APPENDIX I — CULTURAL RESOURCES AND HISTORIC OVERVIEW

The following sections are from the Draft Environmental Impact Statement Jonah Field II Natural Gas Project (BLM 1997) and provide an overview of the cultural resources within the Jonah Infill Drilling Project Area. Understanding of the Jonah field cultural resources is undergoing extensive synthesis as part of the ongoing Pinedale RMP and other efforts. The below is a somewhat dated but still useful general summary.

I-1.0 CULTURAL RESOURCES

Cultural resources, which are considered under the National Historic Preservation Act of 1966 (NHPA) and the Archaeological Resources Protection Act of 1979 (ARPA), are the nonrenewable remains of past human activity. The archaeological record of the Jonah Field II Project Area (J2PA) has been partially examined through surveys, test excavations, examination of ethnographic materials, consultation with modern Native American people, archival sources, and the historic record. Euro-American exploration and settlement in the area is understood by historic and archival records, information provided by local ranchers, and informant interview. The J2PA is rich in prehistoric resources (though they are poorly understood), but contains fewer historic period sites. The historic period sites predominantly relate to open range ranching, stock grazing, and wagon road passage.

Prior to fall 1996, less than 50 sites had been recorded on the J2PA during an equivalent number of cultural resource inventory projects. In November and December 1996, Operators conducted a geophysical project covering portions of the J2PA. This project involved a cultural resource inventory, and 74 new sites were located and recorded (Kail and Sudman 1997). These cultural resource data have added substantially to our knowledge of the area's prehistory.

I-1.1 Site Types

Prehistoric site types known or suspected for the J2PA include prehistoric campsites, housepits, lithic scatters, kill/butchering sites, floral processing locales, sacred sites, extensive lithic procurement locales (see Section I-1.5), Traditional Cultural Properties, limited activity sites, and various rock alignment sites. Rock alignment sites include vision quest locales, stone circle sites such as tipi rings (three have been recorded), Medicine Wheels, and cairns. No drivelines are currently known, but the vicinity of Sites 48SU1327 and 48SU1328 is suggestive. While no human burials, petroglyphs, or pictograph sites currently are known, the geomorphology of the area is conducive to the presence of these most sensitive site types. The preliminary work conducted in the J2PA suggest high site density, complex geomorphology, and a different cultural character of prehistory as compared to other, better known regions of the Green River Basin.

I-1.2 Native American Sensitive Sites and Traditional Cultural Properties

In the late nineteenth century, the J2PA was used predominantly by the Shoshone Tribe, though the Bannock, Ute, and other tribes frequented the Upper Green River. In prehistoric times, this picture is clouded, as tribal distinctions are difficult, if not impossible, to determine. Both prehistoric sties and more modern Native American use sites are sensitive, or can be considered Traditional Cultural Properties.

Sites and properties within this class are protected by numerous laws, such as the Native American Graves Protection and Repatriation Act, the American Indian Religious Freedom Act, and Executive Orders. Human burials, rock alignment sites, petroglyphs, steatite procurement locales, and modern-day Native American use, extraction, or religious sites are considered sensitive or sacred to modern Native Americans. One such site is already identified (48SU2194), and others are known from the J2PA (e.g., 48SU2215). Consultation with potentially affected Native American Tribes concerning the identification and management of Traditional Cultural Properties and other sensitive sites in the J2PA began in 1996, was curtailed by the onset of winter, and is scheduled to resume in spring 1997.

I-1.3 Chronology

The earliest securely documented human occupations in North America are associated with diagnostic (temporally distinct) projectile points of the Clovis and Folsom Traditions. Clovis and Folsom sites have been radiocarbon dated to between 12,000 and 10,500 years before present (YBP). These Paleoindian sites represent early human adaptation to Late Pleistocene, post-glacial environmental conditions. Past emphasis on the "Big Game Hunting Tradition" (i.e., a reliance on Pleistocene megafauna for subsistence) may have been overstressed (personal communication, January 1997, with Kevin Thompson, Archaeologist, Western Wyoming College). Studies of Paleoindian sites continue to fascinate archaeologists, and the new trend in paleoenvironmental reconstruction of the late Pleistocene/early Holocene environments is welcome.

Early Paleoindian occupations are known from just south of the J2PA. Sites 48SU389, 48SU907, 48SU908, and 48SU909 record extensive prehistoric occupations associated with an assumed perennial watersource. Recorded in the 1970s and rerecorded by the State of Wyoming in the 1980s, the site complex has produces Folsom materials and Paleoindian artifacts in the Hell Gap, Agate Basin, Scottsbluff, and Cody Complexes, as well as numerous Archaic and Late Prehistoric period artifacts, including a bison bone bed, groundstone, and other artifacts. Paleoindian occupations spanning a 12,000 to 8,000 YBP period are suggested at this large and significant site complex.

The first documented Paleoindian presence within the J2PA is recorded at Site 48SU1421. Here, Late Paleoindian diagnostic artifacts in the Lanceolate and Medicine Lodge Creek/Lovell Constricted Series were found. The "Jimmy Allen" Lance point tentatively dates the site to about 9,000 YBP. A Pryor Stemmed Point suggests an 8,500 YBP occupation. Associated with a campsite adjacent to an ancient playa lake, the site setting is duplicated at several locales within the J2PA. There is potential for use of this site for paleoenvironmental reconstruction. Additional Paleoindian sites in the J2PA likely occur, such as Site 48SU2230 (recorded in 1996), though such sites are not abundant. Extensive prior artifact collecting makes location of temporally diagnostic material difficult.

By about 8,000 YBP, postglacial environmental conditions began to reflect a more modern setting. Pleistocene megafauna such as mammoth, prehistoric bison, camel, and early horse became extinct. Human occupation sites reflect this shift, and archaeologists refer to the subsequent 6,000 years of prehistory as the Archaic Period. Figure I-1.1 depicts several different interpretations of Archaic Period chronology. The Metcalf (1987) scenario drew from the Exxon LaBarge EIS project to the south and west of the J2PA; Wheeler et al.'s (1986) similar chronology reflects excavations at the Exxon Shute Creek Plantsite. The McKibbin et al. (1989) version reflects work in Sweetwater County, Wyoming, at the Black Butte Coal Mine, similar to that of McNees et al. (1994).

Finally, archaeologists at Western Wyoming College (WWC) continue to refine southwestern Wyoming's chronology based on the most recent data and a recognition that Late Paleoindian sites may indeed mirror "Archaic" lifestyles. Rather than exclusively big game hunters, Paleoindians early on may have developed a detailed knowledge of the environment and the seasonal availability of floral and faunal resources—a hunting/foraging/collecting subsistence strategy. The resultant settlement pattern would resemble an annual cycle or "seasonal round" tapping into different resources in different locales, when available.

Sites dating to the Archaic Period (roughly 8,000 to 2,000 YBP) are numerous in the J2PA. These sites are temporally divided into the Great Divide Phase, the Green River/Opal Phase, the Pine Springs Phase (roughly equivalent to the McKean Technocomplex in the northern Great Plains [Frison 1991]), and the Deadman Wash Phase (equivalent to the Late Archaic on the Plains). The Uinta Phase marks the introduction of the bow and arrow into southwestern Wyoming and, later, the production of ceramics. These cultural innovations mark the traditional end of the Archaic Period.

One site (Site 48SU1754) on the J2PA was located and salvaged in a joint effort by Operators and the Bureau of Land Management (BLM). Hearths, lithics, tools, and butchered and processed mammal bone were recovered from the excavations. Radiocarbon assay documented an occupation of 3,590 ± 60 YBP, a Pine Springs Phase/McKean Technocomplex site. Site 48SU1754 represents the only site in the J2PA that has been subject to controlled excavations, and the site is considered eligible for the National Register of Historic Places (NRHP).

Other Archaic-aged campsites like Sites 48SU1328, 48SU1561, 48SU1562, 48SU1751, 48SU1778, and 48SU1779 are commonly identified. These sites usually date to the Pine Springs and Deadman Wash Phases of the Archaic and produce McKean Technocomplex (Site 48SU1328) and Late Archaic Period (Site 48SU1751) dart points and numerous lithic tools. The Archaic dart point recovered from Site 48SU1751 was manufactured from obsidian, a volcanic glass that can be easily sourced via X-ray florescence techniques to the exact parent obsidian flow. Obsidian source analysis (Thompson et al. 1993) is proving to be important in discerning ancient trade patterns and population movement throughout the Intermountain region. Site within the J2PA area will undoubtedly play an important part in this study.

Sites dating to the Late Prehistoric Period, Uinta and Firehole Phases (about 1,800 to 200 YBP), are probably the most numerous. Recent inventory efforts recorded approximately 70 new sites, many of which date to the Late Prehistoric period. Sites like Site 48SU1563 have produced both Rose Springs Series arrow points (a diagnostic Uinta Phase marker) and groundstone, suggesting both hunting and vegetal food collecting as subsistence strategies. Sites 48SU2189, 48SU2198, and 48SU2204 contain similar Uinta Phase material.

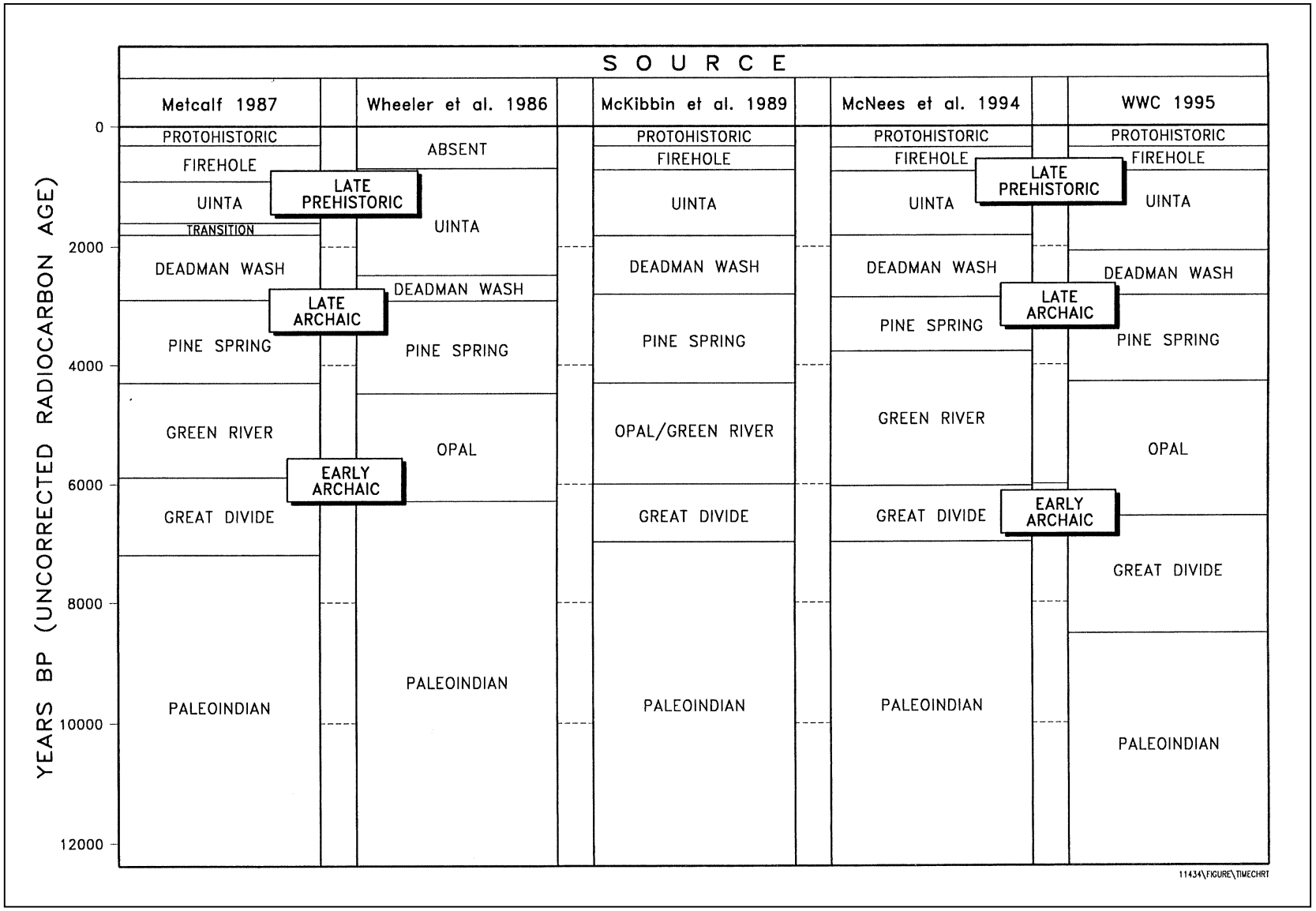

Figure I-1.1. Cultural Chronology Framework with Revisions, Jonah Field II Project, Sublette County, Wyoming, 1997.

An important site containing prehistoric Intermountain ware ceramics is Site 48SU1443, located in the J2PA. Here, sherds of brown-gray pottery containing sand (or grit) tempering may relate to similar ceramics recovered from the Wardell Site, located to the north. The identification of prehistoric ceramics on sites anywhere within the Green River Basin is unusual and adds to the site's significance. Ceramic analysis can shed light on shared cultural affiliation with adjacent groups, such as the Fremont regions within Utah to the west and south or the sedentary villagers to the south and east in Colorado. Distinctions between Uinta Phase peoples and the later Firehole Phase occupants can be drawn by ceramic analysis.

Stone circle sites like those recorded at Sites 48SU2194 and 48SU2215 represent preserved dwelling or residence sites that suggest a modicum of sedentary (or seasonal) existence. These sites, though currently undated, frequently are Late Prehistoric in age and are good candidates for containing ceramics in their assemblages. Stone circle sites are considered sensitive by some modern-day Native Americans.

One site, Site 48SU968, was also subject to a small salvage effort. Two hearths were excavated, but noteworthy was the recovery of portions of a steatite bowl (personal communication, January 1997, with Scott McKern, consulting archaeologist). Steatite was aboriginally quarried in the adjacent Wind River mountains (Vlcek 1993) and represents an unusual resource, subject to transportation or trade with adjacent prehistoric populations. The recovery of steatite on sites removed from the mountains is rare, but not unknown in the J2PA (personal communication, n.d., with Pete Olsen, local rancher). Steatite use is more commonly documented on Late Prehistoric and protohistoric sites, though Archaic aged use is documented. Steatite is also considered a sacred material by some modern-day Native Americans.

I-1.4 Geomorphology

Geomorphological studies that examine the relationship among geology, soils, topography, and vegetation are important to archaeologist because most significant prehistoric sites are located within specific soil matrices, the history of which contribute to archaeological site integrity, the integrity of cultural deposits, and the post-depositional history of the site. These factors are critical for understanding the nature, integrity, and preservation potential of the archaeological resources in the J2PA. Specialists in the field are often referred to as geoarchaeologists.

The geology and soils of the J2PA are described in Sections 3.2.2 and 3.2.6, respectively, of the Jonah Field II environmental impact statement. Geologic and soils descriptions and mapping have important cultural resource applications. For example, aeolian deposits (sand dunes) (see Map 3.1) in the region often contain buried archaeological sites (Monte-Leckman complex; Hateron-Garsid complex; Spool, Ouard, and San Arcacio Variant complex; and San Arcacio-Saguache association soils). Further, Monte-Leckman soils, which are located on alluvial fans and along major drainges, and San Arcacio-Saguache soils, which occur on old floodplains, fans, and terraces (see Table 3.5 and Appendix A), both have high potential to contain buried cultural resource sites.

A recent trend in assaying cultural resource potential at the regional level involves integrating geoarchaeological information from a diversity of locales within the Green River Basin. The major regional oil and gas fields (Moxa Arch, Fontenelle, LaBarge, Wamsutter) have been a target for geoarchaeologists, due to the intensive surface management in these fields, and geomorphologic data relating to climatic shifts has emerged. Eckerle (1996) and Miller (1996) are synthesizing these data in part to determine the influence of climatic shifts on prehistoric settlement patterns within the Green River Basin. Geoarchaeological studies are lacking for the

J2PA, and a further understanding of the geoarchaeology of the area will aid in cultural resource management and the avoidance of inadvertent impacts.

I-1.5 Archaeological Landscapes

Two geomorphic conditions that directly relate to the archaeology of the J2PA are noteworthy. They involve the surficial expression of lithic source material useful for prehistoric stone tool manufacturing. Weathered quartzite cobbles (Site 48SU1334) and nodules of a gray, medium- to high-quality chert (Wilkins Peak Chert, Site 48SU337) are commonly located on the surface throughout the area. Prehistoric occupants utilized this material in stone tool manufacture, heating rocks for food preparation, and hearths. In 1992, the term "Yellow Point Archaeological Landscape" (Site 48SU1334) (Enders 1992) was applied to the casual use and lithic reduction of secondary deposits of quartzite cobbles in the vicinity of Yellow Point Ridge. Since this artifact class represents an elemental aspect of prehistoric resource exploitation and is easily understood by prehistorians, expressions of the Yellow Point Archaeological Landscape are not eligible for NRHP inclusion (i.e., this cultural resource is by definition nonsignificant).

While attempting to apply a similar strategy to recording the surficial expressions and lithic procurement of Wilkins Peak Chert (Site 48SU337), a somewhat more complex situation arose. Early recognized by investigators in the area (Reed 1974; Love 1976; Hakiel 1982), procurement of Wilkins Peak Chert seems to co-occur with other prehistoric artifact classes, such as utilized flakes, campsite debris, features, and formal tools (Nelson and Nelson 1994). Utilization of Wilkins Peak Chert may not represent as elemental an aspect of prehistoric exploitation as first thought. First, the chert is found as both primary outcrops and secondary deposits, with operating geology not fully understood. Second, the material is found amidst site types of greater complexity. Finally, insufficient inventory has occurred in areas where Wilkins Peak Chert is found. The initial proposal to categorically recognize Wilkins Peak Chert lithic procurement as nonsignificant was rejected by the Wyoming State Historic Preservation Office (SHPO). Nonetheless, a 1995 field examination of select areas resurrected this approach, and it will be pursued in the near future.

I-2.0 HISTORIC OVERVIEW OF THE UPPER GREEN RIVER REGION OF WYOMING

I-2.1 Early Exploration

Early fur traders and trappers were the first Euro-Americans to penetrate and explore the Upper Green River region between present-day Pinedale and LaBarge, Wyoming, and by the 1830s, the South Pass route along the Oregon Trail was utilized to access the region. Captain Bonneville traveled over South Pass in 1832, and this was the first time wagons were used to traverse the pass. Nathaniel Wyeth led an expedition west over South Pass to the fur trade rendezvous on Green River in 1834 (Chittenden 1935; Gowans 1975; Johnson 1984; Todd 1986). Missionary activity spawned the earliest migration of emigrants west along the newly established trail when the Whitmans and Spaldings traveled over the Oregon Trail in 1836 (Coutant 1899; Hine 1984). In 1840, Jesuit missionary Pierre-Jean De Smet passed over the Oregon Trail and arrived at the rendezvous held on Green River near Horse Creek, where he held a Mass introducing Catholicism to the Shoshone and Flathead Indians gathered there with the traders and trappers (Gowans 1975; Larson 1984; Jording 1992).

Captain John C. Fremont and guide Kit Carson led the first scientific expedition by the U.S. Topographical Engineers into present Wyoming (Goetzman 1959; Larson 1984). As part of a diplomatic plan to open the Oregon region to settlement by mapping an emigrant road west, Fremont also explored the upper Green River and the Wind River Mountains. The results of the expedition, while supplying less scientific results than hoped for, succeeded in focusing the American psyche on the Far West and its settlement. In the 1850s, the Sublette and Lander Cutoffs were blazed to shorten the Oregon Trail route from South Pass across western Wyoming. No historic trails are present on the J2PA.

I-2.2 Early Settlement

Some of the first permanent settlement in the upper Green River region occurred along Fontenelle Creek, approximately 30 miles southwest of the J2PA (Stone 1924; Holden 1928). Prior to 1882, herds of cattle and sheep were driven through the area from Oregon to Nebraska, and local herds were pastured in the mountain valleys during the summer months, then driven east of Green River into the Little Colorado Desert for winter grazing (Holden 1928).

Settlers continued to arrive in the upper Green River Basin to settle along the tributaries of the Green River. Farther north, the first settler on Horse Creek was a man named Daniel. A post office was established at the mouth of Horse Creek on the Green River which was named for him, and the small town of Daniel grew (Stone 1924; Holden 1928).

In 1879, Daniel Budd and Hugh McKay brought 750 head of cattle into what is called the Piney Country in the vicinity of present Big Piney. Budd and his son opened a store and established a post office some years later that was named Big Piney, thus establishing the future town of Big Piney in what would become Sublette County (Stone 1924; Larson 1978). Following the survey of the public lands in the vicinity of the J2PA, numerous settlers filed on land holdings, fences were built, and irrigation ditches laid out in every valley from Fontenelle Creek to Big Piney (Holden 1928).

The number of cattle continued to increase in the Green River Basin during the early 1880s. However, the severe winter of 1888–1889 caused many ranchers not to rely upon open range for winter pasture, and to switch to haying and stockpiling hay as winter stock forage.

Sometime around the turn of the century, the town of Pinedale emerged on Pine Creek and became an important community amidst the sprawling cattle country on the upper Green River and its tributaries. The first post office was erected in May 1899, about 0.25 mile south of the present-day townsite, and served as the basis for the new community. The town's unofficial establishment dates to 1904, when a few hewn log buildings emerged in a sagebrush flat near the original post office. The town boasted of a newspaper, the *Pinedale Roundup*, by September 1904, and Pinedale was incorporated in 1912. With the addition of two new counties in 1921, Pinedale became the Sublette County seat, besting Big Piney in the contest by a small margin of votes (Stone 1924; Urbanek 1988; Rosenberg 1990). During the next few decades, Pinedale served as the community center for a sparsely settled countryside whose economic basis remained focused on livestock production coupled with an emerging dude ranch industry.

As communities like Big Piney and Pinedale were established (Rosenberg 1982, 1986), a wagon link with the railhead in Rock Springs was essential. Beginning in the 1880s, the Rock Springs to New Fork Wagon Road (Site 48SU1408) carried freight, mail, and supplies to the inhabitants of the Upper Green River Basin (Vlcek 1995). This vital link (and its sister freight road, the Opal Wagon Road) carried virtually all of the imported goods and supplies not locally produced, and these goods were used by virtually everyone in what was to become Sublette County. The Wagon Road not only had a commercial function, but stops along the route served to give place names to an otherwise desolate landscape. Ten Trees, The Wells, Mud Hole, and Sand Springs became real places and Farson developed into a community. Because the Rock Springs to New Fork Wagon Road played a critical function in settling the region, it is recognized as an NRHP eligible Expansion Era trail. Use of the wagon road continued until the paving of the Rock Springs to Pinedale Road (Site 48SU1281) in the 1920s (Gardner and Johnson 1991).

The exact location of the Rock Springs to New Fork Wagon Road in the vicinity of the J2PA is unknown; however, it is assumed to be on the eastern edge of the area, near U.S. Highway 191.

I-2.3 Irrigation and Agricultural Settlement

Raising livestock in the northern Green River Basin has shaped the image and influence of the region, its origins dating back to the 1870s and 1880s. The history of livestock associations in the region are almost as old. Beginning with the creation of the Big Piney Roundup Association following the harsh winter of 1889-1890, the Upper Green River Cattle and Horse Association evolved to care for livestock as their numbers increased within the region. The current Upper Green River Cattle Association (UGRCA) has seasonally trailed or drifted cattle up and down the Green River since its creation in 1925 from the former association. Over the decades, this seasonal movement from one grazing range to another has become known as the Green River Drift. Cooperative activities of the UGRCA have evolved from simply caring for livestock herds during seasonal drives to new pasture during the early twentieth century to working with government agencies (e.g., U.S. Forest Service [USFS], BLM) in better managing the use of the land and protecting natural resources. UGRCA has had an important role in sustaining a viable ranching culture that has become a tradition in the Upper Green River Basin (Sommers 1994).

The livestock industry brought only sparse settlement to the Green River Basin. Agricultural development of Wyoming's arable lands was necessary to provide the impetus for growth during the first decade of statehood, and irrigation was the key component to successful agriculture

(Hoyt 1878). The Green River Basin had a potential water supply, but the disadvantages included poor soils and high elevations, which severely limited the types of crops that could be produced.

Passage of the Carey Act in 1894 provided federal and state aid to irrigation projects and gave promoters and settlers alike the opportunity to undertake ambitious projects to convert sagebrush-covered benchlands into farms.

Several areas of the upper Green River Basin were suitable for irrigation under the Carey Act, and early agriculture in the area was probably limited to irrigating hay meadows and for domestic garden production along the tributaries of Fontenelle, LaBarge, and Piney Creeks (Holden 1928).

In 1883, an unknown engineer conceived the idea that the Big Sandy region was suitable for irrigated agriculture (Wright and Wright 1975), and permits for irrigation were first issued in 1886 (U.S. Department of the Interior [USDI] 1981). In 1906, the Eden Irrigation and Land Company was organized and incorporated under the laws of Wyoming (Wright and Wright 1975), and in 1907, the Eden Irrigation and Land Company constructed the Eden Dam on the Big Sandy River, creating Eden Reservoir. According to a newspaper article in the *Rock Springs Miner*, settlers arrived in the spring of 1908 and established the communities of Eden and Farson. The Eden Dam project was finished in 1914, and about 30 farmers utilized water from the system to irrigate crops of oats, wheat, barley, grass hay, alfalfa, and garden produce (USDI 1981).

The Green River itself was the focus of irrigation by several entities in the early 1900s. In 1908, permits were issued to the Green River Irrigation Company to construct the Green River Canal to divert water from the Green River above the mouth of Fontenelle Creek in order to irrigate lands between Green River and the Big Sandy River. It was estimated that up to 97,474 acres could be irrigated by this canal (Johnston 1909). By 1909, surveys were completed for a second canal to divert water from the west side of the Green River to reclaim 50,000-60,000 acres of land northwest of the town of Green River, and a third canal was considered to divert water from the Green River near the mouth of Horse Creek in the vicinity of Pinedale (Johnston 1909).

Expectations for the Carey Act fell short; however, with passage of the Reclamation Act of 1902, a new era of land use began with the formation of a new federal agency—the Reclamation Service (Bureau of Reclamation after 1923). In 1940, President Roosevelt approved a plan to develop and rehabilitate the Eden irrigation system under the water conservation provision of the Interior Department Appropriation Act of 1940, and the majority of work was completed by December 1959 (USDI 1981). The original system was augmented by the construction of the Big Sandy Dam and Reservoir 10 miles north of Farson. Ninety-four miles of lateral canals currently supply water to participating farmers. Livestock production is the mainstay of the area, and the principal crops include wheat, oats, barley, alfalfa, grass hay, and pasture (USDI 1981).

The Seedskadee project—part of the Colorado River Storage Project in the Upper Green River Basin—provides "storage and regulation of the flows of the Green River for power generation, municipal and industrial use, fish, wildlife, and recreation" (USDI 1981). Fontenelle Dam and its powerplant and reservoir are the key components of this project. The dam is an earth-filled structure located on the Green River 24 miles southeast of LaBarge (USDI 1981). The Seedskadee National Wildlife Refuge is an important part of the project that was created in 1965 to provide habitat for waterfowl. The refuge begins 6 miles below Fontenelle Dam and extends 35 miles downstream (USDI 1981).

I-2.4 Energy Resource Industries

While the agricultural and livestock potential of the Green River Basin was being realized, simultaneous developments were being made in the energy resource industries. Settlement in the Green River Basin at the beginning of the twentieth century remained sparse, and initial oil and gas discoveries were minimal except in the upper Green River region near LaBarge, Big Piney, and Pinedale. Coal deposits, while plentiful in the region north of Evanston, were minimal in the upper Green River Basin.

It was the twentieth-century industrial demand for petroleum products that had the greatest economic impact on the upper Green River Basin. Influenced by national and international political events, economic conditions, and perhaps most importantly by the advent of the mass-produced, affordable automobile, Wyoming's oil and gas industry rose to prominence in the early decades of the twentieth century (Larson 1978).

Oil seeps and springs were probably known to exist by Native Americans in the Green River Basin; however, the extent and type of aboriginal use, if any, is not understood at present (Veatch 1907). It may be on coincidence that the historic California, Oregon, or Mormon Trails passed oil seeps to allow their utilization by the westbound emigrants (Metz 1986). Oil and gas reserves of commercial potential were discovered during the first decade of the twentieth century in the vicinity of LaBarge Creek, approximately 25 miles southwest of the J2PA and 40 miles north of Opal. Studies of the surface geology resulted in the discovery of the current LaBarge Oil Field in 1924, which was part of the 1920s Wyoming oil boom (Espach and Nichols 1941; Wyoming Geological Association 1957; Biggs and Espach 1960). By January 1938, approximately 85 wells produced 1,100 barrels of oil per day, and six gas wells produced 35 million cubic feet per day (mmcfd) of natural gas. Unitization occurred in April 1949, and by 1960, 245 wells had been drilled in the LaBarge Field, and the oil was shipped 39 miles through a 4-inch pipeline to Opal, Wyoming.

The Big Piney Gas Field lies north of the LaBarge Field and includes North Big Piney, South Big Piney, Dry Piney, and Paff-Quealy Fields. The discovery well was completed in 1938; however, development of the field as a primary gas producer did not occur until September 9, 1952, when a well blew out in Section 28 of T28N, R113W and produced 75 mmcfd for 10 days before it could be capped and cemented. Following this occurrence, the area was developed as a gas field (Biggs and Espach 1960). In 1955, a 16-inch pipeline was constructed to Opal, Wyoming, and by 1957, gas production from 44 wells yielded 1.9 mmcfd (Biggs and Espach 1960).

The Pinedale Gas Field lies northeast of the Big Piney Field, and the town of Pinedale is located near the northern end of one of the largest anticlines in the state. In 1939, the first well was drilled, and in February 1955 a well was completed with daily production of 2.3 mmcfd from the Fort Union Formation. By 1956, five gas wells had been completed; however, no gas was produced except for testing and field use (Biggs and Espach 1960).

The Big Piney and LaBarge Fields have been enlarged since 1960 (Roberts 1989; BLM 1990b), and production levels for natural gas from the combined LaBarge, Big Piney, and Pinedale Fields are among the highest in the state (BLM 1987a). These fields figure prominently in the future development of Wyoming's natural gas reserves.

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