

CHAPTER THREE AFFECTED ENVIRONMENT

3.1 Introduction

This chapter provides a description of the human and natural environmental resources that could be affected by the Proposed Action and alternatives. This EA draws upon information compiled in the following Resource Management Plans (RMPs) analyses that have been completed for planning areas that would be crossed by the proposed pipeline:

- Green River Resource Area RMP (BLM, 1996)
- Pinedale Resource Area RMP and FEIS (BLM, 1987)

More recently, information has been compiled in the following NEPA documents:

- Pinedale Anticline Oil and Gas Exploration and Development EIS (BLM 1999a and BLM, 2000a)
- Questar Year Round Drilling Proposal Environmental Assessment (BLM, 2004a)

3.2 Socioeconomics and Environmental Justice

The proposed 611 Pipeline route is located in Lincoln and Sublette counties. Approximately two miles of the pipeline right-of-way is located in Lincoln County, and the remainder of the right-of-way is in southern Sublette County. All other proposed modifications included in the Proposed Action are located in the PAPA, also within Sublette County.

The closest community to the proposed condensate pipeline right-of-way is LaBarge which is approximately 1.2 miles to the northeast. Pinedale, in Sublette County, is a larger town in the area of the proposed pipeline. The two counties are primarily rural and their economies are tied to traditional natural resource based industries. Ranching provided the basis for community development during the nineteenth century, but its importance has recently diminished. The mineral extraction industries, particularly the oil and gas industry, now provide for much of the area's economic well being.

3.2.1 Demographics

The populations of Lincoln and Sublette counties are primarily Caucasian and male. Slightly more than 50 percent of the population is male and 97 percent are Caucasian. Each county contains very small populations of Native Americans, Hispanics, and other minorities (U.S. Census Bureau, 2005a and 2005b). The populations of Sublette and Lincoln counties have remained fairly level during the 1990s and have since grown annually by 3.0 and 1.7 percent, respectively, since 2000. Recent population statistics are shown in Table 3-1.

The 2004 estimated population of LaBarge is 419, a decrease from 431 estimated in 2000. The population of Pinedale has increased 11.5 percent from 1,412 in 2000 to 1,575 in 2004 (Wyoming Department of Administration and Information, 2004a).

**Table 3-1
Population Statistics for Lincoln and Sublette Counties**

Region	Population Census Estimates			Population % Change 1990-2000	Annual % Change 1990-2000	Population % Change 2000- 2004	Annual % Change 2000-2004
	1990	2000	2004				
Wyoming	453,588	493,782	501,242	8.9	0.9	2.6	.6
Lincoln County	12,625	14,573	15,626	15.4	1.4	7.2	1.7
Sublette County	4,843	5,920	6,654	22.2	2.0	12.4	3.0

Sources: US Census Bureau, 2005b, 2005c and Wyoming Department of Administration and Information, 2004a.

3.2.2 Economic Activity

Wyoming's economy reached a minimum level during an economic "bust" in 1987. Since then it has begun to recover. The primary industries in Lincoln and Sublette counties are mining (including oil and gas), government, transportation, and manufacturing. Mining is the largest revenue-producing industry. In terms of Gross State Product (GSP), which is the state equivalent to GDP, mining contributed 24 percent in 2000. Nationwide, the mining industry contribution to the GDP was only 1.4% for the same year (Wyoming Department of Administration and Information, 2003).

Wyoming's natural resource and mining industry has demonstrated strong growth since 2000. The following table breaks down contributions to state and local governments in the fiscal year 2003 from oil and gas industries. This would compute to a direct payment of nearly \$1,500 for each person living in Wyoming.

**Table 3-2
Taxes From Oil and Gas Industries
In Wyoming During 2003**

Tax Source	Revenue (in millions)
Property Taxes	\$228.5
Severance Taxes	\$198.9
Federal Royalties	\$220.8
State Royalties	\$ 57.9
Sales and Use Taxes	\$ 38.0
Conservation Mill Levy	\$ 3.6
Total For State	\$747.7

Source: Petroleum Association of Wyoming Oil and Gas Facts and Figures, 2004.

In Sublette County, 95.62 percent of the property tax was paid by the oil and gas industry. The 2004 county's assessed valuation of 1.88 billion more than doubled since 2000 due to high natural gas prices (Sublette County Assessor, 2005). In Lincoln County, 61 percent of the total property assessed was mineral property (Larson, 2005). In 2003, natural gas accounted for 78 percent of Lincoln County's \$362 million mineral valuation up from \$189 million in 2000 (Wyoming Business Council, 2004a).

3.2.3 Employment

Between May 2004 and May 2005, employment in the natural resource and mining sectors in the state increased 10.8 percent. Unemployment in Wyoming is expected to remain constant at around 4.5 percent, lower than the national average of 5.8 percent (State of Wyoming Department of Administration and Information, 2003). In 2000, the largest employment sectors in Lincoln and Sublette counties were Services and Professional (48 percent) and Government (19 percent and 17 percent, respectively). Mining made up 6.3 percent and 7.8 percent of the total jobs in the two counties, respectively (Wyoming Department of Administration and Information, 2000).

Unemployment in Lincoln County was 5.4 percent in 2001, somewhat higher than the state unemployment average of 3.9 percent for that year. Sublette County, however, fell below the state figure at 2.1 percent (Wyoming Department of Administration and Information, 2004b).

**Table 3-3
Income and Poverty Statistics for 2000 and 2003 (where available).**

Statistic	Lincoln County		Sublette County		Wyoming	
	2000	2003	2000	2003	2000	2003
Median Household Income	40,776	43,516	39,096	41,664	37,892	
Per Capita Money Income	17,310	19,369	19,827	21,747	19,134	
Persons below Poverty Line	9.0%		9.7%		11.4%	
Source: Wyoming Business Council, 2004b						

3.2.4 Environmental Justice

Federal agencies are required to conduct their programs, policies and activities that substantially affect human health or the environment in a way that ensures that no person is excluded from participation therein, denied the benefit of, or subjected to discrimination due to race, color or national origin. Executive Order 12898 requires Federal agencies to assess their projects to ensure they do not result in disproportionately high and adverse environmental, health or safety effects to minority or low-income populations.

Sublette and Lincoln counties are greater than 97 percent white. Each county contains very small populations of Native Americans, Hispanics and other minorities (U.S. Census Bureau, 2005a and 2005b).

3.3 Transportation

A regional network of State highways and county, local and rural roads provides the basic transportation infrastructure for access to the proposed 611 Pipeline route. U.S. Highway 189 (US 189) extends from Interstate 80 north to LaBarge, Big Piney, and Marbleton and intersects with State Highways 351 and 191. The proposed pipeline route would cross U.S. Highway 189 approximately 1.7 miles south of the Green River pipeline crossing location. The 611 Pipeline would also cross State Highway 235 at the LaBarge Tank Farm. The eastern terminus of the 611 Pipeline would be accessed from the Burma Road (BLM Road 5406), the Luman Road (BLM Road 5407), and/or from BLM Road 4203 which joins US 189 after crossing the Green River approximately 1 mile north of LaBarge.

Included in the Proposed Action is the 630-foot 25 kV power line which is adjacent to the Pinedale South Road, an improved dirt-surfaced road that can be accessed from Tyler Avenue in Pinedale, from the Mesa Road (BLM Road 5102), or from the Green River Road (Sublette

County Road 23-110). Access to the new NGL Stabilizer and Water Handling Facility and existing Gobblers Knob Compressor Station where ten parallel pipelines are proposed is from the Anticline Crest Road which joins U.S. Highway 191 via the Paradise Road (Sublette County Road 23-136). The proposed 1,250-foot long 25 kV distribution power line would also be accessed by that route.

Roads in rural areas crossed by the pipeline route are typically characterized by low traffic volumes, infrequent congestion, low travel speeds and rugged terrain. Common attributes of rural roads include a mix of rural and urban travelers, secondary roads with less frequent maintenance, large variances in travel speeds and frequent passing, adverse road surface conditions, light usage, and large geographical areas that impede rapid emergency detection and response (Goehring and Sundeen, 1999). However, all roads within the PAPA and Pinedale area have experienced increased traffic volumes and speed recently (BLM, 2004a).

3.4 Land Use and Grazing

Sublette and Lincoln counties are primarily rural and are tied to traditional natural resource based industries. Agricultural and mineral extraction industries, particularly oil and gas, are principal land uses. The pipeline route through Sublette County is zoned as resource/conservation (BLM, 1999b) with the exception of Sections 16, 20, and 21 in T27N, R112W. These latter sections are zoned A-1 (agricultural) (Curry, 2005). In Lincoln County, the pipeline route crosses land which is zoned industrial.

The only urban development in proximity to the proposed 14.4-mile long portion of the 611 Pipeline is in the small community of LaBarge, Lincoln County, located one to two miles south and east of the right-of-way near its southern terminus. Green River and Rock Springs to the southeast and Kemmerer to the southwest are the larger cities located near the proposed pipeline.

Grazing is the primary agricultural use of the lands in the vicinity of the proposed pipeline and other modifications. Arid conditions and relatively unproductive soils preclude extensive crop development. However, within the Green River Floodplain and to the west of the Green River, there are irrigated hay meadows which the proposed pipeline route crosses (USGS, 1996).

The majority of the proposed pipeline route crosses public lands managed by BLM. Other lands crossed are owned and managed by the State of Wyoming, small privately owned parcels, and Lincoln County (see Appendix A). Livestock grazing is authorized on BLM-managed lands under Section 3 of the Taylor Grazing Act of 1934. Recently the BLM (2004b) released a final environmental impact statement that proposes revisions to grazing regulations for public lands. The revisions would require, among other actions, a consistent approach to assess and monitor resource conditions to help evaluate the grazing use applicable for each managed allotment (BLM, 2004b).

The proposed condensate pipeline route would cross approximately 13.4 miles of three grazing allotments in Sublette and Lincoln counties: the Figure Four allotment for 7.3 miles all on BLM land, the Bird Individual allotment for 0.7 mile on BLM land and 0.6 mile on private land, and the North LaBarge Common allotment for 3.2 miles across BLM land, 1.1 miles of State land, and 0.5 mile across land owned by Lincoln County.

The proposed buried power lines and ten connecting pipelines would cross approximately 0.12 mile of Mount Airy Common Allotment and 0.27 mile of Mesa Common Allotment all within BLM land.

Yearly grazing uses (AUMs and season of use) of each allotment are based on biological assessments and biological evaluations (BLM, 2004b), and therefore are subject to change. Available information for livestock use within each allotment is provided in Table 3-4.

**Table 3-4
Grazing Allotments and Livestock Use Potentially Affected by the Proposed Condensate Pipeline and Other Modifications**

Allotment	Allotment Area (acres)	Livestock Type	Season of Use	AUMs
Figure Four	114,425	Sheep/Cattle	05/10 – 01/10	1,969
Bird Individual	597	Cattle	05/20 – 06/19	52
North LaBarge Common	131,713	Cattle	05/15 – 10/31	19,398
Mount Airy Common	9,999	Cattle	05/16 – 06/25	758
Mesa Common	55,841	Cattle/Horse	05/01 – 11/15	5,003
Sources: BLM, 1987, 1992, 1996				

3.5 Recreation Resources

Recreation resources within the project area and located on BLM land are managed to prevent or mitigate environmental degradation that could result from recreation and/or other land uses (BLM 1987, 1997a). Focus is mainly on recreation management areas. Within the project area there is only one undeveloped BLM site, north of LaBarge on the Green River that will be within the vicinity of any proposed component.

BLM lands crossed by the proposed 14.4-mile long portion of the 611 Pipeline support dispersed recreation, such as hiking, camping, mountain biking, fishing, boating, swimming, sight-seeing, hunting, and wildlife watching (Tyrrell, 2000; Sweetwater County Joint Travel & Tourism Board, 2002). Such a diverse representation of activities is a factor in the location of the proposed pipeline within the Green River Basin.

The Green River offers excellent opportunities for trout fishing. The condensate pipeline will cross beneath the Green River at a segment that is considered a fishery of statewide importance and is provided a designation of Class 2 by the Wyoming Game and Fish Department (Tyrrell, 2000). The southern terminus of the proposed pipeline is located approximately seven miles from the northern end of the Fontenelle Reservoir. Recreation use is low and seasonal (Sweetwater County Joint Travel & Tourism Board, 2002).

Hunters pursue numerous game species in the project area including antelope, mule and white-tailed deer, elk, moose, and waterfowl (WGFD, 2005; Tyrrell, 2000). The proposed 611 Pipeline will cross over several large game hunt areas. In addition, other modifications proposed will be located in large game hunt areas. Table 3-5 provides big game species, hunt areas, and hunting season for each species.

BLM land in southwest Wyoming supports over 1,600 wild horses. These horses are managed by the BLM in partnership with private landowners in Wild Horse Herd Management Areas. The proposed condensate pipeline will cross through the Little Colorado Wild Horse Herd Area (BLM, 1997a).

**Table 3-5
Big Game Hunt Areas (2005) Crossed By the Proposed Condensate Pipeline
and Other Modifications**

Species	Hunt Area	Hunting Season
Antelope	87, 88, 89, 90	September 10 – October 31
Mule/White-tailed Deer	138, 139, 140, 142, 143	September 15 – November 7
Elk	92, 94, 97, 98	September 20 – November 15
Moose	4, 25	September 20 – October 31
Source: WGFD, 2005		

The network of historic trails in the area provides a unique recreational and historic experience for mountain bikers (Sweetwater County Joint Travel & Tourism Board, 2002).

Other proposed modifications occur within the PAPA. Recreation opportunities in and adjacent to the PAPA are described in the PAPA EIS in Section 3.8 (BLM, 1999a).

3.6 Visual Resources

The Visual Resource Management (VRM) System is a tool used by the BLM to inventory and manage visual resources on public lands. The VRM classification combines an evaluation of visual quality, visual sensitivity of the area, and view distances. VRM classes are used to identify the degree of acceptable visual change within a characteristic landscape. Throughout development of the PAPA, BLM maintained visual resource protection in Management Areas 2 and 4.

The proposed 14.4-mile long portion of the 611 Pipeline route would cross two VRM sensitivity classes (Classes III, and IV; BLM, 1987, 1997a) parallel and adjacent to multiple pipeline rights-of-way that connect the LaBarge Tank Farm with the Bird Canyon Compressor Station (Figure 2-1). The proposed 14.4-mile long portion of the 611 Pipeline is either parallel, adjacent, or overlaps with permanent rights-of-way of other existing natural gas pipelines, power lines, and/or roads for 70 percent of the proposed route.

Other modifications included in the Proposed Action will also be located within BLM classified areas. The ten connecting pipelines and power line from NGL Stabilizer and Water Handling Facility to the Gobblers Knob Compressor Station occur in VRM sensitivity Class II, and the power line to Stewart Point 16-18 CDP would occur in VRM sensitivity Class III (BLM, 1999a), all within previously disturbed sites. Location of blowdown tanks within the PAPA occur on existing disturbance in all three VRM sensitivity classes affected by previously described project components (Class II, III, and IV) (BLM, 1999a).

The objectives for management of the three VRM sensitivity classes affected by the proposed project are as follows (BLM, 1997a):

- Class II: to retain the existing character of the landscape with designs which will blend into the surrounding landscapes and not attract attention of the casual observer;
- Class III: to partially retain the existing character of the landscape with designs that do not dominate the surrounding landscape; and

- Class IV: to provide for management activities that may result in major modifications to the existing character of the surrounding landscape. The level of change to the characteristic landscape can be high, and management activities may dominate the view; however, the change should repeat the basic elements of form, line, color, and texture of the surrounding landscape.

VRM Class III that would be crossed by the proposed 14.4-mile long portion of the 611 Pipeline is associated with the Green River, riparian zones, floodplain, and adjacent uplands on either side of the river. (Note: The disturbance for the condensate pipeline in all VRM classes would typically be adjacent to or within existing pipeline corridors/rights-of-way and would not constitute a new intrusion into the VRM area. VRM Class IV areas would occupy the remainder of land crossed by the proposed pipeline, including other waterbodies crossed by the pipeline (BLM, 1987 and 1997a).

The proposed power lines, ten connecting pipelines, and blowdown tanks lie within the PAPA. VRM Class II areas are found adjacent to the New Fork River and Green River, with VRM Class III designated areas falling just outside of these VRM Class II areas. VRM Class IV-designated areas apply to the rest of the PAPA (BLM, 1999a). Again, these facilities would be located immediately adjacent to existing disturbances in identified VRM areas.

3.7 Cultural and Historic Resources

3.7.1 Cultural History Overview

Cultural resources are protected under the National Historic Preservation Act of 1966, the Archaeological Resources Protection Act of 1979, Executive Order 11593 Protection and Enhancement of *the Cultural Environment*, and Executive Order 13007 *Indian Sacred Sites*.

Cultural resources in the area of the proposed 14.4-mile long portion of the 611 Pipeline route consist of sites associated with prehistoric and historic time periods. The prehistoric period extends from approximately 12,000 years before present time (B.P.) through 250 B.P. when European cultural items began to arrive in the Green River Basin. Approximately 75 percent of the sites found in the Green River Basin are prehistoric. Artifacts from prehistoric times include projectile points, grinding slabs, pottery, and evidence of camp sites (BLM, 1996).

Many historic sites in the Green River Basin are associated with historic trails. The Upper Green River Basin provided routes over the Continental Divide and over the major rivers of the region. Trails provided a route through the arid region on the way to finding moister lands to the west and near the coast (BLM, 2003). No historic trails are crossed by the proposed 14.4-mile long portion of the 611 Pipeline; however, the Sublette Cutoff (48LN225) is located six to ten miles to the south.

Many other historic sites in the Green River Basin are associated with the early fur trade, the frontier military, railroads, the mining industry, ranching, and early oil and gas development (BLM, 1996).

One Expansion Era Road, the Opal Wagon Road (48SU852), is eligible for inclusion on the National Register of Historic Places. It is a remnant of the original Highway 191 grade (48SU1595) and is located in the project area. The Opal Wagon Road was the major route between Opal, Wyoming and the upper Green River Basin. It was established in 1882 when Opal became a rail stop on the Oregon Shortline railroad north of the main Union Pacific tracks at Granger. After completion of the Oregon Shortline, Opal became a major shipping center from the railroad to Big Piney, LaBarge, and the upper Green River. Establishment of the Opal station brought the railroad approximately 30 miles closer to the upper Green River than the

stations at Rock Springs and Green River, and consequently it became a center for both freight and passenger service. The Opal Wagon Road is considered to be eligible for nomination to the National Register of Historic Places because of the significant role it played in the development of the Upper Green River Basin. This road was essential to the settlement of, and the continued economic maintenance of, ranching families living in the area, as well as, the pioneering oil and gas industry.

An abandoned grade of Highway 191 was relocated within the project area. The grade is considered not eligible for nomination to the National Register of Historic Places because it lacks the qualities of a significant historic property.

3.7.2 Cultural Resource Inventory Results

The proposed 14.4-mile long portion of the 611 Pipeline route parallels existing pipelines for most of its length. Previous Class III inventories were completed in association with the installation of the existing pipelines (Hakiel, 1982a and 1982b; Darlington, 1994; Murray, 1997; Murray, 1998). The inventories resulted in the testing and documentation of previously known sites, the evaluation of previously unevaluated sites, and the identification of isolated finds.

Additional field work (Murray, 2005 and Yerkovich, 2005) conducted for the proposed 14.4-mile long portion of the pipeline route includes:

- A Class III cultural resource inventory of the right-of-way including staging areas, a tank farm, and LACT facility; and
- Testing for eligibility for nomination to the National Register of Historic Places (NRHP).

Based on the current Class III inventory, approximately eight sites, six prehistoric and two historic, are documented within the proposed pipeline right-of-way. These eight sites were also recorded during previous surveys. Two of the sites are recommended eligible (48SU390 and 48SU852) and six sites are recommended not eligible for nomination to the NRHP. Site 48SU390 is located at the proposed condensate pipeline crossing of the Green River. The other site, 48SU852 (Opal Wagon Road), is located west of the Green River crossing (see Appendix C).

3.7.3 Traditional Cultural Properties

Native American tribes, including the Ute, Arapahoe, Cheyenne, Shoshone, and Shoshone-Bannock, have been identified with tribal territories located in the general area of the proposed pipeline route. Outreach with potentially affected Native American Tribes was conducted for the proposed condensate pipeline. No Native American religious concerns were identified.

3.8 Geology and Geologic Hazards, Minerals and Paleontological Resources

3.8.1 Geology

The proposed 14.4-mile long portion of the 611 Pipeline is located within the Green River Basin, primarily a flat to gently rolling plain. Slopes along the route are generally less than five percent with limited areas of slopes greater than 10 percent (Hamerlinck and Arneson, 2002). Elevations range from 6,600 feet at the Green River crossing to approximately 7,320 feet, 1.2 miles west-northwest of the Bird Canyon Compressor Station. Therefore, total relief along the right-of-way is more than 700 feet.

Most of the pipeline corridor is underlain by the Eocene-age Wasatch Formation (Love and Christiansen, 1985). Within the project area, this bedrock consists of mudstone, conglomerate, sandstone, and thin limestone beds of the New Fork Tongue, LaBarge Member, and Chappo

Member of the Wasatch Formation. The cap rock of the upland plateau near the Bird Canyon Compressor Station is marlstone and oil shale of the Laney Member of the Eocene-age Green River Formation.

Much younger unconsolidated sediments of Quaternary age overlie the Wasatch and Green River formation bedrock in stream valleys and the buttes west of the Green River. These sediments include alluvium, colluvium, stream terrace gravels, and wind-blown sands that are late Pleistocene to Holocene (Recent) in age. Some of these deposits may pre-date the most recent glacial (Wisconsin) period (Mears, 1987). Thick, Holocene deposits are found in the Green River valley at the pipeline crossing location.

3.8.2 Geologic Hazards

Lands crossed by the proposed 14.4-mile long portion of the 611 Pipeline route do not show evidence of major landslides (BLM, 1999b). There are no known active faults along the pipeline route (Wyoming State Geological Survey, 2000). There have been no major earthquakes recorded in historic times in the vicinity of the proposed pipeline route, although the USGS estimated that a 4.2 to 4.5 magnitude earthquake might occur somewhere in the Green River Basin every 62 years (BLM, 1999b).

3.8.3 Minerals

Although oil production began in the Green River Basin in the 1920s, most of the development occurred in the 1970s and 1980s and continues today. About 6,000 billion cubic feet (Bcf) of gas has been produced from Cretaceous beds in the greater Green River Basin, while only 1,600 Bcf has come from all other formations combined. The basin contains more than 100 fields with more than one million barrels of oil equivalent. In the project vicinity, the most prolific production comes from the LaBarge Platform (including Big Piney Field), which has produced more than 80 million barrels of oil and has an estimated ultimate recovery of more than two trillion cubic feet (Tcf) of gas (Gibson, n.d.).

Of the fields that would have access to the proposed 611 Pipeline, the Moxa Arch fields are estimated to contain more than one Tcf of gas (estimated ultimate recovery) in the Frontier Formation and other strata. Other deep basin-centered tight gas plays produce from the coal and carbonaceous shales of the Cretaceous Cloverly, Frontier, and Mowry formations. Similar sandstone reservoirs exist in both the Cloverly and Frontier formations. The play extends to the Mesaverde group, where it is focused on the Almond Formation (Gibson, n.d.).

The Jonah Field produces natural gas and liquids from innumerable late Cretaceous and early Tertiary fluvial sandstone bodies at depths of 7,300 to 12,800 feet. The Jonah Field is currently producing over 175 MMCF/D from over-pressured fluvial channel sandstones of the Upper Cretaceous Lance Formation. Gas production originates from multiple layers that compose a column as great as 4,000 feet thick (Hanson et al., 2002). The field was discovered in 1975 (Robinson, 1998).

In 2002, the U.S. Geological Survey (USGS) used a geology-based assessment methodology to estimate the remaining undiscovered natural gas and oil in the Southwestern Wyoming Province. The Southwestern Wyoming Province includes the Green River Basin, Moxa Arch, and the entire area in and around the proposed 611 Pipeline. The USGS estimated that an average 84.6 Tcf of gas, 131 million barrels of oil, and 2.6 million barrels of natural gas liquids remain in the reservoirs evaluated in the study (USGS, 2002).

Salable minerals include sand, gravel, topsoil, boulders, riprap, sandstone, shale, limestone, and borrow material. Sand, gravel, and fill material are used by the Wyoming Department of Transportation, other agencies, and local contractors. Gravel deposits occur along the Green

River valley (BLM, 1996). There is currently no active exploitation of salable minerals within the proposed pipeline corridor.

Although mining claims exist throughout the basin, there are no claims along the route of the proposed pipeline. No significant deposits of locatable minerals are present along the pipeline corridor.

3.8.4 Paleontological Resources

The condensate pipeline route crosses the Green River and Wasatch formations which are recognized for the presence of significant fossil remains (Dames & Moore, 1992 and EVG, 1999). During the Eocene, this region was located at much the same latitude it is today, but the climate was moist temperate or sub-tropical. A series of large inland lakes extended across the region, and it is in the bottoms of these lakes that various plants and animals were buried and fossilized. These lakes later dried up as the local climate changed, and many of the plants and animals living there became extinct. The Green River and Wasatch formations have yielded fossil resources of vertebrates, invertebrates, trace fossils, and plants (EVG, 2002 and 2005).

Vertebrate fossils in the Green River and Wasatch formations can include fish, reptiles, birds, and mammals. Invertebrate fossils are abundant, with remnants of snails and insects being common. Plant fossils, including many reeds, leaves, and wood specimens, are also very prevalent. A large majority of known fossils are fragmentary but some complete skeletons exist of fish, birds, reptiles, and mammals (Winterfeld, 2005).

Literature reviews and preconstruction field and open trench field monitoring of nearby and paralleling linear pipeline construction projects have been conducted on several occasions since 1998 (EVG, 1999, 2001, 2001a, 2002, 2002a, 2005). These reports have confirmed the presence of vertebrate fossils in the surface lithology along existing pipeline rights-of-ways and along the proposed route for 14.4-mile long portion of the 611 Pipeline.

These two formations crossed by the proposed pipeline route are rated as having the highest paleontological potential and meet the BLM's Paleontology Condition 1 and Probable Fossil Yield Classification 5. The unnamed deposits of Quaternary age are not known to yield scientifically significant fossils in the project area. Similar age deposits, however, have yielded scientifically significant fossils elsewhere in Wyoming and for that reason these deposits are considered to have an undetermined, but probably low, paleontological potential.

A field survey of the proposed 14.4-mile long portion of the 611 Pipeline right-of-way was conducted by the principal paleontology investigator on April 5-7, 2005 (EVG, 2005). Most of the proposed pipeline right-of-way is flat-lying and vegetated (chiefly by sagebrush) and covered by a thin veneer of Holocene or possibly Pleistocene colluvial, terrace, or alluvial deposits. Bedrock outcrops are generally not found in these areas and fossil resources are not easily identified at the surface. As a result, the survey consisted primarily of a drive-by to delineate areas of outcrop that warranted a pedestrian survey and visual examination.

Only one significant outcrop area was identified along the proposed 14.4-mile long portion of the 611 Pipeline route. It is located along the sides of Bird Canyon (Sections 19, 20, 22, 23, 24, and 25, T27N, R111W) where the Laney Shale, Farson Sandstone, and Tipton Shale (Scheggs Bed) members of the Green River Formation and the Alkali Creek and Main Body members of the Wasatch Formation are exposed. Most outcrops contained some fossil material. Fossil wood and invertebrate trace fossils were identified in the Laney Member and fossil vertebrate material was discovered in the Wasatch Formation at several locations. No fossils of scientific significance were discovered during the survey.

3.9 Water Resources

3.9.1 Surface Water

The proposed 14.4-mile long portion of the 611 Pipeline route is located within the lower portion of the Upper Green Sub-basin (Hydrologic Unit 14040101) of the Green River Basin (WYDEQ, 2004), a major tributary of the Colorado River. The pipeline crosses the Green River approximately six miles above the confluence with LaBarge Creek and approximately eight miles south of the confluence with Dry Piney Creek. The lower portion of the sub-basin is underlain by fine-grained sedimentary rock which is a natural source of sediment and TDS (total dissolved solids) in surface waters. The primary land uses in the sub-basin (grazing, recreation, irrigated hay production, and oil and gas development) all contribute to increased sediment and TDS over natural background levels. Other surface water resources in the vicinity of the proposed pipeline route include intermittent, ephemeral, and perennial streams; livestock ponds; seeps; and springs (BLM, 1999b).

The PAPA where QGM and Questar's proposed other modifications are located is also within the Green River Basin. Portions of five perennial streams and rivers flow through the PAPA including Duck Creek, East Fork River, Green River, New Fork River and Pine Creek. The majority of the PAPA is drained by intermittent and ephemeral streams (BLM, 1999a).

The Wyoming Environmental Quality Council pursuant to W.S. 35-11-101 through 1304 has promulgated regulations for quality standards for Wyoming surface waters. The objectives of the Wyoming pollution control program are specifically designed to maintain the best possible quality of waters commensurate with the designated use. The Green River at the proposed crossing location has been designated Class 2AB by WDEQ (2001), meaning that the waters are protected for drinking water, game and non-game fish, fish consumption, other aquatic life, recreation, wildlife, agriculture, industry, and scenic value. In the PAPA, the Green River has been designated Class 1 which means that no further water quality degradation by point source discharge other than from dams would be allowed (WDEQ, 2001).

Section 303(d) of the Clean Water Act requires states to identify waters which are not supporting their designated uses. The Green River at the proposed pipeline crossing location is not on the State of Wyoming's 2004 303(d) list. Similarly, there are no streams within the PAPA that are on the 2004 303(d) list (WDEQ, 2004).

3.9.2 Ground Water

Groundwater along the proposed 14.4-mile portion of the 611 Pipeline route west of the Green River is found within 20 to 50 feet of the surface. East of the Green River depths to the water table are 100 to 200 feet in the upland areas. Shallow ground water can be found in the Quaternary alluvial sand and gravel deposits of the Green River Floodplain. Groundwater vulnerability to environmental contaminants is low to medium in upland areas because these areas receive little recharge. In the Green River Floodplain and Birch Creek valley, vulnerability is medium to high because of the high water table, sandy soils, and high hydraulic conductivity associated with alluvium (Hamerlinck et al., 2002).

Groundwater in the Green River Basin is used for agricultural, municipal, domestic, and industrial purposes (States West, 2001). A number of water wells have been drilled in the vicinity of the proposed pipeline route but only two wells appear to be potentially located within 100 feet of the proposed pipeline right-of-way (Hamerlinck et al., 1998). These are located in the SW¼, Section 28, Township 27 North, Range 111 West and the NE¼, Section 30, Township 27 North, Range 112 West. Approximately half of the water wells in Lincoln and

Sublette counties are used for domestic purposes. About one-third of the Sublette County wells are tapping water from alluvial aquifers (Hamerlinck et al., 2002).

3.10 Soils

Soils in Wyoming are closely related to geologic parent materials and vegetation communities because of the state's harsh climate (Munn and Arneson, 1998). The Bridger Formation, the Laney member of the Green River Formation, and the Wasatch Formation dominate the surface rock. In upland areas, these mostly high-clay-content parent materials produced a complex of aridic soils, or Aridisols, that characterize the area. The majority of the upland soils crossed by the proposed pipeline route mostly range from very shallow to mostly moderately deep to deep, forming on rolling upland plains dissected by rock ravines, short escarpments, and draws (BLM, 1996 and 1999a).

Slopes range from nearly level to steeply sloping. Sensitive upland soils include shallow soils occupying steeper slopes and areas of rock outcrop. These soils typically have high water runoff rates and are subject to accelerated rates of soil erosion, especially when disturbed. The high runoff rates limit the effective moisture received by these soils and their mostly shallow depth limits their water holding capacity, causing them to be droughty and which limits their reclamation potential. Less sensitive upland soils include shallow to moderately deep to deep soils that occupy less steep topography. These less sensitive soils are more dominant in extent along the proposed pipeline route, but the shallow soil depths may still limit successful reclamation should recent drought conditions continue in the Green River Basin of Wyoming.

Emphasis should continue to be placed on the reduction of soil erosion and sediment into the Green River watershed. Of particular importance would be those areas with saline soils such as the Little Colorado Desert to the east of the Green River crossing (BLM, 1992).

Bottomlands associated with drainage bottoms crossed by the proposed pipeline route are floodplains, terraces, and tributary alluvial fans of the perennial Green Rivers and several intermittent drainages. The bottomland soils of these drainages are forming in mostly alluvial deposits, vary in texture, are deep, and are subject to flooding. These soils typically have a high reclamation potential, if they are not saline or sodic. These soils can also be susceptible to gully erosion when disturbed.

Soils along the floodplains of the intermittent drainages are likely to be saline and can be sodic, affected by high concentrations of sodium in proportion to concentrations of calcium and magnesium in the soil (BLM, 1999a). These soils are sensitive because of their potential to cause water quality impacts, if disturbed, and potential sedimentation of downstream perennial streams. In addition, the elevated salinity and possibly sodicity of these soils reduces their reclamation potential (BLM, 1999a).

3.11 Vegetation and Noxious Weeds

3.11.1 Native Vegetation

The proposed 14.4-mile long portion of the 611 Pipeline route crosses Wyoming big sagebrush – mixed grass steppe for approximately 13.70 miles. Dominant species include Wyoming big sagebrush, basin big sagebrush, Gardner saltbush, greasewood, and cushion plants including Hood's phlox, wildbuckwheats, pusseytoes, and Hooker sandwort. Other understory species include western wheatgrass, needle-and-thread grass, Sandberg blue grass, pricklypear cactus, scarlet globemallow, and rabbitbrush, species adapted to aridic soils and droughty conditions. Species composition varies depending on soil type, salinity, exposure, and moisture levels.

Grassland communities along the proposed 14.4-mile long portion of the 611 Pipeline route are generally limited in size, principally found on reclaimed rights-of-way adjacent to and overlapping the proposed pipeline route, and in small patches along the length of the proposed pipeline route. Many of the same plant species associated with sagebrush-steppe as understory components are dominant species within grasslands. While species vary by soil type and succession, they include western, crested, and thickspike wheatgrasses, Indian ricegrass, Sandberg bluegrass, and winterfat. Crested wheatgrass is a non-native species often planted to stabilize disturbed soils.

Vegetation in the vicinity of other modifications included in the Proposed Action include Wyoming big sagebrush – mixed grass steppe along the 630-foot 25 kV distribution line and undisturbed land in the vicinity of the NGL Stabilizer and Water Handling Facility. Portions of the 1,250-foot long 25 kV distribution line (NGL Stabilizer site to Gobbler’s Knob Compressor Station) will be within sagebrush – grass steppe as well as previously disturbed vegetation. All blowdown tanks will be on well pads where vegetation has been or will be removed.

Vegetation in the vicinity of the proposed 14.4-mile long portion of the 611 Pipeline and other modifications under the Proposed Action can be important as a forage base for livestock, big game (pronghorn and mule deer), and wild horses. However, shallow soils and arid conditions limit vegetative production (Knight, 1994; BLM, 1997a). The amount of vegetative cover partially determines the amount of precipitation infiltration. Vegetation impedes runoff and increases temporary surface storage, increasing the infiltration of rainfall.

3.11.2 Non-Native and Invasive Species

Noxious weeds are plants designated by a Federal, State, or county government as injurious to public health, agriculture, recreation, wildlife, or property. They are plants that are competitive, persistent, and pernicious. They are also often non-native. Invasive species are plants introduced into an environment with no natural enemies, such as insects or other plants, to limit their reproduction and spread. They frequently dominate native vegetation if left unchecked.

Based on field reconnaissance, noxious weed establishment along the proposed pipeline route and within the PAPA is limited to existing pipeline rights-of-way, roadsides, well pads, and other previously disturbed areas. The most common weed observed within or near the proposed pipeline route is halogeton with others such as perennial pepperweed, Canada thistle, and tamarisk present in wetter areas. The proposed 14.4-mile long portion of the 611 Pipeline route would be located parallel and adjacent to existing pipelines and/or power lines for approximately 74 percent of the route.

3.12 Wetland and Riparian Resources

Riparian habitat is a highly valued wetland vegetation community found along or around streams, lakes, ponds, and other open water (both perennial and intermittent). This unique habitat is crucial to the continued existence of many fish and wildlife species known to occur in the area. Riparian vegetation helps maintain high water tables, stabilize ponds and stream-banks, create quality fish and wildlife habitat, prevent or reduce flooding, and maintain or improve water quality (BLM, 1997b).

Wetlands are lands where at least periodic inundation or saturation with water (either from the surface or subsurface) is the dominant factor determining the nature of soil development and the types of plant and animal communities living there. These include the entire zones associated with streams, lakes, ponds, springs, canals, seeps, wet meadows, and some aspen stands. Wetlands provide habitats for more species of wildlife (in higher densities) than any other habitat type in the project area though comprising less than one percent of the public land

acreage (BLM, 1997b). Wetlands in the Green River Basin are important for waterfowl production and recreation.

Based on wetland reconnaissance identification and mapping of the proposed route of the 14.4-mile long portion of the 611 Pipeline, wetland and riparian areas are limited to margins of the Green River in the vicinity of the proposed pipeline crossing. The proposed route crosses approximately 0.26 mile of palustrine emergent wetlands on the west bank of the Green River which has been delineated on National Wetland Inventory (NWI) maps. The wetlands coincide with hay meadows and are dominated by clustered field sedge, threesquare, bullrush, creeping spikerush, curly dock, foxtail barley, horsetail, arrow-grass, and other low-lying hydrophytic species.

Portions of those wetlands are within a zone of forest-dominated riparian vegetation on both banks of the river dominated by narrowleaf cottonwood and patches of shrubby understory composed of silver sagebrush, shrubby cinquefoil, sandbar willow, and Geyer willow. Although 0.23 mile of the proposed route crosses the forested riparian zone, no riparian forest is present within the immediate vicinity of the proposed pipeline right-of-way. Forested riparian communities are used by many wildlife species for feeding, nesting habitat, and cover.

3.13 Threatened and Endangered Species

3.13.1 Federally Listed Species

Consultations to date: Consultation was completed for the PAPA and was included in the Record of Decision for that document. Additionally, a species list was reviewed for the Questar Year-Round Drilling Proposal EA (BLM, 2004a) for potential impacts to listed species. Those impacts were disclosed in the EA and Decision Record for that document. An updated species list from the U.S. Fish and Wildlife Service (FWS) Ecological Services was reviewed for this EA.

Listed species potentially occurring in the vicinity of the proposed 14.4-mile long portion of the 611 Pipeline route include the gray wolf, black-footed ferret and bald eagle. Four listed fish species – bonytail, humpback chub, Colorado pikeminnow, and razorback sucker may be impacted by water depletions from the Colorado River System. Ute ladies'-tresses orchid, grizzly bear, Canada lynx, Kendall warm springs dace are also listed species that may be present in the two-county project area but not present in the project area vicinity and would not be impacted by the Proposed Action and are not discussed any further.

Black-footed Ferret. There is historical evidence that black-footed ferrets occurred in the Green River Basin (Jobman and Anderson, 1981). Ferrets are closely associated with prairie dog colonies, including those in sagebrush-grasslands (Cerovski et al., 2004).

FWS (2004a) has been evaluating the potential for prairie dog colonies in Wyoming to support black-footed ferrets. As a result, FWS has determined there are many areas in the State not likely to be inhabited by the species, based on the quality of habitat and likelihood that ferrets, if ever they were present, are now extirpated in the areas. FWS (2004a) has determined that all white-tailed prairie dog colonies within the area including the 611 Pipeline route have been cleared from the recommendation for black-footed ferret surveys. In addition, biological surveys were conducted during the spring of 2005. No white-tailed prairie dog colonies were located within 0.25 mile of the 611 Pipeline route.

FWS (2004a) has determined that approximately 64 square miles of the PAPA (all or portions of Township 30 North and 31 North, Range 109 West and 110 West) are within the Big Piney prairie dog complex in which surveys for black-footed ferrets are recommended. Although there are no white-tailed prairie dogs present within Questar's lease area on the PAPA, colonies are

proximate to the new NGL Stabilizer and Water Handling Facility, Gobbler's Knob Compressor Station, and 1,250-foot long 25 kV distribution power line

Gray Wolf. Since reintroduction of 31 animals in Yellowstone National Park (YNP) during 1995 and 1996, the gray wolf population in the Greater Yellowstone Recovery Area has grown to over 300 animals in 2003 (FWS et al., 2004). Those animals are classified as a nonessential experimental population (FWS, 2004b). Gray wolves inhabit coniferous forests as well as shrub and grasslands in mountains and foothills where they feed on big game as well as smaller prey species (Cerovski et al., 2004).

Packs have become established outside of YNP including two north and east of the project area: the Green River Pack east of the Pinedale in the upper Green River Basin in 2002 and the Daniel Pack northwest of Pinedale in 2003 (FWS et al., 2004). Since their establishment, both wolf packs have preyed on cattle and sheep and pack members in both have been killed in control actions. Recently, one female wolf and four pups were removed by the FWS northeast of Farson, Wyoming. The male wolf and two pups are still unaccounted for and whereabouts unknown. While unlikely, wolves could potentially be present in the vicinity of the proposed pipeline route.

Bald Eagle. Bald eagles nesting in northwestern Wyoming have been increasing steadily since 1978 (Patla et al., 2003). Bald eagles nest in trees, including cottonwoods in riparian zones associated with large lakes and streams (Cerovski et al., 2004).

Potential bald eagle nesting and roosting habitat is present along the Green River. Surveys for nesting bald eagles were conducted during the spring of 2005. No bald eagles were found nesting within a one-mile buffer of the proposed 611 Pipeline route.

Wintering bald eagles regularly occur in western Wyoming generally from November 1 through April 15 (FWS, 2004b) and may occur during any time of year along the Green River corridor corresponding with the project area. A winter survey completed by BLM personnel in January 2005 found 52 wintering bald eagles within the boundaries of the Pinedale Field Office, many of which were along the Green and New Fork rivers and their tributaries. Migratory bald eagles have been observed during April and November generally through the Green River Basin (Patla, 2004). Bald eagles arrive on the Green River the second week of October coinciding with kokanee salmon and brown trout runs which are probably a primary source of autumn food (BLM, 1995).

Colorado River Fish. There are four listed threatened and endangered fish species possibly present in the vicinity of the proposed pipeline. Bonytail, Colorado pikeminnow, humpback chub, and razorback sucker may inhabit the Colorado River System downstream of the Proposed Action. No documented observations of these species in the vicinity of the proposed 611 Pipeline have been recorded though prior to construction of Flaming Gorge Reservoir, pikeminnows and bonytails may have had viable populations in the Green River (Baxter and Stone, 1995).

3.13.2 Other Special Status Species

In addition to species listed under ESA, BLM has identified sensitive species (BLM, 2001) within the Pinedale and Rock Springs resource areas, some of which are known within or potentially occur in the project area. Sensitive species known to occur within the vicinity of the project area include ferruginous hawk, greater sage grouse, burrowing owl, sage thrasher, Brewer's sparrow, sage sparrow, pygmy rabbit, and white-tailed prairie dog (Table 3-6). Other species' occurrences are judged as possible, unlikely, or highly unlikely based on their habitat requirements and known distributions (Baxter and Stone, 1980; Baxter and Stone, 1995; Cerovski et al., 2004).

Special Status Wildlife Species. According to Wyoming Natural Diversity Database (WNDD, Keinath et al., 2003) records, most of the bird species identified as sensitive by BLM (2001) have been observed southeast of the Green River crossing in the Seedskaadee National Wildlife Refuge. These include the burrowing owl, ferruginous hawk, sage grouse, long-billed curlew, sage thrasher, loggerhead shrike, Brewers sparrow, and sage sparrow. Trumpeter swans are very rare and it is unlikely that they are present in the vicinity of the proposed 611 Pipeline route (BLM, 1999a). Many of these species have suitable habitat in the vicinity of the proposed 611 Pipeline route.

Pygmy rabbits are known to occur in the vicinity of the proposed 611 Pipeline, and their habitat may occur along the proposed route. Surveys conducted during spring and summer 2002 revealed their presence in tall, dense sagebrush at several locations in the vicinity of the Pinedale Mesa (McGee et al., 2002). In addition, a specimen was found on the Mesa, apparently killed by a vehicle (Smith, 2004).

**Table 3-6
BLM-Sensitive Vertebrate Species Not Listed Under ESA That Could Occur within the Project Area, Habitats, and Other Status Designations**

Common Name Scientific Name	Habitat (BLM, 2001)	Potential Occurrence	State Rank ¹	WGFD Status ²
Fish				
Roundtail chub <i>Gila robusta</i>	Colorado River drainage in large rivers, streams and lakes	possible	S3	NSS1
Leatherside chub <i>Gila coperi</i>	Green River drainage in clear, cool streams and pools	highly unlikely	S1	NSS1
Bluehead sucker <i>Catostomus discobolus</i>	Green River drainage, all water types	possible	S3	NSS1
Flannelmouth sucker <i>Catostomus latipinnis</i>	Colorado River drainage in large rivers, streams and lakes	possible	S3	NSS1
Colorado River cutthroat trout <i>Oncorhynchus clarki pleuriticus</i>	Colorado River drainage, clear mountain streams	unlikely	S1	NSS2
Amphibians				
Northern leopard frog <i>Rana pipiens</i>	Beaver ponds, permanent water in plains and foothills	possible	S3	none
Spotted frog <i>Rana pretiosa</i>	Ponds, sloughs, small streams	unlikely	S3	none
Boreal toad <i>Bufo boreas boreas</i>	Pond margins, wet meadows, riparian areas	possible	S1	none
Great basin spadefoot <i>Spea intermontana</i>	Spring seeps, permanent and ephemeral waters	unlikely	S3	none
Birds				
White-faced ibis <i>Plegadis chihi</i>	Marshes, wet meadows	possible	S1B	NSS3
Trumpeter swan <i>Cygnus buccinator</i>	Lakes, ponds, rivers	possible	S2	NSS2
Ferruginous hawk <i>Buteo regalis</i>	Basin-prairie shrub, grasslands, rock outcrops	present	S5N	NSS3
Peregrine falcon <i>Falco peregrinus</i>	Tall cliffs in most habitats	possible	S2	NSS3
Greater sage grouse <i>Centrocercus urophasianus</i>	Basin-prairie shrub, mountain-foothills shrub	present	S4	game bird
Long-billed curlew <i>Numenius americanus</i>	Grasslands, plains, foothills, wet meadows	possible	S3B	NSS3
Yellow billed cuckoo <i>Coccyzus americanus</i>	Open woodlands, streamside willow and alder groves	highly unlikely	S1	NSS2

Table 3-6 (concluded)

Common Name Scientific Name	Habitat (BLM, 2001)	Potential Occurrence	State Rank¹	WGFD Status²
Burrowing owl <i>Athene cucularia</i>	Grasslands, basin-prairie shrub	present	S3	NSS4
Loggerhead shrike <i>Lanius ludovicianus</i>	Basin-prairie shrub, mountain-foothills shrub	possible	S3	none
Sage thrasher <i>Oreoscoptes montanus</i>	Basin-prairie shrub, mountain-foothills shrub	present	none	NSS4
Brewers sparrow <i>Spizella breweri</i>	Basin-prairie shrub	present	none	NSS4
Sage sparrow <i>Amphispiza belli</i>	Basin-prairie shrub, mountain-foothills shrub	present	S3	NSS4
Mammals				
Dwarf shrew <i>Sorex nanus</i>	Mountain-foothills shrub	unlikely	none	NSS3
Long-eared myotis <i>Myotis evotis</i>	Conifer and deciduous forests, caves and mines	possible	none	NSS2
Fringed myotis <i>Myotis thysanodes</i>	Conifer forests, woodland chaparral, caves and mines	highly unlikely	S2	NSS2
Spotted bat <i>Euderma maculatum</i>	Cliffs over perennial water, basin-prairie shrub	highly unlikely	S3	NSS2
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	Forests, basin-prairie shrub, caves and mines	highly unlikely	S2	NSS2
Pygmy rabbit <i>Brachylagus idahoensis</i>	Prairie-basin shrub and riparian shrub	present	S1	NSS3
White-tailed prairie dog <i>Cynomys leucurus</i>	Grasslands, basin-prairie shrub	present	S3	NSS3
Wyoming pocket gopher <i>Thomomys clusius</i>	Meadows with loose soils	highly unlikely	S2	none
Idaho pocket gopher <i>Thomomys idahoensis</i>	Shallow stony soils	highly unlikely	S2	NSS3
Swift fox <i>Vulpes velox</i>	Grasslands	highly unlikely	S2	NSS4

Sources: BLM, 2001, Keinath et al., 2003; Cerovski et al., 2004

¹ State Rank: Assigned by WNDD and reflects status of species within political borders of the State of Wyoming: S1 = Extremely rare, S2 = Very rare, S3 = Rare, S4 = Apparently secure, but may be rare in portions of its range, S5 = Secure under present conditions. "B" following state rank indicates breeding status; "N" indicates non-breeding status.

² WGFD Status = Wyoming Game and Fish Department Status:

NSS1 = Species with ongoing significant habitat loss, populations greatly restricted or declining, and extirpation appears possible.

NSS2 = Species 1) whose habitat is limited or vulnerable, but no recent or significant loss has occurred and populations are greatly restricted or declining; or 2) with ongoing significant loss of habitat and populations are declining or restricted in numbers and distribution, but extirpation is not imminent.

NSS3 = Species in which 1) habitat is not limited, but populations are greatly restricted or declining and extirpation appears possible; 2) habitat is limited or vulnerable, although no significant recent loss has occurred and populations are declining or restricted in numbers or distribution, but extirpation is not imminent; or 3) significant habitat loss is ongoing, but the species is widely distributed and population trends are thought to be stable.

NSS4 = Populations greatly restricted or declining, extirpation possible; habitat stable and not restricted -OR- Populations declining or restricted in numbers or distribution, extirpation not imminent; Species widely distributed, population status or trends unknown but suspected to be stable; habitat restricted or vulnerable but no recent or ongoing significant loss; species likely sensitive to human disturbance -OR- Populations stable or increasing and not restricted in numbers or distribution; on-going significant loss of habitat.

White-tailed prairie dogs were surveyed in spring 2005 and no colonies were observed within the proposed pipeline route. Colonies are proximate, however, to the new NGL Stabilizer and Water Handling Facility, Gobblers Knob Compressor Station, and 1,250-foot long 25 kV distribution line. As noted earlier, greater sage grouse inhabit the entire project area.

Fish listed as state sensitive that occur in the area are the roundtail chub, flannelmouth sucker, Colorado River cutthroat trout, and the bluehead sucker. WNDD includes a single record of a bluehead sucker from the Green River north of the Fontenelle Reservoir. Several Colorado River cutthroat trout populations inhabit tributary streams west of the Green River including Horse Creek, Cottonwood Creek and LaBarge Creek. WGFD Fish Division (WGFD, 2003) has initiated multiple projects to restore native cutthroat trout in those watersheds but the species is not expected in the Green River mainstem.

Special Status Plant Species. BLM has indicated the following special status plant species may occur within the vicinity of the proposed pipeline: Cedar Rim thistle, large-fruited bladderpod, Beaver Rim phlox, and tufted twinpod (Table 3-7). Nelson's milkvetch, mystery wormwood, and Trelease's racemose milkvetch could occur if required habitats were encountered.

**Table 3-7
BLM-Sensitive Plant Species Not Listed Under ESA That Could Occur within the Project Area,
Habitats, and Other Status Designations**

Common Name Scientific Name	Habitat (BLM, 2001)	Potential Occurrence	State Rank¹
Meadow pussytoes <i>Antennaria arcuata</i>	Moist, hummocky meadows, seeps or springs surrounded by sage/grasslands 4950-7900' elevation	highly unlikely	S2
Small rock cress <i>Arabis pusilla</i>	Cracks/crevices in sparsely vegetated granite/pegmatite outcrops within sage/grasslands, 8000-8100' elevation	highly unlikely	none
Mystery wormwood <i>Artemisia biennis</i> var. <i>diffusa</i>	Clay flats and playas, 6500' elevation	possible	S1
Nelson's milkvetch <i>Astragalus nelsonianus</i>	Alakine clay flats, shale bluffs and gullies, pebbly slopes in sparse sagebrush – cushion plant associations 5200-7600' elevation	possible	none
Precocious milkvetch <i>Astragalus proimanthus</i>	Cushion plant communities on rocky, clay soils mixed with shale on white shale hills, 6800-7200' elevation	highly unlikely	S1
Trelease's racemose milkvetch <i>Astragalus racemosus</i> var. <i>treleasei</i>	Sparsely vegetated sagebrush on shale or limestone outcrops, barren clay slopes, 6500-8200' elevation	possible	S2
Cedar Rim thistle <i>Cirsium aridum</i>	Barren, chalky hills, gravelly slopes, fine textured sandy-shaley draws, 6700-7200' elevation	likely	S2
Ownbey's thistle <i>Cirsium ownbeyi</i>	Sparsely vegetated shaley slopes in sagebrush, juniper, 6400-8400' elevation	highly unlikely	S2
Wyoming tansymustard <i>Descurainia torulosa</i>	Sparsely vegetated sandy slopes at base of cliffs of volcanic breccia or sandstone, 8300-10000' elevation	highly unlikely	S1
Large-fruited bladderpod <i>Lesquerella macrocarpa</i>	Gypsum-clay hills, benches, clay flats, barren hills, 7200-7700' elevation	likely	S2
Stemless beardtongue <i>Penstemon acaulis</i> var. <i>acaulis</i>	Cushion plant or black sage grassland communities on semi-barren rocky ridges, knolls, slopes, 5900-8200' elevation	highly unlikely	S1

Table 3-7 (concluded)

Common Name Scientific Name	Habitat (BLM, 2001)	Potential Occurrence	State Rank¹
Beaver Rim phlox <i>Phlox pungens</i>	Sparsely vegetated slopes on sandstone, siltstone, limestone substrates, 6000-7400' elevation	likely	S2
Tufted twinpod <i>Physaria condensata</i>	Sparsely vegetated shale slopes, ridges, 6500-7000' elevation	likely	S2
Green River greenthread <i>Thelesperma caespitosum</i>	White shale slopes, ridges of Green River Formation, 6300' elevation	unlikely	S1
Uinta greenthread <i>Thelesperma pubescens</i>	Sparsely vegetated benches, ridges on coarse, cobbly soils of Bishop Conglomerate, 8200-8900'	highly unlikely	S1
Cedar Mountain Easter daisy <i>Townsendia microcephala</i>	Rocky slopes of Bishop Conglomerate, 8500' elevation	highly unlikely	S1

Source: BLM, 2001; Keinath et al., 2003.

¹ State Rank: assigned by WYNDD and reflects status of species within political borders of the State of Wyoming:

S1 = Extremely Rare

S2 = Very Rare

S3 = Rare

S4 = Apparently secure, but may be rare in portions of its range

S5 = Secure under present conditions

3.14 Wildlife and Aquatic Resources

Detailed information regarding wildlife occurrence and habitat and fisheries along the proposed pipeline route has been reported in BLM's Green River (BLM, 1996) and Pinedale (BLM, 1987) Resource Management Plans and more recently in the Draft Environmental Impact Statement for the Pinedale Anticline Oil and Gas Exploration and Development Project (BLM, 1999a) and the Environmental Assessment for the Questar Year-Round Drilling Proposal (BLM, 2004a). Information obtained from those sources along with data provided by Wyoming Game and Fish Department (WGFD) and field observations are used in this analysis.

3.14.1 Big Game

The proposed pipeline route is entirely within the Sublette Antelope Herd Unit. The pipeline will cross approximately 8.5 miles of pronghorn crucial winter yearlong range and 5.9 miles of spring/summer/fall range within the herd unit. The proposed route crosses portions of the Sublette and Wyoming Range mule deer herd units. Approximately 5.2 miles of the pipeline will cross crucial winter range in the Sublette Mule Deer Herd Unit and 6.6 miles of crucial winter range in the Wyoming Range Mule Deer Herd Unit.

Crucial winter-yearlong range utilized by moose in the Sublette Herd Unit is present along 4 miles of the proposed pipeline route, principally on both banks of the Green River. The route also crosses the Pine and Pinedale elk herd units. No seasonally occupied ranges in the Pinedale Elk Herd Unit will be affected. However, the proposed route crosses 6.6 miles of winter-yearlong range within the Piney Elk Herd Unit.

The 630-foot long 25 kV distribution line is within crucial winter range on the Sublette Mule Deer Herd Unit while the NGL Stabilizer and Water Handling Facility and 1,250-foot long 25 kV distribution line (NGL Stabilizer and Water Handling Facility to Gobblers Knob Compressor Station) are within crucial winter range on the Sublette Antelope Herd Unit. Blowdown tanks will be on each of Questar's well pads, all of which are within crucial mule deer winter range.

3.14.2 Upland Game Birds

Several species classified as upland game birds are likely to occur in the vicinity of the 14.4-mile long portion of the proposed 611 Pipeline. Sage grouse are the predominant upland game bird in southwestern Wyoming and are known to occur within or near the proposed route. Any sagebrush habitat within two miles of a lek is considered potential nesting habitat. Approximately 3.2 miles of the proposed route is within 2 miles of two known sage grouse leks. Two other leks are farther than two miles from the route.

A survey conducted during Spring 2005 documented sage grouse breeding activity at one lek farther than two miles from the proposed 611 Pipeline. No breeding activities were observed during that survey at the other three leks known to be in the project vicinity.

Although the 630-foot long 25 kV power line is within 2 miles of several sage grouse leks, none have been active recently. Likewise, the NGL Stabilizer and Water Handling Facility and 1,250-foot long 26 kV distribution power line (Stabilizer site to Gobbler's Knob Compressor Station) are within 2 miles of inactive leks. There are 26 leks on or within 2 miles of Questar's lease on the PAPA. Not all leks are active but currently there are 6 active leks within 2 miles of Questar's lease area. Consequently, blowdown tanks on each of Questar's well pads are likely to be within 2 miles of an active or inactive lek and generally within potential sage grouse nesting habitat.

The proposed 611 Pipeline route is within Upland and Small Game Management Area (USGMA) 3 (Bridger) west of the Green River and in USGMA 7 (Eden) east of the river. WGFD (2004) has documented harvests of ring-necked pheasant, chukar partridge, blue grouse, ruffed grouse, and mourning doves in one or both USGMAs. Of these species, mourning doves are most likely to occur along the proposed pipeline route. Chukars and ruffed grouse may also be present in suitable habitats.

3.14.3 Migratory Birds

Data compiled for nine National Biological Survey BBS routes in the upper Green River area document 150 bird species have been observed on one or more routes since 1980 (Sauer et al., 2005). Of those, 147 species are listed as migratory birds protected under the Migratory Bird Treaty Act (MBTA, 16 U.S.C. 703-712) and Migratory Bird Treaty Reform Act of 2004. Migratory species in the vicinity that are sagebrush obligates - nesting in and almost entirely dependent on sagebrush vegetation - include sage thrasher, Brewer's sparrow, and sage sparrow. Others are nearly sagebrush obligates including green-tailed towhee and vesper sparrow. Abundance of at least one, the sage thrasher, appeared to be declining within the region through 2003 (BLM, 2004a).

Other migratory species include raptors that are known to nest, migrate, and seasonally reside, in the general vicinity of the proposed pipeline route. These species include golden eagle, red-tailed hawk, ferruginous hawk, great horned owl, bald eagle, Swainson's hawk, northern harrier, prairie falcon, American kestrel, merlin, and osprey. Sharp-shinned hawk, Cooper's hawk, burrowing owl, and long-eared owl may also be present in the area during the summer months. Raptors that may winter in the area include golden eagle, rough-legged hawk, and great horned owl.

There is potential nesting habitat for buteo raptors and some other species within one mile of the proposed pipeline route. Raptor surveys were conducted during spring 2005 prior to construction of this project. Only one red-tailed hawk nest was found along the Green River, beyond one mile of the proposed route.

3.14.4 Other Wildlife

Many other small mammals, birds, amphibians, and reptiles occur in areas crossed by the proposed pipeline route. Wading birds, shorebirds and waterfowl may utilize limited habitats in wetlands, the Green River, and nearby Fontenelle Reservoir. Mammals such as beaver, mink, muskrat, and river otter are also likely to be associated with those aquatic habitats. Lists of species commonly found in the region are available in the Fontenelle and Jonah II EISs (BLM, 1995b, 1997b).

3.14.5 Wild Horses

The Little Colorado Desert Wild Horse Herd Management Area (HMA) occurs to the east of the Green River along the entire proposed 14.4-mile long pipeline route. The Little Colorado Desert HMA is managed under the Green River RMP as an important part of the natural system under the multiple-use concept and is managed to maintain a herd of 69 to 100 animals (BLM, 1997a).

3.14.6 Aquatic Resources

Fisheries resources within the Project Area are limited to the Green River, crossed by the proposed pipeline upstream from Fontenelle Reservoir. Other drainages that will be crossed are intermittent and do not support fisheries. The Green River is classified as 2AB fisheries (WYDEQ, 2004). The Green River and Fontenelle Reservoir support brown, rainbow, and cutthroat trout and provides spawning habitat for Kokanee salmon. Spawning occurs in October (BLM, 1995b). Common nongame fish include mountain sucker, speckled dace, mottled sculpin, and fathead minnow.

3.15 Air Quality

Current (2006) air quality conditions in the Pinedale region are under analysis. Air quality monitoring and preliminary results from the current conditions analysis are described in this section.

3.15.1 Concentrations

Ozone and sulfur dioxide concentrations monitored by CASTNet (Clean Air Status Trends Network) near Pinedale, available from 1989 through 2003, are below applicable guidelines and standards. Nitrogen dioxide and particulate matter concentrations monitored by SLAMS (State and Local Air Monitoring System) near Pinedale, available from late 2004 through the present, are below applicable standards.

Potential concentrations of nitrogen dioxide, particulate matter and sulfur dioxide from cumulative sources are below Wyoming and Federal air quality standards.

Potential concentrations of nitrogen dioxide, particulate matter and sulfur dioxide from cumulative sources are less than applicable PSD (Prevention of Significant Deterioration) increments. A comparison of potential concentration to PSD increments does not constitute a regulatory PSD Increment Consumption Analysis.

3.15.2 Visibility

Visibility monitored by IMPROVE (Interagency Monitoring of Protected Visual Environment) near Pinedale, available from 1989 through 2003, shows a steady trend over the monitoring period. Potential visibility impairment is significant in several Class I areas and communities in the Pinedale region.

3.15.3 Atmospheric Deposition

Total nitrogen and sulfur deposition monitored by NADP (National Atmospheric Deposition Program) and CASTNet, available from 1989 through 2003, are below applicable levels-of-concern (LOC). Precipitation pH monitored by NADP near Pinedale, available from 1987 through 2003, shows slight acidification from 1987 through 1998.

Potential deposition from cumulative sources are below current levels-of-concern for nitrogen and sulfur at PSD Class I areas. The US Forest Service and the National Park Service are concerned that the current LOCs are set too high and so are re-evaluating the LOC's. Potential changes to lake chemistry are below levels-of-acceptable-change (LAC) for lakes.