
Chestnut-collared longspur	BCC	Short-grass prairie habitat	No short-grass prairie in PAA - No Impact

<sup>1</sup> U.S. Fish and Wildlife Service Birds of Conservation Concern for the Southern Rockies/Colorado Plateau, Region 16 List (December 2002).

<sup>2</sup> U.S. National Forest Region 2 Regional Forester's Sensitive Species (November 2003).

<sup>3</sup> BLM Colorado State Director Sensitive Species (March 17, 2002)

<sup>4</sup> Proposed Action Area

<sup>5</sup> Species analyzed in the Secord Biological Evaluation

<sup>6</sup> Species analyzed in the Secord Biological Assessment

### 2.9.2 Environmental Consequences/Mitigation

The Secord proposed action activities would disturb approximately 1.77 acres of potentially suitable habitat for the sage sparrow. The Secord proposed action activities may cause indirect impacts to habitat by altering surface soil conditions, altering the local hydrologic regime and creating erodible conditions. Listed BBC species that may be potentially indirectly impacted include the golden eagle, piñon jay, Virginia's warbler, black-throated gray warbler and Grace's warbler. Individuals would not be directly harmed because of their mobility and ability to avoid areas of human activity. The increased human presence, during construction and drilling activities may indirectly disturb or displace adults from nests and foraging habitats for a short period of time; three months or less. Construction and drilling may indirectly degrade adjacent nesting and foraging habitats. Long-term production operations would result in only a slight increase in human activity in the immediate Secord proposed action area. Therefore, production operations are not anticipated to indirectly impact adjacent nesting or foraging activities or habitats. Carrying capacities of existing undisturbed habitat with the ability to support displaced individuals are unknown. However, these habitats are assumed to occur within the Secord proposed action area and BBC listed bird species are expected to continue to use these habitats without impacts to individual health or population status. The occurrence and availability of prey species would not be altered by implementation of the Secord proposed action. Therefore, direct and indirect impacts of the Secord proposed action on potentially suitable habitat for the BBC Region 16 listed species are anticipated to be inconsequential.

## **2.10 NATIVE AMERICAN RELIGIOUS CONCERNS**

Representatives from the 25 Native American Tribes and Pueblos were consulted during the development of the Draft Northern EIS 2004. These consultations are currently continuing (Draft Northern EIS 2004). No traditional cultural properties, significant sites or localities were identified for the HD FEIS project area during the consultation interviews for the HD FEIS in 1992. There are no known traditional cultural properties or significant sites or localities within the Secord proposed action area. However, this does not imply that there are no significant sites in the Secord proposed action area. There may be locations significant to individuals, clans, or extended family groups that are not general tribal knowledge. There are no known consequences to Native American religious concerns anticipated from the Secord proposed action.

## **2.11 THREATENED, ENDANGERED AND CANDIDATE**

**(Includes a finding on Standard 4)**

### **2.11.1 Affected Environment**

Section 7 of the Endangered Species Act (ESA) [16 USC 1531 et seq.] outlines the procedures for federal interagency cooperation to conserve federally listed species and designated critical habitats. Section 7(a)(2) of the ESA states that each federal agency, in consultation with the Secretary of the Interior or Secretary of Commerce, must ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Section 7(c) of the ESA requires that a Biological Assessment (BA) be prepared if listed species or critical habitat may be present in a project area, to assess whether the proposed action may affect a listed species or its critical habitat.

A BA (the Secord BA) was prepared in accordance with the legal requirements set forth under Section 7(c) of the ESA; and U. S. Forest Service and BLM manual direction to address potential effects to listed species from for the Secord proposed action. The species addressed in the Secord BA were based on a list provided by the U.S. Fish and Wildlife Service on April 19, 2004 (U.S. Fish and Wildlife Service 2004). The April 19, 2004 list included eight (8) species that are identified in Table 2.2. All species discussed in Table 2.2 were evaluated for their potential to occur in the Secord proposed action area. This evaluation concluded that four (4) of these species are not expected to occur because the Secord proposed action area is either outside their range, and/or does not contain any potential habitat. These species are southwestern willow flycatcher, Mexican spotted owl, Gunnison sage grouse and yellow-billed cuckoo. The Secord BA concluded that these species would not be affected by the Secord proposed action; and a determination of “no effect” has been recommend as appropriate. These species were eliminated from further detailed evaluation in the Secord BA.

### **2.11.2 Environmental Consequences/Mitigation**

The remaining four (4) federally listed species or their critical habitats were determined to have potential to occur in the Secord proposed action area based on known occurrences of, or the presence of suitable habitats for these species. These species are the bald eagle, Colorado pikeminnow, razorback sucker and Knowlton’s cactus. The potential effects of the Secord proposed action on these species have been evaluated in detail in the Secord BA. A summary of these analyses and the determinations of effect are listed in Table 2.2.

**Table 2.2 Threatened, Endangered and Candidate Species with a Potential to Occur in or Near the Second Proposed Action Area; as Established on April 19, 2004 with the USFWS.**

Species	Federal Status	Habitat	Determination of Effects of the Second Proposed Action
<b>BIRDS</b>			
Bald eagle	Threatened	Large, open-branched trees (preferably near lakes, reservoirs, or rivers) for hunting perches and roosting sites. Winter habitat requires abundant food source in conjunction with one or more suitable night roost sites.	May occasionally use the PA for foraging. No winter concentration, nests or roosting habitats in PAA <sup>1</sup> - No Effect -Second BA <sup>2</sup>
Southwestern willow flycatcher,	Endangered	Riparian habitats along rivers, streams or other wetlands with dense willows and other shrubs. Scattered overstory of cottonwoods common	No riparian habitats, rivers, streams or other wetlands with dense willows or other shrubs; or cottonwoods in PAA - No Effect - Second BA
Gunnison sage-grouse	Candidate	Healthy, extensive sagebrush community	No healthy, extensive sagebrush community in PAA - No Effect - Second BA
Mexican Spotted owl	Threatened	Mixed conifer forests within steep, rock-walled canyons with piñon-juniper and ponderosa pine forests near canyons	No mixed conifer forests within steep, rock-walled canyons with piñon-juniper and ponderosa pine forests near canyons in PAA - No Effect - Second BA
Cuckoo yellow-billed	Candidate	Older riparian forests with dense understory	No older riparian forests with dense understory in PAA - No Effect - Second BA
<b>FISH</b>			
Colorado pikeminnow	Endangered	San Juan River drainage <sup>3</sup>	PAA is within the San Juan River drainage - May effect, but is not likely to adversely affect -Second BA.
Razorback sucker	Endangered	San Juan River drainage	PAA is within the San Juan River drainage - May effect, but is not likely to adversely affect -Second BA.
<b>PLANTS</b>			
Knowlton's cactus	Endangered	Gravelly alluvial deposits; rolling gravelly hills covered with piñon-juniper and sagebrush	Gravelly alluvial deposits; rolling gravelly hills covered with piñon-juniper and sagebrush does occur in PAA. Site specific survey found no individuals. May effect, but is not likely to adversely affect -Second BA.

<sup>1</sup> Second Proposed Action Area

<sup>2</sup> Second Biological Assessment

<sup>3</sup> Downstream of the Second Proposed Action Area

### **Bald Eagle**

The primary factors of concern for the bald eagle as a result of the Secord proposed action would be increased human disturbance in the project area, resulting in the possible temporary loss of bald eagle foraging habitat. Human and vehicle intrusions into the area would be markedly increased during well drilling and completion, as well as during pipeline and access road construction, and reclamation. These actions would result in an increase in dust and noise. The western portion of the project would contain new ground disturbances for the access road and pipeline, resulting in a change in vegetation species composition. The western portion of the proposed action area contains the best bald eagle foraging habitat. Well completion, pipeline and access road construction, and reclamation activities are planned to be completed prior to December 1, 2004. As the Secord project is proposed, the majority of increased human intrusions into the area would occur prior to the bald eagle winter foraging time period of November 15, minimizing any potential impacts to wintering bald eagles. Following well completion and reclamation, increase in human activity into the area would be limited to one vehicle trip per day utilizing the proposed access road to the well location. A portion of this road would also be used by the existing residences in the area. Maintenance activities on the wells and/or pipelines may occur at any time of year however they would be restricted to daylight hours. At this time, it is not known if a compressor would be required. If a compressor is installed, it would be subject to SJPLC noise mitigation requirements. No bald eagle nesting or roosting habitats occur in the proposed action area.

The Secord BA determined that the implementation of the Secord proposed action would have no effect on the bald eagle or bald eagle foraging habitat in the Secord proposed action area. No winter concentration, nests or roosting habitats are within the Secord proposed action area. Human intrusions to bald eagle foraging areas would be short term, less than two months, with the level of human activity returning to near current conditions. Cumulatively, the Secord proposed action would not increase the total surface disturbance within designated bald eagle winter concentration areas of the cumulative effects analysis area. Additionally, CDX would be committed to all conservation measures designed to avoid any direct or indirect adverse effects to the bald eagle and/or bald eagle habitat.

### **Colorado Pikeminnow and Razorback Sucker**

The discussion for these two species has been combined because of the similarity between the affected environments, effects of the Secord proposed action, and mitigation measures for both species.

Potential effects to the federally listed Colorado pikeminnow and razorback sucker as a result of the Secord proposed action include reduced surface flows and altered water quality. Changes in surface flows may occur through two mechanisms. First, the extraction of CBM typically involves the dewatering of subterranean coal seams (groundwater). Over time, the groundwater is replenished by interception and infiltration of surface waters, resulting in a reduction of surface flows. Second, the drilling process requires the use of water for lubrication. Surface water depletions would occur as an indirect result of dewatering the Fruitland Formation during CBM production of the Secord well. Based on the current and expected produced water production from the existing CBM wells, the Anderson No. 1 and the Penrose No. 1, it can be extrapolated that over the next approximately 15 years, an estimated 23.79 to 29.00 acre-feet per year of surface water would be intercepted and converted to groundwater as a direct result of the Secord 17U-34-6 #1 Well proposed extraction of CBM. Routinely, production of produced water is greater at first and decreases over the life of the well (Oso Energy communication 2004). In addition, approximately 4,500 bbls (barrels) of water, or approximately 0.58 acre/feet of water would be required during the drilling process for the proposed Secord wells (Oso Energy, pers. communications 2004). The Secord wells are proposed to be drilled during the fall of 2004 or spring of 2005. This assessment assumes an equal distribution of drilling water use over that time.

Changes in water quality would result from increased runoff from the access road, pipelines and well pad. This erosion may increase sedimentation into Reservoir Canyon, which may in turn result in channel scouring, bank erosion, and alteration of the canyon flow-line. This increased sedimentation may reach Ute and/or Beaver creeks, but is not anticipated to reach Los Piños River. The effects to water quality include increases in suspended sediment loads, dissolved solids and turbidity, and a decrease in concentrations of dissolved oxygen. The degree of soil loss and corresponding increased sediment input to streams is difficult to quantify. Implementation of best management practices (BMPs) and other mitigation measures including revegetation over time, as detailed in the 13-point surface use plan of the Secord APDs and as detailed in the soils, water quality and vegetation section of this EA should reduce sediment input to Reservoir Canyon and its downstream tributaries. While watershed BMPs are intended to minimize these types of impacts, the magnitude and duration of impact would depend on the implementation and maintenance of BMPs sediment controls.

Accidental spills of fuel, lubricants, drilling fluids, and produced saline water may affect the quality of surface water within and downstream of the Secord proposed action area. The potential for such spills would be reduced by implementation of the Spill Prevention Control and Countermeasures (SPCC). Mitigation measures designed to prevent spills and leaks from affecting surface waters are outlined in the Secord APDs and EA. CBM produced water would be disposed of through a pipeline to the existing BP America location (Harper Gas Unit 01-18/FT/No.1) in the SE $\frac{1}{4}$  SW $\frac{1}{4}$  of Section 18U, T. 34N., R. 6W., SUL, NMPM. Existing produced water storage tanks on the BP America well location would be used for temporary storage of the produced water. The produced water would be trucked from this location to a permitted disposal well. This disposal well would inject the produced water into aquifers located below the Fruitland Formation. The likelihood of PAH and produced water spills is low, but possible.

Reduced surface flows and altered water quality can degrade the quantity and quality of aquatic habitat both within and downstream of the Secord proposed action area. It has been determined that the amount and quality of water delivered to the lower San Juan River determines habitat suitability for the two endangered fishes (U.S. Fish and Wildlife Service 1995a, SJRB RIP 2003). As a result, it has been the position of the U.S. Fish and Wildlife Service that any depletion of water from the San Juan Basin, regardless of magnitude, timing, duration, or source, contributes to the overall cumulative effect of water depletions on the endangered fishes and has the potential to jeopardize the viability of the population. Through informal consultation with the U.S. Fish and Wildlife Service, it was determined that the Biological Opinion developed for the Draft Northern EIS is adequate to address the potential effects of the Secord proposed action to the listed fish species (personal communications, John Kleopfer, U.S. Fish and Wildlife Service, 6/24/04). This conclusion is based on industry's decision not to locate a CBM well at T.34N., R.6W., Section 8, NE $\frac{1}{4}$ SW $\frac{1}{4}$ ; as analyzed in the Draft Northern EIS. In other words, the effects of the Secord proposed actions are offset by not developing a CBM well site previously consulted on. No further consultation concerning listed fish species will be initiated. In keeping with previous findings for like actions, the Secord BA concluded that the Secord proposed action may affect, and is likely to adversely affect the Colorado pikeminnow and razorback sucker.

#### **Knowlton's Cactus**

The Secord proposed action is not likely to have any direct, indirect, or cumulative effect on Knowlton's cactus, even though suitable habitat of piñon-juniper and sagebrush at elevations below 8,000 feet exist in the Secord proposed action area. As standard protocol, a pre-construction survey was conducted for all areas of suitable habitat that may be disturbed by activities associated with the Secord proposed action. No Knowlton's cacti were discovered during this survey of May 5, 2004. If Knowlton's cacti are discovered during any phase of the Secord proposed action, all activities in the area would cease, and the SJPLC would be immediately notified. An appropriate buffer would be

established around the occurrences of Knowlton's cactus, within which no ground disturbing activities would occur. Since no ground disturbing activities would occur within these buffered areas surrounding a located population of Knowlton's cactus, it is unlikely that there would be adverse effects to any subsequently discovered population.

The Secord BA concludes that the implementation of the Secord proposed action may effect, but is not likely to adversely affect Knowlton's cactus. This determination is based on the fact that there are no known occurrences of this species in the Secord proposed action area, and a May 5, 2004 site specific survey within the Secord proposed action area did not locate any Knowlton's cactus. If the species is subsequently found in the Secord proposed action area, no ground-disturbing activities would occur within the buffered area surrounding that population of Knowlton's cactus.

#### **Finding for Public Land Health Standard 4: Threatened and Endangered Species**

The Secord proposed action would have no effect on any federally listed threatened or endangered species or potential habitat for such species, except the Colorado pikeminnow, razorback sucker and Knowlton's cactus. The Secord proposed action has been determined to have a may affect, and is likely to adversely affect impact on the Colorado pikeminnow and razorback sucker. The Secord proposed action has been determined to have a may affect, but is not likely to adversely affect impact on Knowlton's cactus. The Public Land Health Standard 4; for Threatened and Endangered Species would continue to be "moving toward achieving" with the implementation of the Secord proposed action.

### **2.12 SENSITIVE SPECIES (Includes information related to Standard 3)**

#### **2.12.1 Affected Environment**

Sensitive species include those species on the U.S. National Forest Region 2 Regional Forester's Sensitive Species (November 2003) list and those species listed as sensitive by the by the BLM Colorado State Director (as of March 17, 2002). Those sensitive bird species listed by the U. S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern (BCC) for the Southern Rockies/Colorado Plateau (December 2002), as protected under Executive Order 13186 Migratory Birds-2001 and the Migratory Bird Treaty Act of 1918 (16 USC 703-711) are also discussed in Section 2.9, Migratory Birds. Forest Service Manual (FSM) 2672.4 states: "As part of the National Environmental Policy Act (NEPA) decision making process, review proposed U.S. Department of Agriculture, Forest Service (FS) programs or activities in sufficient detail to determine how an action or proposed action will affect any species which is listed under the Endangered Species Act, proposed for such federal listing, or designated in Region 2 as sensitive."

To achieve the objectives set forth above, two field investigations (on March 31 and May 5, 2004) as well as a habitat characterization for the Secord proposed action was completed. The Secord Habitat Characterization considered all U.S. National Forest Region 2 Regional Forester's Sensitive Species and BLM Colorado State Director sensitive species. A total of 94 sensitive flora and 49 sensitive fauna species were initially considered in the Secord Habitat Characterization. All species of concern were evaluated for their potential to occur in or near the Secord proposed action area. The evaluation concluded that of these species, 86 sensitive flora species and 28 sensitive fauna species would not be impacted by the Secord proposed action, either because the project is either outside of their range or because the project area did not contain suitable or potential habitat. These species were therefore eliminated from further detailed evaluation.

A biological evaluation (the Secord BE) was prepared in accordance with the Forest Service Region 2 directives as set forth in Forest Service Manual (FSM) 2672.4, Supplement R2-2600-94-2 for the remaining 8 flora and 21 fauna species, considered to have potential for occurrence in the Secord

proposed action area. The Second BE provided sufficient information to determine the affect of the Secord proposed on species designated as sensitive by the Regional Forester in Region 2 (as of November 3, 2003) and by the Director of BLM in Colorado (as of March 17, 2000). A complete evaluation of these species, including a discussion of protective status, distribution, life history, factors of concern, environmental baseline, effects, determination, and recommendations for mitigation measures, when appropriate has been detailed in the Second BE. This evaluation was based on the two field investigations relative to the sensitive species habitat and life history information.

Of the 8 flora species evaluated, a determination of “no impact” was provided for all eight species; Zuni milkvetch, Naturita milkvetch, Aztec milkvetch, Wetherill milkvetch, Pagosa skyrocket (gilia), Pagosa Springs bladderpod, Harrington beardtongue and wild hyacinth. Table 2.3 presents the list of these sensitive plant species considered and a summary of the Second BE determinations.

Of the 21 sensitive fauna species evaluated in the Second BE, a determination of “no impact” was provided for 18 species: longnose leopard lizard, ferruginous hawk, golden eagle, Columbian sharp-tailed grouse, short-eared owl, Lewis’ woodpecker, loggerhead shrike, black-throated gray warbler, gray vireo, piñon jay, Virginian’s warbler, Brewer’s sparrow, sage sparrow, fringed myotis, spotted bat, Allen’s big-eared bat, Gunnison’s prairie dog and pronghorn.

For the bluehead sucker, flannelmouth sucker and roundtail chub a determination of “may adversely impact individuals, but not likely to result in a loss of viability within the area managed by the SJPLC, nor cause a trend to federal listing or a loss of species viability range wide” was provided. This determination was based on potential indirect impacts to these species from reduced surface flows, increased sedimentation and altered water quality from the Secord proposed action. Table 2.3 presents the list of these sensitive fish species considered and a summary of the Second BE determinations.

**Table 2.3 Sensitive Species Summary of Effect Determinations**

<b>Species</b>	<b>Common Name</b>	<b>Determination</b>
<b>Flora</b>		
<i>Astragalus missouriensis</i> var. <i>humistratus</i>	Zuni milkvetch	No Impact
<i>Astragalus naturitensis</i>	Naturita milkvetch	No Impact
<i>Astragalus proximus</i>	Aztec milkvetch	No Impact
<i>Astragalus wetherilli</i>	Wetherill milkvetch	No Impact
<i>Ipomopsis polyantha</i>	Pagosa skyrocket (gilia)	No Impact
<i>Lesquerella pruinosa</i>	Pagosa Springs bladderpod	No Impact
<i>Penstemon harringtonii</i>	Harrington beardtongue	No Impact
<i>Triteleia grandiflora</i>	Wild hyacinth	No Impact
<b>Fauna</b>		
<b>Fish</b>		
<i>Catostomus discobolus</i>	Bluehead sucker	“May Adversely Impact” <sup>1</sup>
<i>Catostomus latipinnis</i>	Flannelmouth sucker	“May Adversely Impact”
<i>Gila robusta</i>	Roundtail chub	“May Adversely Impact”
<b>Reptiles</b>		
<i>Gambelia wislizenii</i>	Longnose leopard lizard	No Impact
<b>Birds</b>		
<i>Aquila chrysaetos</i>	Golden eagle	No Impact
<i>Buteo regalis</i>	Ferruginous hawk	No Impact

Species	Common Name	Determination
<b>Birds</b>		
<i>Tympanuchus phasianellus columbians</i>	Columbian sharp-tailed grouse	No Impact
<i>Asio flammeus</i>	Short-eared owl	No Impact
<i>Melanerpes lewis</i>	Lewis' woodpecker	No Impact
<i>Lanius ludovicianus</i>	Loggerhead shrike	No Impact
<i>Gymnorhinus cyanocephalus</i>	Piñon jay	No Impact
<i>Vireo vicinior</i>	Gray vireo	No Impact
<i>Dendroica nigescens</i>	Black-throated gray warbler	No Impact
<i>Vermivora virginiae</i>	Virginia's warbler	No Impact
<i>Spizella breweri</i>	Brewer's sparrow	No Impact
<i>Amphispiza belli</i>	Sage sparrow	No Impact
<b>Mammals</b>		
<i>Myotis thysanodes</i>	Fringed myotis	No Impact
<i>Cynomys gunnisoni</i>	Gunnison's prairie dog	No Impact
<i>Euderma maculatum</i>	Spotted bat	No Impact
<i>Idionycteris phyllotis</i>	Allen's big-eared bat	No Impact
<i>Antilocapra americana</i>	Pronghorn	No Impact

<sup>1</sup>“May adversely impact individuals, but not likely to result in a loss of viability within the area managed by the SJPLC, nor cause a trend to federal listing or a loss of species viability range wide”

## 2.12.2 Environmental Consequences/Mitigation

### ➤ Plants

Based on existing habitat and the two field investigations of the Secord proposed action area, there would be no direct impacts of the Secord proposed action on listed sensitive plants. The Secord proposed action activities have the potential to indirectly impact sensitive plants through the altering surface soil conditions, local hydrologic regime, and creating erodible conditions. Disturbances may also create conditions that are conducive to establishment of non-native plant species. Many non-native plant species can out-compete native species for habitat resources, which could lead to indirect impacts to listed sensitive plants. Implementation of mitigation measures outlined for invasive and non-native species, soils, water quality and vegetation would reduce the effects of the Secord proposed action on sensitive plant species. If any of these species are subsequently discovered, avoidance measures as directed by the SJPLC would be implemented. Specific mitigation measures described in the 2004 Draft Northern EIS for sensitive plant species and applicable to the Secord proposal are:

- Minimize disturbance by clearing and otherwise disturbing only vegetation within the minimum area needed for safe and efficient development, production, and maintenance.
- Conduct preconstruction surveys for Aztec milkvetch, Pagosa skyrocket and Pagosa Springs bladderpod, when these species are most likely to be flowering, in all potential areas of disturbance that are identified as suitable habitat during the pre-construction phase of the project.

Given the implementation of proposed mitigation measures and BMPs, there are no anticipated direct or indirect impacts to sensitive plant species from the Secord proposed action.

### ➤ Fish

Potential impacts to the sensitive bluehead sucker, flannelmouth sucker and roundtail chub as a result of the Secord proposed action include reduced surface flows and altered water quality. These are fully

described above under the discussion for Colorado pikeminnow and razorback sucker. The implementation of best management practices (BMPs) and other mitigation measures including revegetation over time, as detailed in the 13-point surface use plans of the Secord APDs and as detailed in the soils, water quality and vegetation section of this EA should reduce sediment input to Reservoir Canyon and its downstream tributaries. Based upon these potential indirect impacts, implementation of the Secord proposed action may adversely indirectly impact bluehead sucker, flannelmouth sucker and roundtail chub individuals, but is not likely to result in a loss of viability within the area managed by the SJPLC, nor cause a trend to federal listing or a loss of species viability range wide.

➤ **Reptiles**

Based on site specific biological inventories of the Secord proposed action area, no suitable or potential habitat exists within the Secord proposed action area for the sensitive longnose leopard lizard. Therefore it was determined that there would be no impact to longnose leopard lizard from the implementation of the Secord proposed action. If this species was to be subsequently discovered, avoidance measures as directed by the SJPLC would be implemented.

➤ **Birds**

The Secord proposed action may cause indirect impacts to sensitive bird species habitat by altering surface soil conditions and local hydrologic regime, and creating erodible conditions. Individuals would not be directly harmed because of their ability to avoid areas of human activity. The increased human presence, construction and operation activities may disturb or displace adults from nests and foraging habitats. Construction and drilling operations of the Secord project facilities may degrade adjacent nesting and foraging habitats. The carrying capacities of existing undisturbed habitat with the ability to support displaced individuals are unknown. These habitats are assumed to occur within the Secord proposed action area and sensitive bird species are expected to continue to use these habitats without impacts to individual health or population status. The occurrence and availability of prey species would not be altered by project implementation. Based on the Secord BE analyses, no direct or indirect impacts on the listed sensitive bird species is anticipated from the Secord proposed action. Additionally, mitigation measures for sensitive bird species specified in the 2004 Draft Northern EIS and applicable to the Secord proposal are:

- Prohibit employees and contractors from bringing dogs or carrying firearms on site.
- Conduct periodic employee and contractor wildlife awareness programs that cover seasonal wildlife requirements and sensitivities, how disturbances affect wildlife and ways personnel can reduce disturbances.
- Remove all contaminants from project sites to avoid exposure to wildlife.
- Fence or cover emergency pits that are connected to each disposal well to prevent animals from drinking any contaminated water.
- Install mufflers or screens on exhaust systems to the extent possible to avoid wildlife entrapment and mortality.
- Minimize disturbance by clearing and otherwise disturbing only vegetation within the minimum area needed for safe and efficient development, production, and maintenance.

➤ **Mammals**

Direct impacts of the Secord proposed action to sensitive mammal species include injury or mortality, as well as disturbance or displacement of adults from human intrusions. Human activity and intrusions in the general area would increase, resulting in habitat fragmentation. Individual adults would not be directly harmed because of their ability to avoid areas of human activity. The increased human

presence, construction and operation activities may disturb or displace adults from existing habitats. Construction and facility operations may indirectly degrade adjacent habitats. The carrying capacities of existing undisturbed habitat with the ability to support displaced individuals are unknown. These habitats are assumed to occur adjacent to the Secord proposed action area and the sensitive species are expected to continue to use these habitats on occasion without impacts to individual health or population status. The occurrence and availability of prey species is not expected to be altered by implementation of the Secord proposed action. Three of the evaluated sensitive mammal species have the potential for occurrence within the Secord proposed action area. However, none of these species or evidence of these species were observed during the two field investigations. The Secord BE determined that habitat two mammal species did not occur within the Secord proposed action area. Based on the individual's ability to utilize adjacent habitats, and the lack of observation of any of the five mammal species or signs of these species; no direct or indirect impacts on the listed sensitive mammal species is anticipated from the Secord proposed action. Additionally, specific mitigation measures described in the 2004 Draft Northern EIS for sensitive mammal species and applicable to the Secord proposal are:

- Prohibit employees and contractors from bringing dogs or carrying firearms on site.
- Conduct periodic employee and contractor wildlife awareness programs that cover seasonal wildlife requirements and sensitivities, how disturbances affect wildlife, and ways personnel can reduce disturbances.
- Remove all contaminants from project sites to avoid exposure to wildlife.
- Fence or cover emergency pits that are connected to each disposal well to prevent animals from drinking any contaminated water.
- Install mufflers or screens on exhaust systems to the extent possible to avoid wildlife entrapment and mortality.

In addition to the mitigation described above, well telemetry should decrease the number of vehicle trips and therefore human intrusions into the well area, during the production phase of the Secord proposed action. One vehicle trip per day to check the well for safety and production would still be required.

## **2.13 WASTES, HAZARDOUS OR SOLID**

### **2.13.1 Affected Environment**

CDX maintains on file, and would have available at the project site, all current MSDS for all chemicals, compounds and/or substances which would be used during any phase of the Secord proposed action. Materials that maybe used during the Secord proposed action include drilling mud and cementing products, fuels and materials for completion activities such as acids and gels. Human wastes would be contained in portable facilities. Solid, non-hazardous wastes would be contained in a trash cage. The handling of all materials and wastes is detailed in the 13-point surface use plans of the Secord APDs.

### **2.13.2 Environmental Consequences/Mitigation**

All wastes and products brought to the project site would be handled as specified by law and label directions. All substances would be properly contained, removed and disposed of. Materials would be handled to minimize leaks and spills. Any spills would be reported to the SJPLC and immediately cleaned up and disposed of in accordance with SJPLC, federal and State of Colorado regulations. No impact from hazardous wastes is anticipated as a result of the implementation of the Secord proposed action.

## **2.14 WATER QUALITY: SURFACE AND GROUND**

**(Includes a finding for Standard 5)**

### **2.14.1 Affected Environment**

The Secord proposed action is in the central portion of the San Juan River Basin of Colorado, drained by the Los Piños River. The Los Piños River drains southwesterly and south entering into Navajo Reservoir (USDA 1992). Ute Creek and associated Harper Pond are approximately one (1) mile west of the Secord proposed action area. Ute Creek runs to the southwest entering the Los Piños River, south of Ignacio. Los Piños River and Ute Creek are perennial water sources, where as other area streams and washes are ephemeral, dependent upon snow melt, rainstorm runoff and irrigation flows. Two U.S. Geological Survey (USGS) gauging stations are located on the Los Piños River upstream of the Secord proposed action area. One gauging station is located on Spring Creek, downstream from the Secord proposed action area. Several irrigation diversions from the Los Piños River are located below Vallecito Reservoir. Surface water quality data for Los Piños River and Spring Creek have been collected at La Boca, Colorado, downstream from the project site and appear to show irrigation and other man-made impacts (HD FEIS/ROD 1992). The majority of pollutants entering Los Piños River appear to be from agricultural non-point sources, with relatively high reading being recorded between Armstrong Canyon (north of the Secord proposed action area) and Green Canyon (south of the Secord proposed action area) (HD FEIS/ROD 1992). Reservoir Canyon drainage has low levels of disturbance on federal lands. However, private lands in the Reservoir Canyon area have been highly modified by agriculture (Draft Northern EIS 2004). The Bayfield Irrigation Ditch runs generally north to south at the western extent of the Secord proposed action area. No perennial surface water sources are located in the immediate Secord proposed action area.

Major sources of groundwater occur within the Terrace and alluvial floodplain deposits. The Late Tertiary and Quaternary aged terrace and alluvial floodplain deposits overlaying the bedrock of the San Jose Formation supply a well yield of 5 to 10 gallons/minute (g/min). Dissolved solids range from 148 to 5,390 milligrams per liter (mg/l). The Tertiary San Jose Formation has a range of well yield from 1 to 10 g/min, with dissolved solids ranging from 117 to 2,910 mg/l. In some areas drinking water standards are exceeded (HD FEIS/ROD 1992). The State of Colorado Water Resources Department has records of three water wells within a one-mile radius of the Secord proposed action and two additional water wells near the one-mile radius.

### **2.14.2 Environmental Consequences/Mitigation**

The Secord proposed action proposes an access road and pipelines crossing of Reservoir Canyon drainage with the installation of three 36-inch culverts and the crossing on a smaller drainage with one 36-inch culvert. These actions would temporarily affect the local surface hydrology of Reservoir Canyon and possibly downstream tributaries. Disruption of area soils and the increase of barren surface would result in augmented surface flows with associated increased sedimentation from both wind and water erosion down gradient of the Secord proposed action. These effects would be noticeable within Reservoir Canyon and may reach Ute and/or Beaver creeks. The increased sedimentation effects are not anticipated to reach Los Piños River. The quality and quantity of this sedimentation increase would be dependent upon wind and water events in relation to the timing of soil disturbance and reclamation success. The new road would cross the Reservoir Canyon drainage with three 36-inch culverts, as specified by the landowner. One 36-inch culvert would be installed in a smaller, side-drainage crossing. Nine inch diameter fiber logs would be placed downstream of all culverts. These would be removed when the soils disturbed by placement of the culverts have been fully reclaimed. Fiber and rock would be placed over the fill required to install the three culverts in the Reservoir crossing. Rock would be placed below all culverts to minimize erosion from flowing water. The access road would be surfaced and maintained as described in the 13-point surface use

plans of the Secord APDs and to landowners' specifications. Water along the access road would be diverted at frequent intervals by cutouts, mud holes would be filled and detours around mud holes would not be permitted. These mitigation measures would minimize erosion from the road surface. Rapid reclamation and reseeding of disturbed areas as specified in the Secord APDs' 13-point surface use plans and as specified by the landowners' would minimize impacts to downstream surface water quality and quantity. The implementation of BMPs and mitigation measures would lessen downstream sedimentation from the access road crossing of Reservoir Canyon.

Lining of the reserve pit and the berming of storage tanks would prevent fluid seepage into surface water or shallow ground water. Fluids either stored on location or associated with the pipeline, during all operations would be contained in tanks.

CDX would drill, case and cement both wells as specified in the eight-point drilling plans of the Secord APDs and as directed by the SJPLC, to protect the quality and quantity of all ground water aquifers. To assure all casings and cementing are established, bradenhead testing would be implemented as specified in the San Juan /BLM Notice to Lessees (NTL) MDO-91-1, Change 1. Drilling and/or cementing operations may be witnessed by the SJPLC. Water for drilling and completion would be trucked to the location, from permitted sources. CDX has tested three water wells within a one-mile radius of the project. If a problem with these water wells arises during the production phase of the Secord proposed action, the wells would be retested for flow, water depth, quantity and quality. If a problem(s) with the water well(s) continues during the production of the Secord well, a hydrologic investigation into a possible cause(s) would be conducted.

#### **Finding for Public Land Health Standard 5: Ensure Water Quality Meets Minimum Colorado Standards**

With the implementation of mitigation measures, moderate impacts to downstream surface water quality are anticipated. No impacts to ground water quality or quantity are anticipated with the implementation of mitigation measures. The Public Land Health Standard 5; for Water Quality to Meet Minimum Colorado Standards would continue to be "moving toward achieving" with the implementation of the Secord proposed action.

### **2.15 WETLANDS & RIPARIAN ZONES (Includes a finding for Standard 2)**

#### **2.15.1 Affected Environment**

The drainage of Reservoir Canyon has been designated as a riparian area in the 1992 HD FEIS. Downstream from the Secord proposed action area (SE<sup>1</sup>/<sub>4</sub> of Section 18U, T. 34 N., R. 6W., SUL, NMPM), Reservoir Canyon drainage was designated a wetland area in the 1992 HD FEIS. However, this designation was not carried forward in the 2004 Draft Northern EIS. Riparian and wetland areas are isolated areas of high groundwater in the immediate drainage of Reservoir Canyon. Wetlands and riparian areas are considered sensitive, due to their importance to wildlife and their function in the ecosystem. Based on the two field investigations, no riparian or wetlands areas would be within, crossed or directly disturbed by the Secord proposed action. Riparian and wetland areas are located downstream from the Secord proposed action area where Reservoir Canyon joins Ute Creek, as well as areas surrounding Beaver Creek and Harper Pond. A small artificial riparian area is associated with the Bayfield Irrigation Ditch, at the extreme western end of the Secord proposed pipelines. The Secord proposed pipelines would be bored under the irrigation ditch.

#### **2.15.2 Environmental Consequences/Mitigation**

The proposed new access road and pipelines would cross Reservoir Canyon in compliance with 13-point surface use plans of the Secord APDs and the landowners' specifications and mitigation measures described in Section 2.13 Water Quality. All disturbed areas not needed for production or vehicle travel would be immediately recontoured and reseeded consistent with the landowners' and

NRCS specifications. The remaining disturbed areas, around production equipment and the running surface of the access road, would be surfaced to minimize sedimentation into Reservoir Canyon and downstream tributaries. With the implementation of mitigation measures described in Section 2.13 Water Quality and mitigation measures in the 13-point surface use plans of the Secord APDs, sedimentation into Reservoir Canyon and its downstream tributaries may increase moderately for the short-term. Upon successful reclamation of disturbed areas and surfacing of the access road, downstream sedimentation as a result of the Secord proposed action is anticipated to be less than during the construction phase of the project. Given the existing condition of the vegetation communities, the mitigation measures of the Secord proposed action may assist in reducing erosion and sedimentation into Reservoir Canyon, by improving on the existing vegetation. The riparian systems downstream of the Secord proposed action area may notice some short-term increases in sedimentation. The small riparian area surrounding the Bayfield Irrigation Ditch would not be directly or indirectly affected by the proposed pipelines or any other elements of the Secord proposed action. Over the long-term the riparian systems downstream of the Secord proposed action are expected to remain unchanged.

**Finding for Public Land Health Standard 2: Proper Functioning of Riparian Systems.**

Riparian systems down gradient of the Secord proposed action would continue to be “moving toward achieving” with the implementation of the Secord proposed action and associated mitigation measures.

**2.16 WILD and SCENIC RIVERS**

No wild and/or scenic rivers are in or near the Secord proposed action area.

**2.17 WILDERNESS**

No designated or proposed wilderness areas or wilderness study areas are in or near the Secord proposed action area.

**NON-CRITICAL ELEMENTS**

**2.18 SOILS (Includes a finding for Standard 1)**

**2.18.1 Affected Environment**

The Soil Conservation Service, now the Natural Resource Conservation Service (NRCS), along with the U.S. Forest Service, surveyed the soils in the Secord proposed action area (USDA SCS and USFS, 1981). The existing well pad for the proposed Secord No. 1 and No. 1X wells is contained within the Corta silt loam, 4 to 25 percent slopes. This mesa soil is deep and well drained, formed from interbedded shale and sandstone. Permeability is very slow, with a moderate water holding capacity. Runoff is slow to medium and the hazard of water erosion is moderate. Soil blowing hazard is slight. The proposed new access road and pipelines are contained within Nunn loam, 0 to 4 percent slopes. This alluvial plain and piedmont soil is deep and well drained, formed from material derived from shale and some sandstone. Permeability is slow, with a moderate available water holding capacity. Runoff is slow and the hazard of water erosion is moderate. The existing access road and proposed pipelines crosses Corta silt loam, 25 to 65 percent slopes, from approximately engineering station (E.S.) 0+00 to E.S. 2+78.05. This soil has the same characteristics as the previously described Corta soil, but steeper slope.

**2.18.2 Environmental Consequences/Mitigation**

Approximately 1.77 acres of new ground disturbance within the Nunn loam 0 to 4 percent slopes would be required for the Secord proposed action. The project would utilize approximately 4.31 acres of previously disturbed ground within the Corta silt loam soil type. 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, soils are subject to increased water and

wind erosion, dependent upon the timing of storm events (water and/or wind) relative to the disturbance. The heaviest amounts of erosion sediments entering Reservoir Canyon and then into Los Piños River would be short-term, until vegetation has been reestablished and following the implementation of best management practices (BMPs). Following construction and drilling, vehicular activity would be restricted to approximately 0.78 of an acre on the well pad and approximately 3.84 acres for the access road running surface, permitting the remaining 1.45 acres to be reclaimed. Rapid establishment of permanent, perennial vegetation, installations of functional erosion control devices such as water bars, culverts, etc. would decrease long-term soil erosion impacts.

### **Finding for Public Land Health Standard 1: Upland Soils; Proper Infiltration/Permeability Rates.**

The Secord well pad is an existing disturbance that has not been fully reclaimed. Following drilling, the pad would be properly reclaimed. Correct construction and maintenance techniques of BMPs on the access road and pipelines would minimize erosion for the life of the project. With the implementation of mitigation measures including BMPs discussed above and in the 13-point surface use plans of the Secord APDs, erosion rates are anticipated to show a minimal increase, or possibly decrease from the existing condition. The Public Land Health Standard 1; Upland Soils: Infiltration/Permeability Rates would continue to be “moving toward achieving” with the implementation of the Secord proposed action and mitigation measures.

## **2.19 VEGETATION (Includes a finding for Standard 3)**

### **2.19.1 Affected Environment**

The Secord proposed action is contained within three vegetation communities (Draft Northern EIS 2004). The well pad and the extreme eastern portion the existing access road are within an upland piñon-juniper woodland community dominated by piñon pine (*Pinus edulis*) and Utah juniper (*Juniper osteosperma*). Associated species include big sagebrush (*Artemisia tridentata*), mountain mahogany (*Cercocarpus montanus*), Gambel’s oak (*Quercus gambelii*), serviceberry (*Amelanchier utahensis*), bitterbrush (*Purshia tridentata*), Indian ricegrass, (*Oryzopsis hymnodies*), western wheatgrass (*Agropyron smithii*) and wild buckwheat (*Eriogonum* spp.). The steep portion of the existing access road and proposed pipelines is contained within a Gambel’s oak community dominated by dense Gamble’s oak brush. The limited understory includes chokecherry (*Prunus virginiana*), snowberry (*Symphoricarpos rotundifolius*), Wood’s rose (*Rosa woodsii*), and creeping mahonia (*Mahonia repens*). The proposed new access road and pipelines are within a valley big sagebrush community. This heavily grazed community has a limited understory of western wheatgrass, squirreltail (*Sitanion hystrix*), broom snakeweed (*Gutierrezia sarothrae*), fringed sage (*Artemisia frigida*) and yarrow (*Achillea lanulosa*). A few cottonwoods (*Populus fremontii*.) are found within the Reservoir Canyon drainage bottom. Appendix D contains a list of the flora species observed in the Secord proposed action area.

### **2.19.2 Environmental Consequences/Mitigation**

The new access road and the western portion of the pipelines would disturb approximately 1.77 acres of big sagebrush vegetation. The Secord proposed action would remove the existing rabbitbrush from the existing well pad, which has not been fully reclaimed. The running surface of the new access road (approximately 3.48 acres) and approximately 0.78 of an acre on the well pad would remain void of vegetation; a total of approximately 4.26 acres. The majority of the existing well pad and the proposed pipelines would be immediately reclaimed and reseeded to the landowners’ and NRCS specifications. All Secord proposed action activities would be confined to the permitted areas, at all times. The reseeding would alter the existing vegetation from big sagebrush to reclaimed grasses.

### **Finding for Public Land Health Standard 3: Healthy and Productive Plant/Animal Communities.**

Reclamation of the existing well pad and proposed pipelines may increase the productivity of the existing plant/animal communities. Following successful reclamation and vegetation establishment, the overall effect to the plant/animal community would be minimal; and may be positive. The Public Land Health Standard 3; for Healthy and Productive Plant/Animal Communities would continue to be “moving toward achieving” with the implementation of the Secord proposed action and mitigation measures.

## **2.20 WILDLIFE, AQUATIC (Includes information on Standard 3)**

### **2.20.1 Affected Environment**

No aquatic wildlife or habitat occurs within the Secord proposed action area. However, approximately one (1) mile west of the Secord proposed action aquatic wildlife and habitat occurs within Ute and Beaver creeks and Harper Pond.

### **2.20.2 Environmental Consequences/Mitigation**

The Secord proposed action may indirectly affect aquatic wildlife or habitats downstream of the project through changes in water quantity and quality. Increased runoff from the access road, pipelines, and the well pad may increase sedimentation into Reservoir Canyon that may, in turn, cause channel scouring, bank erosion, and alteration of the canyon flow-line. This increased sedimentation may reach Ute and/or Beaver creeks, but is not anticipated to reach Los Piños or the San Juan River. The effects to water quality include increases in suspended sediment loads, dissolved solids and turbidity and a decrease in concentrations of dissolved oxygen. The degree of soil loss and corresponding increased sediment input to streams is difficult to quantify. Implementation of BMPs and other mitigation measures including revegetation over time, as detailed previously and in the 13-point surface use plans of the Secord APDs should reduce sediment input to Reservoir Canyon and its downstream tributaries. While watershed BMPs are intended to minimize these types of impacts, the magnitude and duration of impacts would depend on the implementation and maintenance of BMP sediment controls.

## **2.21 WILDLIFE, TERRESTRIAL (Includes a finding on Standard 3)**

### **2.21.1 Affected Environment**

The Colorado Department of Wildlife (CDOW) has designated the Secord well pad area as elk and mule deer winter range. The Secord access road and pipeline area has been designated as elk and mule deer winter range and severe winter range. The Secord proposed action area, similar to other western slope areas of the HD Mountains, contains the important winter range of open canyon habitat, small lower-elevation parks and irrigated agricultural lands for both resident and migratory big game. The Secord proposed action area is managed as part of the CDOW Game Management Unit 751. During the winter, there is a large influx of big game, depending on the weather conditions and snow depths. The Secord proposed action area has also been designated by the CDOW as a wild turkey winter concentration area (HD FEIS/ROD 1992). Field investigations of the Secord proposed action area showed signs of heavy elk and mule deer use.

Wildlife observed during the field inspection included ravens, cottontails, piñon jays, rufous-sided towhee, black billed magpie, mountain bluebird, red-tailed hawk, golden eagle and an oriole nest located in a large cottonwood near the end of the pipeline. Other wildlife species likely to occur in the area include mountain lion, bobcat, red and grey fox, coyote, badger, skunks, and a variety of small mammals. A wide variety of insects, reptiles and birds also use the region. No prairie dogs or evidence of borrows or colonies were observed. A golden eagle and a red-tailed hawk were observed soaring above the project area during the March 31, 2004 field investigation. No other raptors or nests were observed although the area contains potential habitat for raptor nesting and foraging. Appendix

D contains a complete list of fauna species that may occur in the Secord proposed action area.

### **2.21.2 Environmental Consequences/Mitigation**

Wildlife species react differently to vegetation changes, soil loss, increased traffic and/or human intrusions; some negatively, and some show no reaction at all. Species would continue to inhabit the Secord proposed action area or may temporarily leave the area. Species populations may increase or decrease depending on the availability of forage or prey. The Secord proposed action would remove a minimal amount of forage and browse for wildlife species, including big game. Winter forage and solitude are critical for big game animals during demanding winter months. Vehicular traffic and increased human activity in the area would have a negative impact to big game and some wildlife species, especially during construction and drilling. Light truck traffic would continue yearlong. The Secord proposed action would result in the loss of approximately 1.77 acres of habitat in addition to the existing disturbed areas. Of the approximate 1.77 acres of new disturbance, approximately 0.41 of an acre would be reclaimed. CDX would abide by the San Juan National Forest seasonal restriction on construction and drilling from December 1<sup>st</sup> through April 30<sup>th</sup>. This would greatly reduce impacts to wintering big game and other wildlife. To the extent possible, given safety and well production, telemetry would be used to monitor the wells during winter months, thereby limiting the vehicle trips to the well pad. The access road would be totally on private land, therefore limiting general public access and disturbance to the Secord proposed action area and public access to the surrounding San Juan National Forest. Limiting of human and vehicle access to the well pad during the winter months would minimize wildlife interruption during this critical time of year.

### **Finding for Public Land Health Standard 3: Healthy and Productive Plant/Animal Communities.**

The Public Land Health Standard 3; for Healthy and Productive Plant/Animal Communities would continue to be “moving toward achieving” with the implementation of the Secord proposed action and mitigation measures.

**OTHER NON-CRITICAL ELEMENTS**

**Table 2.4 Other Non-Critical Resources; Either Considered or Not brought Forward for Analysis**

<b>Non-Critical Elements</b>	<b>Not Applicable (N/A) or Not Present</b>	<b>Applicable or Present, No Impact</b>	<b>Applicable &amp; Present &amp; Brought Forward for Analysis</b>
<b>Access</b>			<b>X</b>
<b>Cadastral Survey</b>	<b>N/A<sup>1</sup></b>		
<b>Fire</b>			<b>X</b>
<b>Forest Management</b>	<b>N/A</b>		
<b>Geology and Minerals</b>			<b>X</b>
<b>Hydrology/Water Rights</b>	<b>N/A</b>		
<b>Law Enforcement</b>	<b>N/A</b>		
<b>Paleontology</b>	<b>N/A</b>		
<b>Noise</b>			<b>X</b>
<b>Range Management</b>	<b>N/A</b>		
<b>Realty Authorizations</b>	<b>N/A</b>		
<b>Recreation</b>	<b>N/A</b>		
<b>Socio-Economics</b>	<b>N/A</b>		
<b>Transportation</b>	<b>N/A</b>		
<b>Visual Resources</b>			<b>X</b>

<sup>1</sup> Not Applicable

**2.22 ACCESS**

**2.22.1 Affected Environment**

An existing private road currently accesses the existing well pad proposed to be used in the Secord proposed action. The landowners have requested a new access road, to limit traffic near some of the existing residences.

**2.22.2 Environmental Consequences/Mitigation**

A new access road would cause additional ground disturbance in the Reservoir Canyon area of approximately 1.36 acres. Construction, maintenance and BMPs for the new road are detailed in the 13-point surface use plans of the Secord APDs. Crossing of Reservoir Canyon drainage would follow landowners’ specifications and mitigation measures previously detailed. These specifications and mitigation measures may serve to reduce erosion and sedimentation rates into Reservoir Canyon and its downstream tributaries.

Public access to public lands or the San Juan National Forest would not be affected by the Secord proposed action, as the proposed access road would also be totally on private lands. Access to the private land and residences would be improved under the road maintenance agreement between CDX and the landowners, detailed in the 13-point surface use plans of the Secord APDs.

**2.23 FIRE**

**2.23.1 Affected Environment**

The risk of fire in the Secord proposed action area can range from low to high, dependent upon undergrowth and moisture conditions. Beetle-killed piñon trees add to the fire danger. Grazing by big game and livestock has kept the Secord proposed action area’s understory moderate to low, lowering fire risk.

### **2.23.2 Environmental Consequences/Mitigation**

CDX would follow the approved APDs conditions of approval and federal regulations to minimize all fire hazards. These include using an approved and tested blowout preventer and other pressure control equipment, an adequate flare pit and wall located down wind (if flaring is necessary for safety), and maintaining a 10-foot weed free area round all production equipment. No burning would be allowed at any time. Following all mitigation measures would minimize fire risks of the Secord proposed action.

## **2.24 GEOLOGY AND MINERALS**

### **2.24.1 Affected Environment**

The Secord proposed action area lies within the northeastern edge of the San Juan Basin. The primary producing hydrocarbon reservoirs include the Fruitland Formation, Pictured Cliffs Sandstone, the Mesa Verde Group and the Dakota Sandstone. These formations contain both source rock and natural reservoirs for oil and gas.

### **2.24.2 Environmental Consequences/Mitigation**

The Secord proposed action proposes to drain and produce approximately 640 acres of CBM gas from the Fruitland Formation. This production would result in an irreversible and irretrievable production of both federal and fee minerals.

## **2.25 NOISE**

### **2.25.1 Affected Environment**

Ambient noise levels in the Secord proposed action area are generally low. Noise associated with vehicles on private and La Plata County roads can occasionally be heard at the western extent of the Secord proposed action area. Minimal noise is audible at the well pad, in the eastern portion of the Secord proposed action area.

### **2.25.2 Environmental Consequences/Mitigation**

During drilling, access road and pipeline construction, short-term noise within the vicinity would moderately increase. If a compressor or pump jack is required during the project operation phase, noise levels would increase. CDX would be required to meet all La Plata County Noise Regulations and Standards for all production equipment. By following these standards, impacts to ambient noise levels would be minimal.

## **2.26 VISUAL RESOURCES**

### **2.26.1 Affected Environment**

The Draft Northern EIS Visual Quality Objective (VQOs) Classification for the Secord proposed action area is Partial Retention. The VQOs for Partial Retention allows for activities to remain visually subordinate to the characteristic of the landscape.

### **2.26.2 Environmental Consequences/Mitigation**

The Secord proposed action would result in some vegetation alteration and visual scaring of the landscape for the new access road and the western extent of the pipelines. The drilling rig would only be visible from private land within Reservoir Canyon. The drilling rig derrick may be visible from La Plata County Roads 521, 523, 524 and/or nearby residences. After drilling is complete, the production phase of the Secord proposed action would not be visible from any public road or highway, or from nearby residences. During access road and pipeline construction, equipment, machinery and pipe would be visible from private residences. The Secord proposed action being located mainly within existing disturbances minimizes visual impacts. Rapid construction, reclamation and revegetation would decrease the period of visual impact. Painting of surface equipment blend into the surrounding ecosystem, Juniper Green-Federal Standard 595a-17127, would lessen long-term visual impacts.

## **CUMULATIVE IMPACTS SUMMARY**

Currently, one producing CBM well is located within the SW<sup>1</sup>/<sub>4</sub> of Section 18U, and two dry and abandoned wells are within the SW<sup>1</sup>/<sub>4</sub> of Section 17U, T. 34N., R. 6W., SUL, NMPM. Existing CBM wells are also located in the NW<sup>1</sup>/<sub>4</sub> of Section 7U, NW<sup>1</sup>/<sub>4</sub> of 18U, NW<sup>1</sup>/<sub>4</sub> and SE<sup>1</sup>/<sub>4</sub> of 19U and the NW<sup>1</sup>/<sub>4</sub> of 20U, T. 34N., R. 6W., SUL, NMPM. Reasonable foreseeable CMB development is represented in the agency preferred alternative (Alternative 1A) of the 2004 Draft Northern EIS. This document analyzed both resource and cumulative impacts for proposed CBM wells and associated facilities within the northern portion of the San Juan Basin, north of the Southern Ute Indian Reservation. The CBM wells proposed in the Draft Northern EIS would be drilled on 320-acre spacing with one infill well per 320 acres; for one CBM well per 160 acres. Under the agency's preferred alternative for the Draft Northern EIS, the only reasonable foreseeable CBM development predicted would be to the west of the Secord proposed action area. This analysis included three drilling windows in Section 7U (one each in the NE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub> and SW<sup>1</sup>/<sub>4</sub>), one drilling window in the NW<sup>1</sup>/<sub>4</sub> of Section 18U, and two drilling windows in Section 19U (one each in the NE<sup>1</sup>/<sub>4</sub> and SW<sup>1</sup>/<sub>4</sub>); all within T. 34 N., R. 6W., SUL, NMPM. Additionally, one proposed horizontal pad containing one vertical well is proposed in the SW<sup>1</sup>/<sub>4</sub> of Section 20U, T. 34N., R. 6W., SUL, NMPM. To date, none of these wells have been drilled.

In addition to proposed CBM development, Columbine Ranger District of the San Juan National Forest is planning a fuels reduction project on San Juan National Forest lands surrounding the Secord proposed action area to the north, east and south. This project is proposed within Sections 8U, 17U, 20U, 29U and 30U of T. 34N., R. 6 W., NMPM. The fuels reduction project will hydro-mow approximately 900 acres of oakbrush and small trees, and reseed the area with a mixture of forbs and grasses. The primary project objective is to reduce potential fire fuels. Additionally, some benefits to soils, vegetation and wildlife are anticipated.

Residual impacts of the Secord proposed action include impacts to local air quality by dust during construction, and well emissions during drilling and production. If a compressor/pump jack is required, additional combustion emissions would result. A change in site topography, soil constitution and vegetation composition would occur as a result of the new access road and pipelines. Approximately 1.77 acres of vegetation and forage would be lost during well production. The Secord proposal would result in an un-quantified amount of increased soil loss, erosion, and sedimentation into Reservoir Canyon and possibly immediate downstream tributaries. Big game wintering habitat would be fragmented with a small increase in human intrusions and surface disturbances. Vicinity noise may increase, even with proposed mitigation. Some long term visual impacts from the new road would occur. Overall, the residual, irreversible, irretrievable and cumulative impacts from the Secord proposed action to the surface and sub-surface resources would remain within the analysis level of the 2004 Draft Northern EIS and the 1992 HD FEIS/ROD.

### **CHAPTER 3 – PERSONS / AGENCIES CONSULTED**

The following individuals were consulted during the preparation of this document:

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The following agencies were consulted during the preparation of this document:

Colorado Air Quality Control Commission, Air Quality Standards, web site  
Colorado Department of Public Health and Environment, web site  
Colorado Department of Water Resources, Durango, Colorado  
Colorado Oil Conservation Commission, web site  
Natural Resources Conservation Service, Durango, Colorado  
U. S. Fish and Wildlife Service, Ecological Services Department, Grand Junction, Colorado

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# **APPENDIX A**

## **MAPS**

**APPENDIX B**

**SECORD**

**EIGHT-POINT DRILLING PLAN**

**AND**

**13-POINT SURFACE USE PLANS**

**FOR**

**THE SECORD NO. 1 AND 1X WELLS**

# **APPENDIX C**

## **SAN JUAN PUBLIC LANDS**

### **SPECIES OF CONCERN**

## SAN JUAN PUBLIC LANDS

### Species to Consider for All Ground Disturbing Activities

Species	Habitat Association
Canada lynx (Threatened)	High elevation aspen and spruce-fir forests
Black-footed ferret (Endangered)	Prairie dog colonies; unlikely
American marten (FS Sensitive)	Subalpine spruce-fir forests, alpine tundra, montane forests
North American wolverine (FS Sensitive)	Rare; boreal spruce-fir forest and tundra
River otter (FS Sensitive)	Stream and river riparian
Spotted bat (BLM/FS Sensitive)	piñon-juniper, shrub desert, possibly riparian
Townsend's big-eared bat (BLM/FS Sensitive)	Abandoned mines and caves
Fringed myotis (BLM/FS Sensitive)	Piñon-juniper and other coniferous woodlands
Yuma myotis (BLM Sensitive)	Piñon-juniper, semidesert and tied to riparian
Allen's big-eared bat (BLM Sensitive)	Woodlands, mines, and caves
Big free-tailed bat (BLM Sensitive)	Rocky and canyon country
Abert's squirrel (MIS)	Ponderosa pine forests
Gunnison's prairie dog (FS Sensitive)	Grasslands and semidesert and montane shrublands
Elk (MIS)	Most habitats; low elevation winter range
Mule deer (MIS)	Most habitats; low elevation winter range
Pronghorn antelope (BLM – Concern)	Sagebrush grasslands
Desert bighorn sheep (BLM – Concern)	Dolores River canyons
Bald eagle (Threatened)	River, reservoir, and stream habitat
Golden eagle (BCC)	Open habitats including grasslands, sagebrush, farmlands, and tundra
Northern harrier (FS Sensitive/BCC)	Grasslands, agricultural lands, mountain sagebrush, and marshes; require abundant cover (same as for short-eared owl)
Swainson's hawk (BCC)	Arid grassland, desert, and agricultural areas with scattered trees and shrubs
Ferruginous hawk (BLM/FS Sensitive/BCC)	Winter migrant only; grasslands and semidesert shrub
Northern goshawk (BLM/FS Sensitive)	Ponderosa pine, aspen, and spruce-fir forests
Peregrine falcon (BLM/FS Sensitive/BCC)	Cliffs and often in association with riparian areas
Prairie falcon (BCC)	Cliff faces in open country; compete with peregrines and golden eagles for nest sites
Gunnison sage grouse	Sagebrush grasslands; not on FS

(Candidate/BLM Sensitive/BCC)	
Columbian sharp-tailed grouse (FS Sensitive)	Oak/service berry shrublands, often interspersed with sagebrush; aspen forests; irrigated pasture; imminent reintroduction by DOW
White-tailed ptarmigan (FS Sensitive)	Exclusive to alpine tundra
Southwestern willow flycatcher (Endangered)	Willow and tamarisk riparian
Yellow-billed cuckoo (Candidate/BCC/ - BLM Only)	Riparian; gallery cottonwoods
American bittern (FS Sensitive)	Marsh, swamp, or bog with cattails, rushes, grasses, & sedges
White-faced Ibis (BLM Sensitive)	Migrant; wet meadows, marsh edges, and reservoir shorelines
Wilson's phalarope (BCC)	Open water adjacent to moist sedge and rush meadows; nest in sedge & rush meadows with low plant height; breeding records for Southwest Colorado
Mallard (MIS)	Wetlands; larger marshes and rivers during non-breeding
Black swift (FS Sensitive/BCC)	Vertical rock faces, near waterfalls or in dripping caves
Mexican spotted owl (Threatened)	Forested canyon bottoms
Boreal owl (FS Sensitive)	Mature and old-growth spruce-fir forest
Flammulated owl (FS Sensitive/BCC)	Open ponderosa pine forests; dry montane conifer or aspen forests, often with dense saplings
Western burrowing owl (FS Sensitive/BCC)	Rodent burrows; grasslands, shrublands, deserts
Short-eared owl (FS Sensitive/BCC)	Open habitats including grasslands, marsh edges, shrub-steppe, and agricultural lands (same as for Northern harrier)
Lewis' woodpecker (FS Sensitive/BCC)	Open pine forest, riparian, and piñon-juniper woodlands
Three-toed woodpecker (FS Sensitive)	Spruce-fir forests
Hairy woodpecker (MIS)	Ponderosa pine, spruce-fir, aspen, piñon-juniper, riparian forests
Williamson's sapsucker (BCC)	Conifer forests, often mixed with aspen from 7,000 – 10,700 feet; aspen is an essential element
Loggerhead shrike (FS Sensitive)	Lowland riparian, piñon-juniper woodlands, shrublands
Olive-sided flycatcher (FS Sensitive)	Snags and conifers; natural clearings
Purple martin (FS Sensitive)	Old-growth aspen stands near stream, spring, or pond
Gray vireo (BCC on BLM only)	Mesas, steep hillsides, canyons, & wide valleys where junipers are grow spaced apart; grasses, sagebrush, and desert scrub flourish among the juniper
Piñon jay (BCC)	Thrive in piñon-juniper woodlands
Virginia's warbler (BCC)	Dense shrublands and scrub forests associated with mesa slopes, foothills, open ravines, & valleys

Black-throated gray warbler (BCC)	Almost exclusive to mature piñon-juniper woodlands
Grace's warbler (BCC)	Ponderosa pine with a scrub oak understory
Sage sparrow (BCC on BLM only)	Large, low-elevation stands of big sagebrush or mixed big sagebrush and greasewood
Brewer's sparrow (FS Sensitive)	Primarily sagebrush but also in mixed shrublands (rabbitbrush, greasewood, etc)
Mountain bluebird (MIS)	Piñon-juniper woodlands, aspen forest, mountain grasslands
Green-tailed towhee (MIS)	Dry shrubby hillsides, sagebrush flats, oakbrush, shrublands
Boreal toad (Candidate/FS Sensitive)	Damp conditions; marshes, wet meadows, streams, ponds, lakes
Northern leopard frog (FS Sensitive)	Water's edge; wet meadows, banks of marshes and ponds
Longnose leopard lizard (BLM Sensitive)	Shrublands with open ground
Desert spiny lizard (BLM Sensitive)	Shrub-covered dirt banks and sparsely vegetated rocky areas near flowing streams
Brook trout (MIS)	Cold, pure, turbulent freshwater streams
Brown trout (MIS)	Freshwater streams; tolerant of warm temperatures
Colorado River cutthroat trout (MIS, FS/BLM Sensitive)	Freshwater streams
Bonytail (Endangered)	Tributaries of the Colorado and San Juan Rivers
Colorado pikeminnow (Endangered)	Tributaries of the Colorado and San Juan Rivers
Humpback chub (Endangered)	Tributaries of the Colorado and San Juan Rivers
Razorback sucker (Endangered)	Tributaries of the Colorado and San Juan Rivers
Bluehead sucker (BLM/FS Sensitive)	Tributaries of the Colorado and San Juan Rivers
Flannelmouth sucker (BLM/FS Sensitive)	Tributaries of the Colorado and San Juan Rivers
Roundtail chub (BLM/FS Sensitive)	Tributaries of the Colorado and San Juan Rivers
Uncompahgre fritillary butterfly (Endangered)	Unlikely; high elevation;
Great Basin silverspot butterfly (FS Sensitive)	Riparian; mostly tied to springs

\*MIS – Management Indicator Species

\*BCC – Birds of Conservation Concern

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## **APPENDIX D**

### **PLANT AND WILDLIFE LISTS**

**MAMMALS, BIRDS AND REPTILES WITH THE POTENTIAL TO OCCUR IN THE  
SECOND PROPOSED ACTION AREA**

**MAMMALS**

*Ammospermophilus leucurus*  
*Canis latrans*  
*Cervus elaphus*  
*Dipodomys spectabilis*  
*Erethizon dorstaum*  
*Felis concolor*  
*Lepus californicus*  
*Lynx canadensis*  
*L. rufus*  
*Martens americana*  
*Mephitis mephitis*  
*Myotis spp.*  
*Odocoileus hemionus*  
*Perognathus flavus*  
*Spermophilus pilosoma*  
*Sylvilagus auduboni*  
*Urocon cinereoargenteus*  
*Ursus americanus*  
*Vulpes vulpes*

Whitetail antelope squirrel  
Coyote  
American elk  
Bannertail kangaroo rat  
Porcupine  
Mountain lion  
Blacktail jackrabbit  
Canada lynx  
Bobcat  
American marten  
Striped skunk  
Bat  
Mule deer  
Silky pocket mouse  
Spotted ground squirrel  
Desert cottontail  
Grey fox  
Black bear  
Red fox

**BIRDS**

*Apelocoma coerulescens*  
*Aquila chrysaetos*  
*Buteo jamaicensis*  
*B. lagopus*  
*Carpodacus mexicanus*  
*Cathartes aura*  
*Chordeiles minor*  
*Circus cyaneus*  
*Colaptes auratus*  
*Corvus corax*  
*Cyanocitta stelleri*  
*Eremophila alpestris*  
*Euphagus cyanocephalus*  
*Falco sparverius*  
*Gymnorhinus cyanocephalus*  
*Ícterus spp.*  
*Pica pica*  
*Pipilo erythrophthalmus*  
*Siália currucoídes*  
*S. mexicana*

Scrub jay  
Golden eagle  
Red-tailed hawk  
Rough legged hawk  
House finch  
Turkey vulture  
Common nighthawk  
Northern harrier  
Northern flicker  
Common raven  
Steller's jay  
Horned lark  
Brewer's blackbird  
Sparrow hawk  
Piñon jay  
Oriole  
Black-billed magpie  
Rufous-sided towhee  
Mountain bluebird  
Western bluebird

*Sturnella neglecta*  
*Sturnus vulgaris*  
*Turdus migratorius*  
*Zenaidura macroura*  
*Zonotrichia leucophrys*

Western meadowlark  
Starling  
Robin  
Mourning dove  
White-crowned sparrow

**REPTILES**

*Crotalus viridis*  
*Crotaphytus collaris*  
*Phrynosoma douglassi*  
*Pituophis melanoleucus*  
*Sceloporus graciosus*  
*S. stansburiana*

Prairie rattlesnake  
Collared lizard  
Short-horned lizard  
Bull snake  
Sagebrush lizard  
Side-blotched lizard

**PLANTS OBSERVED DURING FIELD SURVEY OF THE SECORD PROPOSED  
ACTION AREA**

**Forbs:**

<i>Achillea millefolium</i> L.	Milfoil Yarrow
<i>Allium</i> sp. L.	Wild onion
<i>Alyssum minus</i> (L.) Roth	Annual alyssum
<i>Amaranthus graecizans</i> L.	Pigweed
<i>Antennaria parvifolia</i> Nutt.	Pussytoes
<i>Aster hesperius</i> Gray	Siskiyou aster
<i>Astragalus flavus</i> Nutt.	Milkvetch
<i>Carduus nutans</i> L.	Musk thistle
<i>Chaenactis douglasii</i> (Hook.) Hook.& Arno.	Chaenactis
<i>Chorispora tenella</i> (Pall.) DC.	Chorispora
<i>Cirsium undulatum</i> (Nutt.) Sprengel	Gray Thistle
<i>Crepis occidentalis</i> Nutt.	Western hawksbeard
<i>Cryptantha crassisejala</i> (Torr.& Gray) Greene	Cryptantha
<i>Cymopterys fendleri</i> Gray	Biscuitroot
<i>Descurainia pinnata</i> (Pursh) Britt.	Tansy mustard
<i>Delphinium</i> sp. L.	Larkspur
<i>Eriogonum alatum</i> Torr.	Winged buckwheat
<i>Eriogonum jamesi</i> Benth. in DC.	Wild buckwheat
<i>Erodium cicutarium</i> (L.) L'Her.	Filare/Storksbill
<i>Grindelia squarrosa</i> (Pursh) Dunal.	Gumweed
<i>Helianthus annuus</i> L.	Sunflower
<i>Heterotheca villosa</i> (Pursh.) Shiners.	Goldenaster
<i>Lactuca serriola</i> L.	Prickly-lettuce
<i>Lappula occidentalis</i> (Wats.) Greene	Stickseed
<i>Lesquerellia fendleri</i> (Gray) Wats.	Bladderpod
<i>Leucocrinum montanum</i> Nutt. ex Gray	Star lily
<i>Lomatium grayi</i> (Coult & Rose) Coult & Rose	Milfoil lomatium
<i>Machaeranthera canescens</i> (Pursh) Gray	Purple aster
<i>Mahonia repens</i> (Lindl.) G. Don	Oregon grape/ Creeping Mahonia
<i>Melilotus</i> sp.	Sweet clover
<i>Orthocarpus purpureo-albus</i> Gray	Purple owl-clover
<i>Phoradendron juniperinum</i> Engelm.	Mistletoe
<i>Rosa woodsii</i> Lindl.	Wildrose
<i>Rumex crispus</i> L.	Curled Dock
<i>Sisymbrium altissimum</i> L.	Tumblemustard
<i>Sphaeralcea grossulariifolia</i> (H & A) Rydb.	Globemallow
<i>Taraxacum officinale</i> Weber	Dandelion
<i>Thlapsi montanum</i> L.	Pennycress
<i>Townsendia incana</i> Nutt.	Daisy
<i>Verbascum thapsus</i> L.	Mullein

**Grasses:**

*Agropyron cristatum* (L.) Gaertner  
*Agropyron smithii* Rydb.  
*Bromus inermis* Leyss  
*Bromus japonicus* Thumb. ex Murry  
*Bromus tectorum* L.  
*Festuca octoflora* Walter  
*Koeleria macrantha* (Ledeb.) Schultes  
*Oryzopsis hymenoides* (R. & S.) Ricker  
*Poa fendleriana* (Steud.) Vasey.  
*Sitanion hystrix* (Nutt.) J.G. Smith

Crested wheat  
 Western wheatgrass  
 Smooth brome  
 Meadow chess  
 Cheatgrass  
 Sixweeks fescue  
 Junegrass  
 Indian ricegrass  
 Muttongrass  
 Squirrel-tail

**Shrubs:**

*Amelanchier utahensis* Koehone.  
*Artemisia bigelovii* Gray  
*Artemisia frigida* Willd.  
*Artemisia ludoviciana* Nutt.  
*Artemisia tridentata* (Pursh) Nutt.  
*Atriplex canescens* (Pursh) Nutt.  
*Cercocarpus montanus* Raf.  
*Chrysothamnus depressus* Nutt.  
*Chrysothamnus nauseosus* (Pall.) Britt.  
*Fendlera rupicola* Gray  
*Prunus virginiana* L.  
*Quercus gambellii* Nutt.  
*Rhus trilobata* Nutt. var. *aromatica*  
*Salix exigua* Nutt.

Serviceberry  
 Sagebrush  
 Sagebrush  
 Sagebrush  
 Big sagebrush  
 Four winged saltbush  
 Mountain mahogany  
 Rabbitbrush  
 Rubber rabbitbrush  
 Fendlerbush  
 Chokecherry  
 Gambel's oak  
 Skunkbrush  
 Coyote willow

**Trees:**

*Juniperus monosperma* (Engelm.) Sarg  
*Pinus edulis* Engelm.  
*Populus fremontii* Wats.

One-seed juniper  
 Piñon pine  
 Fremont cottonwood

**Cacti/Yucca:**

*Yucca baccata* Torr.  
*Opuntia fragilis* (Nutt.) Haw.  
*Opuntia polyacantha* Haw.

Spanish bayonet  
 Brittle prickly pear  
 Prickly pear cactus

## **APPENDIX E**

# **PHOTOGRAPHS OF THE SECORD PROPOSED ACTION AREA**