National Park Service
U.S. Department of the Interior

Lake Meredith National Recreation Area
Texas

Environmental Assessment

J. M. Huber Corporation
Re-enter and Drill a Lateral Sidetrack
Of the Shelton A-2X Gas Well

Huber's Shelton A-2X gas well

In 1916, Congress created the NATIONAL PARK SERVICE in the Department of the Interior to:

…promote and regulate the use of the Federal areas known as national parks, monuments, and reservations…by such means and measures as conform to the fundamental purpose of said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.
(NPS OrganicAct, 16 USC1)

Prepared by
United States Department of the Interior * National Park Service

Environmental Assessment

Proposal by J. M. Huber Corporation
to Re-enter and
Drill a Lateral Sidetrack
of the Shelton A-2X Well within
Lake Meredith National Recreation Area,
Moore County, Texas

December 2005

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Summary

On May 5, 2005 J.M. Huber Corporation (Huber) submitted the Plan of Operations to the National Park Service to re-enter and drill a lateral sidetrack of the Shelton A-2X gas well. The proposed activity for the existing Shelton A-2X well would be conducted within the Lake Meredith National Recreational Area.

This Environmental Assessment (EA) evaluates two alternatives. Alternative A evaluates baseline conditions under No Action. Under No Action, the well would not be re-entered resulting in no new impacts. However, continuing operation and maintenance of the existing well, and associated pipelines and access roads would result in the continuation of localized, short to long-term, negligible to minor adverse impacts on soil resources, vegetation, wildlife, and visitor use and experience.

Alternative B, Proposed Action, evaluates the Plan of Operations as submitted by Huber to re-enter and drill a lateral sidetrack of the Shelton A-2X gas well in addition to continuing operation and maintenance of the well and its associated pipelines and access roads. Under Alternative B, there would be localized, short to long-term, negligible to moderate adverse impacts on soils, vegetation, wildlife, visitor use and experience. Alternative B is the NPS preferred alternative. Alternative A is the environmentally preferred alternative.

Public Comment

If you wish to comment on the Plan of Operations or Environmental Assessment, you may directly input comments into the NPS Planning Environment and Public Comment (PEPC) web page (http://parkplanning.nps.gov) or mail comments to the name and address below. A notice of availability of the Plan of Operations and Environmental Assessment would be published in the *Federal Register,* and in the local newspaper. The 30-day public review period would begin on the date the notice of availability is published in the *Federal Register.* Please note that the names and addresses of people who comment become part of the public record. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. However, we will not consider anonymous comments. We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

Superintendent Karren C. Brown
Lake Meredith Naational Recreation Area and
Alibates Flint Quarries National Monument
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1.0. PURPOSE AND NEED

This Environmental Assessment (EA) evaluates two alternatives for the National Park Service (NPS) to permit J. M. Huber Corporation (Huber) to re-enter and drill a lateral sidetrack of the Shelton A-2X gas well within the Lake Meredith National Recreation Area (Lake Meredith NRA). The purpose of this analysis is to provide a decision-making framework for the NPS to approve the use of parklands for Huber to explore and develop its mineral rights, while protecting and preventing impairment to area resources and values, and allowing for a safe visitor experience; and to determine whether an Environmental Impact Statement (EIS) should be prepared.

The Lake Meredith National Recreation Area lies on the High Plains of the Texas Panhandle in a region known as Llano Estacado, comprising 44,978 acres (Figure 1). Through this plain, the Canadian River has cut and re-cut 200-foot canyons called breaks. Sanford Dam supplies water for 11 Texas Panhandle cities and serves the region as a water recreation area.

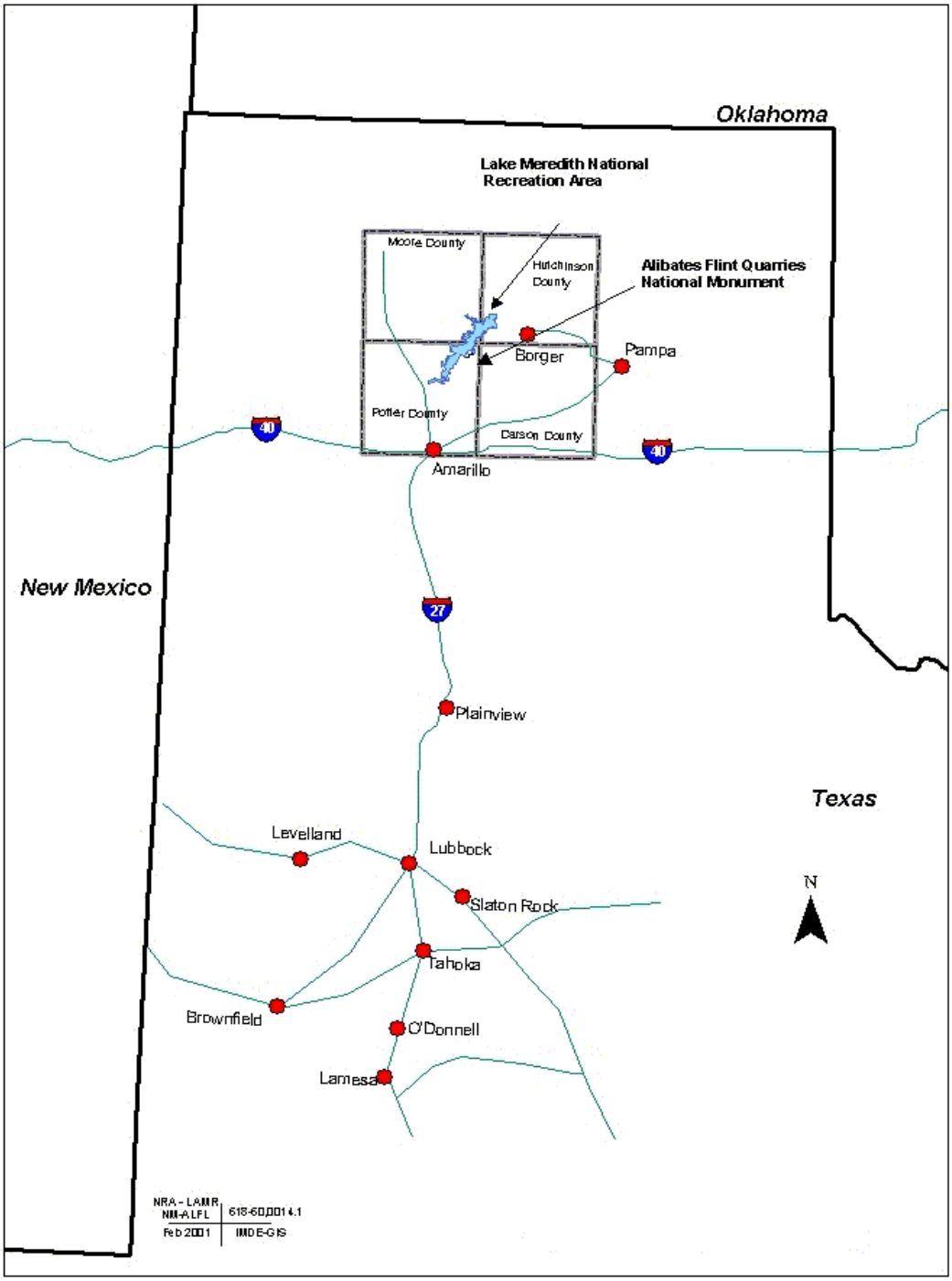
When Congress authorized the construction of Sanford dam in the early1960s, the U.S. Government acquired surface ownership within the area. Private entities or the State of Texas retained the subsurface mineral interests on these lands. Thus, the federal government does not own any of the subsurface oil and gas rights in the park, yet the NPS is required by its laws, policies, and regulations to protect the park from any actions, including gas operations, that may adversely impact or impair park resources and values. Currently, there are 173 active nonfederal oil and gas operations within the Lake Meredith National Recreation Area, which comprises 44,977.63 acres. .

On May 5, 2005, Huber submitted to the NPS the Plan of Operations for the Shelton A-2X well (Figure 2). The NPS reviewed the document and determined the Plan of Operations to be substantially complete. The NPS accepted the Plan on May 31, 2005 for processing.

The analysis area for evaluating impacts in this EA includes:

- The direct area of impact for each park resource or value includes the existing gas well and its associated pipelines and access road.

- The indirect area of impact for each park resource or value could vary for each impact topic; but generally would not extend 1,500 feet beyond the well. NPS has selected the 1500-foot analysis area because this is the distance required for elevated noise that occurs during the drilling of wells to attenuate to background levels. The analysis area along access roads and pipelines would include a 100-foot offset.



• The analysis area for evaluating cumulative impacts on park resources and values may extend beyond the boundaries of the park. Figure 1. Region / Vicinity map depicting the location of Lake Meredith National Recreational Area in the Texas Panhandle

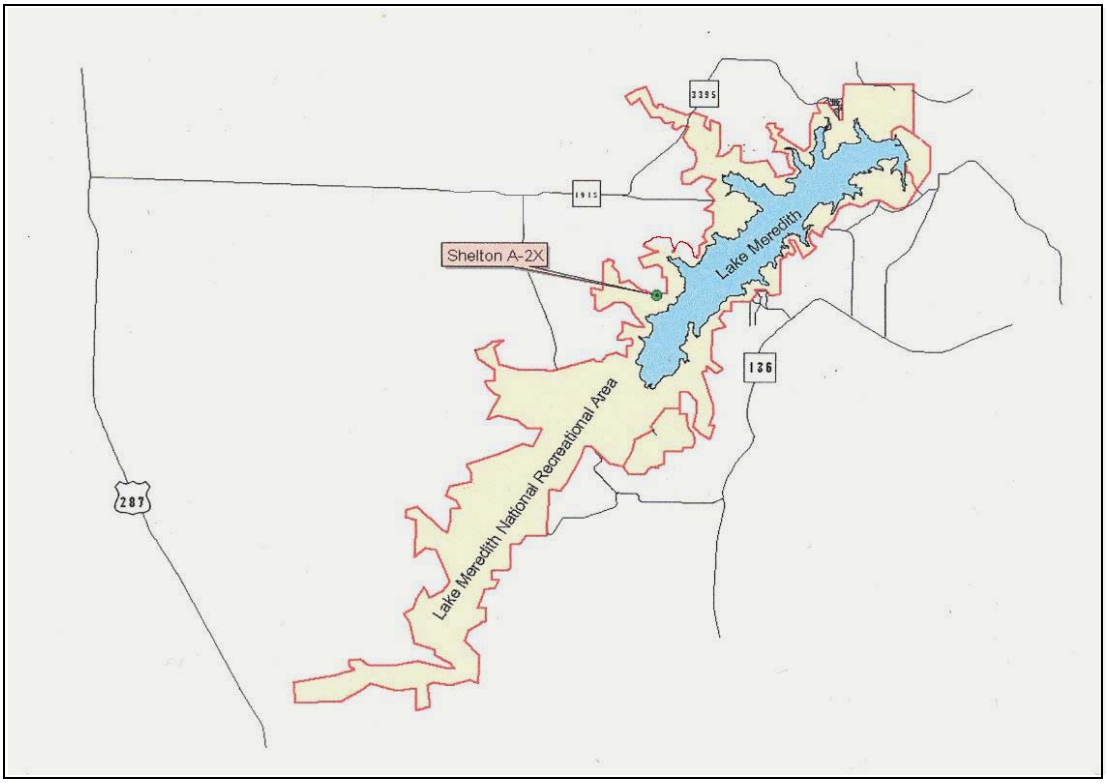


Figure 2. Well location within Lake Meredith National Recreational Area

1.1 Objectives of Taking Action

- Avoid, minimize, or mitigate impacts on park resources and values, visitor use and experience, and human health and safety.
- Prevent impairment of park resources and values.
- Provide J. M. Huber Corporation, as the lessee of nonfederal oil and gas mineral interests, reasonable access for exploration and development.

1.2 Special Mandates and Direction

The NPS evaluates project-specific proposals for oil and gas production and transportation on a case-by-case basis by applying a variety of Current Legal and Policy Requirements prior to issuing a permit under the general regulatory framework of the NPS Nonfederal Oil and Gas Rights Regulations (36 CFR 9B). The following discussion is a summary of the basic management direction the NPS follows for permitting nonfederal oil and gas operations in units of the National Park System.

1.2.1 NPS Organic Act and General Authorities Act - Prevention of Impairment

The NPS Organic Act of 1916 (16 U.S.C. § 1, *et seq.*) provides the fundamental management direction for all units of the National Park System. Section 1 of the Organic Act states, in part, that the NPS shall:

> "…promote and regulate the use of the Federal areas known as national parks, monuments, and reservations…by such means and measure as

conform to the fundamental purpose of said parks, monuments and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." 16 U.S.C. §1.

The National Park System General Authorities Act of 1970 (16 U.S.C. § 1a-1 *et seq*.) affirms that while all national park system units remain "distinct in character," they are "united through their interrelated purposes and resources into one national park system as cumulative expressions of a single national heritage." The Act makes it clear that the NPS Organic Act and other protective mandates apply equally to all units of the system. Subsequently, the 1978 Redwood Act Amendments to the General Authorities Act further clarified Congress' mandate to the NPS to protect park resources and values. The Amendments state, in part: "[t]he authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress." 16 U.S.C. § 1a-1.

Current laws and policies require the analysis of potential effects to determine whether actions would impair park resources. While Congress has given the NPS the managerial discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement (enforceable by the federal courts) that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise (2001 Management Policies, §1.4).

These authorities all prohibit an impairment of park resources and values. Not all impacts are impairments. An impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. The NPS Management Policies explain that an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill a specific purpose identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

An impact would be less likely to constitute impairment to the extent that it is an unavoidable result, which cannot be reasonably further mitigated, of an action necessary to preserve or restore the integrity of park resources or values.

NPS Management Policies explain that "resources and values" mean the full spectrum of tangible and intangible attributes for which the parks are established and are being

managed, including the Organic Act's fundamental purposes (as supplemented), and any additional purposes as stated in a park's establishing legislation. Park resources and values that are subject to the no impairment standard include: the biological and physical processes which created the park and that continue to act upon it; scenic features; natural visibility; natural soundscapes and smells; water and air resources; soils; geological resources; paleontologic resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures and objects; museum collections; and native plants and animals. Additional resources and values that are subject to the non-impairment standard include the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system.

The Environmental Consequences section of this EA provides an analysis of the potential for impairment for each park resource or value carried forward for further evaluation.

1.2.2. Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument Enabling Acts

Lake Meredith National Recreation Area, previously known as the Sanford Dam and Reservoir and as the Lake Meredith Recreation Area, became a National Park System (NPS) unit by a series of agency actions between the NPS and the Bureau of Reclamation (BOR) spanning approximately four decades.

By Public Law 101-628 (16U.S.C. §460eee), on November 28, 1990, Congress renamed Lake Meredith Recreation Area as a National Recreation Area, "to provide for public outdoor recreation use and enjoyment of the lands and waters associated with Lake Meredith in the State of Texas, and to protect the scenic, scientific, cultural, and other values contributing to the public enjoyment of such lands and waters." This change "codified the long-standing administrative arrangements between the BOR and the NPS" (136 Cong. Rec. 17,473) and made Lake Meredith National Recreation Area a National Park System unit emphasized the importance of protecting and interpreting the natural and cultural resources of the park.

Alibates Flint Quarries National Monument was authorized by Congress in 1965 "to provide for the preservation and public use of a concentration of unique flint quarries used as a source of new materials for weapons and tools by High Plains prehistoric cultures spanning 12,000 years." Located immediately adjacent to Lake Meredith National recreation Area, the national monument is comprised of 1,079 acres. The original 91-acre monument is listed on the National Register of Historic Places. Highly significant is the fact that no other archeological area is the national park system has been used as long and as continuously by humans.

1.2.3. NPS Nonfederal Oil and Gas Regulations, 36 CFR 9B

The authority to manage and protect federal property arises from the Property Clause of the United States Constitution. The Property Clause provides that "Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States . . ." U.S. Const. Art. IV, ¶ 3, cl. 2.

In 1916, Congress exercised its power under the Property Clause and passed the NPS Organic Act, 16 U.S.C. § 1 *et seq*. Section 3 of the Organic Act authorizes the Secretary

of the Interior to "make and publish such rules and regulations as he may deem necessary or proper for the use of the parks…" 16 U.S.C. § 3.

Pursuant to section 3 of the NPS Organic Act and individual park statutes, the Secretary of the Interior promulgated regulations at 36 CFR Part 9, Subpart B ("9B regulations") in 1979 to "insure that activities undertaken pursuant to [nonfederal oil and gas rights] are conducted in a manner consistent with the purposes for which the National Park System and each unit thereof were created, to prevent or minimize damage to the environment and other resource values, and to insure to the extent feasible that all units of the National Park System are left unimpaired for the enjoyment of future generations." (see 36 CFR § 9.30). The 9B regulations apply to operations that require access on or through federally owned or controlled lands or waters in connection with nonfederal owned oil and gas in all National Park System units (36 CFR § 9.30(a)).

The NPS Nonfederal Oil and Gas Rights Regulations (36 CFR 9B) and other regulatory requirements assist park managers in determining the standards for oil and gas activities so they may be conducted in a manner that protect park resources and values. NPS must determine that these activities do not impair park resources and values to the extent they preclude visitor enjoyment of the park now and for future generations. The 9B regulations provide NPS with a regulatory framework to manage the effects of oil and gas operations within the parks. The application and implementation of these regulations on the ground must be assessed park wide for each site-specific oil and gas activity to determine if these activities have the potential to impair park resources and values.

1.2.4. NPS Oversight and Monitoring of Nonfederal Oil and Gas Operations

Under 36 CFR § 9.37(f) "[a]pproval of each plan of operations is expressly conditioned upon the Superintendent having such reasonable access to the site as is necessary to properly monitor and insure compliance with the plan of operations." At Lake Meredith National Recreation Area, park staff visits oil and gas sites on a regular basis. In an event of an accident or spill, staff would notify its dispatch immediately and would then immediately notify park resource managers. All approved plans of operations have a spill contingency plan that is reviewed and approved by the NPS.

Pursuant to 36 CFR § 9.51(a) an **"**operator shall be held liable for <u>any</u> damages to federally-owned or controlled lands, waters, or resources, resulting from his failure to comply with…his plan of operations." Undertaking any operations within the boundaries of a park system unit in violation of the 9B regulations shall be deemed a trespass against the United States and shall be cause for revocation of approval of an operator's plan of operations. If an operator violates a term or condition of its approved plan of operation the Superintendent has the authority to temporarily suspend the operation and give the operator the chance to cure the violation. Section § 9.51(c) outlines the Superintendent's suspension authority and procedure. If an operator fails to correct any violation or damage to federally owned or controlled lands, waters, or resources the operator's approval would be revoked. 36 CFR § 9.51(c) (3).

Table 1 summarizes many, but not all , of the statures, regulations, executive orders, and policies that govern the exercise of nonfederal oil and gas rights in the National Park units.

1.2.5. Approved Park Planning Documents

Approved park planning documents also provide a framework for determining how nonfederal oil and gas operations are conducted within the Park.

An Oil and Gas Management Plan/Environmental Impact Statement (OGMP/EIS) was completed in December 2002. The OGMP describes the overall approaches that would be implemented over the next 15 to 20 years, or longer, to manage existing and anticipated oil and gas operations, including the exploration, development and transportation of nonfederal oil and gas underlying Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument, in a manner that provides for hydrocarbon development while protecting natural and cultural resources, human health and safety, and allowing public use and enjoyment of those resources. The Oil and Gas Management Plan:

3) Identifies park resources and values most sensitive to oil and gas exploration and development disturbance, and defines impact mitigation requirements to protect such resources and values.

2) Establishes reasonable oil and gas exploration and development performance standards to protect park resources and values.

3) Develops reasonable alternatives for oil and gas development in the park and analyzes the impacts of those alternatives on park resources and values.

4) Provides pertinent information to oil and gas owners and operators that would facilitate operations planning and compliance with all applicable regulations.

During the scoping and development of the Shelton A-2X Plan of Operations and of this EA, the planning framework provided in the park's OGMP have been followed.

Table 1. Current and Legal Policy Requirements

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
National Park Service Laws and Applicable Regulations	
NPS Organic Act of 1916, as amended, 16 U.S.C. §§ 1 *et seq*.	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, and visual resources
National Park System General Authorities Act, 16 U.S.C. §§ 1a-1 *et seq*.	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, and visual resources
NPS Omnibus Management Act of 1998, 16 U.S.C. §§ 5901 *et seq*.	Any living or non-living resource

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
NPS Nonfederal Oil and Gas Regulations – 36 CFR Part 9, Subpart B	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, and visual resources
Park System Resource Protection Act, 16 U.S.C. § 19jj	Any living or non-living resource that is located within the boundaries of a unit of the National Park system, except for resources owned by a nonfederal entity
Other Applicable Federal Laws and Regulations	
American Indian Religious Freedom Act, as amended, 42 U.S.C. §§ 1996 – 1996a; 43 CFR Part 7	Cultural and historic resources
Antiquities Act of 1906, 16 U.S.C. §§ 431-433; 43 CFR Part 3	Cultural, historic, archeological, and paleontological resources
Archeological Resources Protection Act of 1979, 16 U.S.C. §§ 470aa – 470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7	Archeological resources
Clean Air Act, as amended, 42 U.S.C. §§ 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23	Air resources
Coastal Zone Management Act of 1972, 16 U.S.C. § 1451 *et seq*., 15 CFR Parts 923, 930, 933	Coastal waters and adjacent shoreline areas
Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601-9675; 40 CFR Parts 279, 300, 302, 355, and 373	Human health and welfare and the environment
Endangered Species Act of 1973, as amended, 16 U.S.C. §§ 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450	Plant and animal species or subspecies, and their habitat, which have been listed as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NOAA Fisheries)
Federal Insecticide, Fungicide, and Rodenticide Act, as amended (commonly referred to as Federal Environmental Pesticide Control Act of 1972), 7 U.S.C. §§ 136 et. seq.; 40 CFR Parts 152-180, except Part 157	Human health and safety and the environment
Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. §§ 1251 *et seq*.; 33 CFR Parts 320-330; 40 CFR Parts 110, 112, 116, 117, 230-232, 323, and 328	Water resources, wetlands, and waters of the U.S.
Historic Sites, Buildings, and Antiquities Act (Historic Sites Act of 1935), 16 U.S.C. §§ 461-467; 18 CFR Part 6; 36 CFR Parts 1, 62, 63 and 65	Historic sites, buildings, and objects

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
Lacey Act, as amended, 16 U.S.C. §§ 3371 *et seq*.; 15 CFR Parts 10, 11, 12, 14, 300, and 904	Fish, wildlife, and vegetation
Migratory Bird Treaty Act, as amended, 16 U.S.C. §§ 703-712; 50 CFR Parts 10, 12, 20, and 21	Migratory birds
National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. §§ 4321 *et seq*.; 40 CFR Parts 1500-1508	The human environment (e.g., cultural and historic resources, natural resources, biodiversity, human health and safety, socioeconomic environment, visitor use and experience)
National Historic Preservation Act of 1966, as amended, 16 U.S.C. §§ 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810	Cultural and historic properties listed in or determined to be eligible for listing in the NRHP
Native American Graves Protection and Repatriation Act, 25 U.S.C. §§ 3001-3013; 43 CFR Part 10	Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony
Noise Control Act of 1972, 42 U.S.C. §§ 4901-4918; 40 CFR Part 211	Human health and welfare
Oil Pollution Act, 33 U.S.C. §§ 2701-2761; 15 CFR Part 990; 33 CFR Parts 135, 137, and 150; 40 CFR Part 112; 49 CFR Part 106	Water resources and natural resources
Pipeline Safety Act of 1992, 49 U.S.C. §§ 60101 *et seq*.; 49 CFR Subtitle B, Ch 1, Parts 190-199	Human health, safety, and the environment
Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 et. seq.; 40 CFR Parts 240-280; 49 CFR Parts 171-179	Natural resources, human health, and safety
Rivers and Harbors Act of 1899, as amended, 33 U.S.C. §§ 401 et. seq.; 33 CFR Parts 114, 115, 116, 321, 322, and 333	Shorelines and navigable waterways, tidal waters, and wetlands
Safe Drinking Water Act of 1974, 42 U.S.C. §§ 300f *et seq*.; 40 CFR Parts 141-148	Human health and water resources
Executive Orders	
Executive Order (E.O.) 11593 – Protection and Enhancement of the Cultural Environment, 36 Federal Register (Fed. Reg.) 8921 (1971)	Cultural resources
E.O. 11988 - Floodplain Management, 42 Fed. Reg. 26951 (1977)	Floodplains and human health, safety, and welfare
E.O. 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977)	Wetlands
E.O. 12088 – Federal Compliance with Pollution Control Standards, 43 Fed. Reg. 47707 (1978)	Natural resources and human health and safety
E.O. 12630 – Governmental Actions and Interference with Constitutionally Protected Property Rights, 53 Fed. Reg. 8859 (1988)	Private property rights and public funds

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
E.O. 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, amended by Exec. Order No. 12948, 60 Fed. Reg. 6379 (1995)	Human health and safety
E.O. 13007–Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)	Native Americans' sacred sites
E.O. 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999)	Vegetation and wildlife
E.O. 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)	Migratory birds
E.O. 13212 - Actions To Expedite Energy-Related Projects (2001)	Production, transmission, and conservation of energy
Policies, Guidelines and Procedures	
NPS Management Policies (2001)	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, and visual resources
Department of the Interior (DOI), Departmental Manual (DM) 516 –NEPA policies (1980)	Archeological and prehistoric resources, historic resources, Native American human remains, and cultural objects
Department of the Interior (DOI), Departmental Manual (DM) 516 –NEPA policies (1980)	Archeological and prehistoric resources, historic resources, Native American human remains, and cultural objects
DOI, DM 517 - Pesticides (1981)	Human health and safety and the environment
DOI, DM 519 – Protection of the Cultural Environment (1994)	Archeological, prehistoric resources, historic resources, Native American human remains, and cultural objects
DOI, Onshore Oil and Gas Order Number 2, Section III, Re-entering Abandonment Requirements, 53 Fed. Reg. 46,810-46,811 (1988)	Human health and safety
NPS Director's Order (D.O.) –12 and Handbook – Conservation Planning, Environmental Impact Analysis, and Decision Making (2001)	All resources, including air resources, cultural resources, human health and safety, socioeconomic environment, visitor use
NPS D.O. - 28 – Cultural Resource Management (1998)	Cultural, historic, and ethnographic resources
NPS D.O. - 28 A – Archeology	Clarifies roles & responsibilities for archeological resources management
NPS D.O. - 28 – Cultural Resource Management (1998)	Cultural, historic, and ethnographic resources
NPS 66 – Minerals Management Guideline (1990)	Natural resources, human health and safety
NPS Reference Manual 77 – Natural Resources Management (1991)	Natural resources

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
NPS D.O. and Procedural Manual 77-1 – Wetland Protection (2002)	Wetlands
NPS D.O. and Procedural Manual 77-2 – Floodplain Management (2003)	Floodplains
Secretary of the Interior's "Standards and Guidelines for Archeology and Historic Preservation," 48 Fed. Reg. 44716 (1983), also published as Appendix C of NPS D.O. 28 – Cultural Resource Management	Cultural and historic resources
Government-to-Government Relations with Native American Tribal Governments, Presidential Memorandum signed April 29, 1994	Native American Tribal rights and interests
Selected Texas Laws and Regulations	
Title 2 Texas Natural Resources Code Chapter 40 (Oil Spill Prevention and Response Act of 1991, also liability for natural resources damages from spills), TEX. NAT. RES. CODE tit. 2, § 40 (1991)	Human health and safety, natural resources
Title 3 Texas Natural Resources Code Chapters 81 through 85 (oil and gas operations) (TAC tit. 16, part 1, § 3)	Human health and safety, natural resources
Title 16 Texas Administrative Code Part 1 Chapter 3 – Railroad Commission of Texas, Oil and Gas Division	Human health and safety, natural resources

1.3. Issues and Impact Topics Evaluated

Early in the planning and development of the Plan of Operations for the proposed re-entry and drilling of a lateral sidetrack of the Shelton A-2X gas well, the NPS met with Huber, and their contractor, Llano-Permian Environmental to identify resources, values, and other concerns that could be potentially impacted by re-entering and producing the Shelton A-2X gas well. In addition, early input from other federal, state, and local agencies was sought.

Pursuant to National Environmental Policy Act (NEPA) requirements and to 36 CFR § 9.52(a), public notice of Huber's intent to re-enter the existing Shelton A-2X well was made available by mail, giving the public a 30-day period to submit scoping comments. No comments were received by the Park.

During scoping, a wide range of resources and values were identified that could be affected by the proposed action. From these, the NPS identified the following park resources, values, and other concerns that would be analyzed in detail in this EA.

- soil resources
- vegetation
- wildlife
- visitor use and experience

Other issues that were not carried through for detailed analysis are discussed in Section 1.4.

Based on the above list of park resources, values, and other concerns identified during scoping, issue statements were developed to define problems or benefits pertaining to Huber's proposal to re-enter and drill a lateral sidetrack of the Shelton A-2X gas well and associated construction activities. The issue statements in Table 2, below, describe a cause-and-effect relationship between an activity and a resource, value, or concern. The issue statements were used in developing and evaluating alternatives.

Table 2. List of Issue Statements

Impact Topic	Issue Statement
Soil Resources	• Oil and gas activities including vehicle use; and construction, maintenance, and use of roads, well pad, production facilities, flowlines and pipelines would increase surface runoff; increase soil erosion, rutting and compaction; and adversely affect soil properties such as permeability. • Vehicle use, particularly from heavy vehicles transporting the drilling rig, water, and drilling muds for disposal outside the park, could cause rutting and compaction of the soil. Soils compacted by vehicles could reduce soil permeability, and change surface drainage patterns. In general, clayey soils are more subject to compaction than sandy soils. • The release of hydrocarbons or other contamination and hazardous substances from vehicles and equipment, exploration and production operations, and flowlines and pipelines could alter the soil's chemical and physical properties. Changes in soil properties would result from direct contact with contaminants or indirectly via runoff from contaminated areas.
Vegetation	• Vegetation could be routinely cut along flowlines and pipelines or totally removed in areas for well pad construction. Vegetation removal could change the structure and composition of vegetation communities; alter wildlife habitat and species composition; increase storm runoff, and increase soil erosion. • Construction and use of the oil and gas access roads, well pad, production facilities, and flowlines and pipelines could disrupt surface and subsurface water flow that is necessary to maintain vegetation communities. • The release of hydrocarbons, and contaminating and hazardous substances could damage or kill vegetation via direct contact with contaminants, or indirectly via pathways from contaminated areas. • Reclamation of oil and gas sites could re-establish native vegetation communities and surface and subsurface drainage patterns necessary to support vegetation growth. Disturbances/removal of native vegetation could lead to the unintentional spread and establishment of non-native plant species transported in or on drilling and maintenance equipment.

Impact Topic	Issue Statement
Wildlife	• Oil and gas activities, including the well pad expansion, vehicle use and maintenance of the access roads, well pad, and production facility could increase predation in open areas; directly harm or kill wildlife; and disrupt wildlife feeding, denning, nesting, spawning reproduction, and other behavior. Oil and gas activities could result in avoidance of the area by wildlife due to increased noise and human presence. • Loss or modification of wildlife habitat could occur from the maintenance of the access roads, production facility, flowline and well pad. These activities could increase edge effects, increase human access, and alter wildlife species, composition, and migration. • Liquids that collect in secondary containment structures at the production site could attract, harm, and possibly kill birds. • The release of hydrocarbons and hazardous or contaminating substances from vehicles, drilling and production equipment, and pipelines could injure wildlife. The adverse effects could become worse over time if wildlife species ingest the contaminants and are consumed by other wildlife species. • Heavy equipment used for reclamation operations could injure or kill wildlife over the short-term. However, reclamation of gas sites over the long-term could re-establish native vegetative communities and surface and subsurface water quality and quantity that support wildlife populations.
Visitor Use and Experience	• Oil and gas operations could pose a threat to human health and safety from the use of commercial vehicles with less maneuverability and visibility, hazardous equipment at the well site and production facilities, and the release of hydrocarbons and hazardous or contamination substances. Spilled or released hydrocarbons and contaminating or hazardous substances could be inhaled, absorbed, or ingested by human. • The oil and gas operation could adversely affect air quality, alter scenic resources and the night sky, increase background sound levels, and could degrade the quality of visitor uses and experiences in the park. These effects could adversely affect or preclude visitor uses and experience in certain areas of the park, particularly associated with Lake Meredith, such as hunting, fishing, boating, swimming, picnicking, camping, participating in NPS programs, nature study, and solitude.

1.4. Issues and Impact Topics Eliminated from Further Analysis

Impact topics may be dismissed from further evaluation in an EA when, the resource is not located in the analysis area; or through the application of mitigation measures, there would be "minor or less affects, and there is little controversy on the subject or reasons to otherwise include the topic." For cultural resources, wetlands, floodplains, and species of management concern, these impact topics are normally dismissed if there are no effects or they are not present in the analysis area.

The following topics have been eliminated from further analysis in this EA for the reasons described.

1.4.1. Environmental Justice

Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities of low-income populations or communities. The proposed nonfederal action would not have health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Environmental Justice Guidance (1998). Therefore, environmental justice is being dismissed from further analysis in this EA.

1.4.2. Prime and Unique Farmlands

In August 1980, the Council on Environmental Quality (CEQ) directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops such as common food, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to NRCS, no lands in the project area are classified as prime and unique farmlands. Therefore, the topic of prime and unique farmlands was dismissed as an impact topic in this EA.

1.4.3. Socioeconomics

The socioeconomic issue includes the effect of Huber's proposal to re-enter and drill a lateral sidetrack of the Shelton A-2X gas well on the local and regional economies. Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument lie within the Texas Railroad Commission of Texas (TRRC), District 10. The petroleum / petrochemical industry and related industries are important to the local and regional economies. Approximately 25% to 30 % of the total work force in the local communities of Fritch and Borger, Texas are employed in these fields.

The parks are near the center of Carson, Moore, Hutchinson, and Potter counties. There are approximately 9,200 producing wells in these four counties. The 173 existing wells that occupy 82 acres in the parks represent less than 2% of the total wells and approximately 0.3% of the total production in the four-county area. Drilling activitiy continues in the region. In 1999, the TRRC issued 191 drilling permits for the four-county area. However, none of these wells drilled inside the parks. Gas production in the Panhandle West Field rose to a peak of nearly 800 billion cubic feet of gas (BCFG) per year in 1950, but has since declined to current rates of about 120 BCFG per year. This represents an average field decline of about 4% per year since production started 50 years ago. In the past ten years, production has declined from about 150 BCFG per year to 115 BCFG per year. This represents a decline rate of less than 2.6% per year (Texas railroad Commission, 2005). Gas production is expected to continue to slowly decline over the next 10 to 15 years.

In 2000 the National Park Service prepared a reasonably foreseeable development scenario for inclusion in the park's *Draft Oil and Gas management Plan / Environmental Impact Statement.* The scenario projected that up to 85 new wells could be drilled and produced over the next 15 to 20 years or more, to develop approximately 22.8 billion cubic feet of natural gas and 420,00 barrels of oil from Permian-aged clastic and carbonate and "Granite Wash" reservoirs, which the

U. S. Geological Survey estimates remain beneath the parks. The scenario assumed that of the 85 new wells, up to 20 would be developed from new locations, while the remaining 65 wells would be drilled from existing wells via re-entries or by sharing common well pads for new vertical or directional wells. Up to 150 acres could be developed, including 98 acres of redistrubance of current production sites and up to 52 acres of new surface disturbance. The 150 acres would comprise less than 0.5% of parklands. It is reasonable to assume that, as some wells were being drilled and produced, others would be plugged and abandoned; therefore, impacts would be distributed over time. This level of anticipated development would represent less than 1% of the four-county level of activity over a one-year period.

Under Alternative B, , Proposed Action, Huber would re-enter and drill a lateral sidetrack of the Shelton A-2X gas well, if additional natural gas was discovered and produced, this could result in a negligible beneficial impact the local and regional economics.

It would not change any local or regional land uses or ownership, nor impact local businesses or their agencies. Because of the low intensity of impacts, this topic is being dismissed from further analysis in this EA.

1.4.4 Cultural Resources

The National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq*.); the National Environmental Policy Act of 1969 (42 USC 4321 *et seq*.); and the National Park Service's Director's Order #28, *Cultural Resource Management Guideline (1997*), *Management Policies, 2001* (2000), and Director's Order # 12, *Conservation Planning, Environmental Impact Analysis, and Decision Making* (2001) require the consideration of impacts on cultural resources listed in or eligible to be listed in the National Register of Historic Places. The National Park Service recognizes five categories of cultural resources: historic structures, ethnographic resources, cultural landscapes, archeological resources, and museum collections.

There are no historic structures, ethnographic resources, or cultural landscapes within or near the operations area. During project scoping, a literature search was conducted to determine the extent and continuing adequacy of past archeological surveys that had been performed in the analysis area. An inventory for archeological resources was conducted, which covered a majority of the park. Drs. Susana and Paul Katz were contracted by Huber to conduct the cultural resources field survey specifically for this re-entry well project. Both have a PH.D in anthropology and over 8 years experience conducting surveys at the Lake Plains area. The initial survey was conducted in February 2005 and focused specifically on the area of potential effect of the proposed well pad expansion. This area includes approximately a 500-foot radius around the well pad. No archeological or historic resources were found in the survey area. Because there are no cultural resources in the analysis area, this topic is being dismissed from further analysis in this EA.

1.4.5 Paleontologic Resources

Three important fossil-bearing rock units are exposed within and around Lake Meredith National Recreation Area. They are the Triassic Dockum Group, the Tertiary Ogallala Formation and the Pleistocene-aged deposits. The natural gas well site proposed for re-entry was correlated with a map developed by Dr. Adrian Hunt, illustrating Areas of High Probability for Discovery of Paleontologic Resources. In addition, a field assessment of paleontologic resources was performed by Drs. Susana and Paul Katz in February 2005. No paleontologic resources were discovered. Based on the map correlations, the proposed natural gas operations are located in areas with low probability for discovery of paleontologic resources. In addition, with the

application of mitigation measures detailed in the park's Oil and Gas Management Plan and Final Environmental Impact Statement (April 2002), and incorporated into the Plan of Operations, any impacts to the paleontologic resources discovered during construction could be avoided or minimized further. B there are no paleontologic resources in the analysis area, this topic is being dismissed from further analysis in this EA.

1.4.6. Air Quality

Lake Meredith National Recreation Area is approximately 40 miles northeast of Amarillo and approximately 15 miles west of Borger, Texas. It is in the Upper Panhandle (Region I) air quality-monitoring district and straddles three counties: Hutchinson, Moore, and Potter (although the majority of the unit is in Hutchinson County). During most of the year, prevailing airflow is from the southwest. The park is designated as a Class II air shed for purposes of air quality by the State of Texas. The park's air quality is protected by allowing only limited increases (i.e. allowable increments) over baseline concentrations of pollution for sulfur dioxide, nitrogen oxides, and particulate matter.

The Texas Commission on Environmental Quality (TCEQ), formerly the Texas Natural Resource Conservation Commission, is the lead environmental agency for the state. The State Implementation Plan is Texas's plan for complying with the federal Clean Air Act. The plan consists of narrative, rules, and agreements that Texas would use to clean up polluted areas, and it is regularly revised (TCEQ 2002a). According to the Amarillo regional office (the office closest to Lake Meredith), air contaminants from industrial sources in Borger (a Phillips Petroleum refinery, an associated chemical plant, and several carbon black plants) may affect the unit, but not to a substantial degree (TCEQ 2000b).

Under Alternative B, Huber would re-enter and drill a lateral sidetrack of the Shelton A-2X gas well and continue operations of its associated pipelines and access roads. Construction of the well/production pad and maintenance of the access roads and pipelines would result in localized and intermittent, short-term, negligible increased emissions of particulate matter from ground-disturbing activities. Vehicle emissions of particulate matter, nitrogen oxides, carbon monoxide, carbon dioxide, and sulfur dioxide would be greatest during the short-term drilling operations due to increased use of vehicles and large gasoline and diesel engines used to power the rig, pumps, and auxiliary equipment. The application of mitigation measures (Table 4), particularly incorporating the use of a dust collection tank and dust suppression system during air drilling activities would reduce air particulate matter emissions. Emissions that would occur during the drilling phase of operations would result in localized and intermittent, short-term, negligible to minor adverse impacts on air quality.

Cumulative impacts from existing and future oil and gas operations in and adjacent to the park; routine park operations; park, commercial, and recreational vehicle uses, and visitor uses are expected to result in localized, negligible to minor, adverse impacts on air quality throughout the park, and to remain within state and federal standards.

Because of the low intensity of impacts to air quality, this topic is being dismissed from further analysis in this EA.

1.4.7. Species of Management Concern

In accordance with the Endangered Species Act (1973), the National Park Service has responsibility to address impacts to federally listed, candidate, and proposed species. NPS

policy directs that state-listed species and other species identified by the park as being of management concern are to be managed in a manner similar to that for federally listed species.

Federally listed threatened, endangered, or candidate species that either are or may be potentially found in Lake Meredith National Recreation Area include the Bald Eagle (*Haliaeetus leucocephalus*), black-tailed prairie dog (*Cynomys ludovicianus*) (historically an extirpated species), Arkansas River shiner (*Notropis girardi*),Lesser Prairie Chicken (*Tympanuchus pallidicintus*) (potential resident in higher elevations of flat land), Mountain Plover (*Charadrius montanus*) (potential habitat for a species considered migratory by the Texas Parks and Wildlife Department), Whopping Crane (*Grus Americana*) (potential seasonal migratory species), and the interior least tern (potentially along the Canadian River corridor, although the nearest known colony is 75 miles east of the park in Oklahoma). There are no known federally threatened or endangered plants in the park. Species of concern and state-listed species that either are or may be found in the park include the American Peregrine Falcon (*Falco peregrinus anatum*), the Arctic Peregrine Falcon (*Falco peregrinus tundrus)* (a possible winter migrant), the Texas horned lizard (*Phrynosoma cornutum*), and the Mexican mud-plantain (plant species). Within Lake Meredith National Recreation Area, Arkansas River shiner critical habitat was designated along the Canadian River from the western park boundary was designated along the Canadian River from the western park boundary downstream to the confluence with Coetas Creek, including a lateral distance of 300 feet on each side of the river beyond full bank full width.

Mr. Omar Buchanagra, with U.S. Fish and Wildlife Service, Ecological Services Office in Arlington, Texas, was contacted regarding potential threatened and endangered species near the existing Shelton A-2X well location. A comprehensive list of state and federally listed endangered, threatened, proposed, or candidate species that have either been documented in the park or are likely to occur in the park is provided in Table 3. The complete lists and associated summary descriptions of habitats for state and federally protected species that are likely to occur in Hutchinson, Moore, and Potter counties are available from the U.S. Fish and Wildlife Service's website at <http:/endangered.fws.gov>, and from the Texas Parks and Wildlife Department at <http:/tpwd.state.tx.us/nature/ending.htm>.

Table 3: Federal and State Listed Endangered, Threatened, Proposed, or Candidate Species Known to Occur or Likely to Occur within Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument

SPECIES	FEDERALLY PROTECTED			STATE PROTECTED	
	E	**T**	**C**	**E**	**T**
BIRDS •American Peregrine Falcon *(Falco peregrinus anatum)*				X	
•Arctic Peregrine Falcon *(Falco peregrinus tundrius)*					X
•Bald Eagle *(Haliaeetus leucocephalus)*		X			X
•Interior Least Tern *(Sterna antillarum)*	X			X	
•Lesser Prairie Chicken *(Tympanuchus pallidicinctus)*			X		
•Mountain Plover *(Charadrius montanus)*		P			
•Whooping Crane *(Grus Americana)*	X			X	
FISH •Arkansas River Shiner (Potter County) *(Notropis girardi)*		X			
MAMMALS •Black-footed Ferret *(Mustela nigripes)*	X			X	
•Swift Fox *(Vulpes velox)*			X		
REPTILES •Texas Horned Lizard *(Phrynosoma cornutum)*					X
Key: T = Threatened E = Endangered C = Candidate P = Proposed					

Bald Eagle. Bald eagles are winter residents at Lake Meredith. They roost and perch in tall trees near water and feed primarily on fish and waterfowl. Most wintering bald eagles migrate north from February through March. According to park staff, wintering bald eagles roost in the Bonita Creek area in the southern end of the park. They do not rest or perch in or near the analysis area, and therefore they would not be affected by the proposed action.

Interior Least Tern. The interior least tern historically bred on sandbars along the Canadian River. The creation of Lake Meredith resulted in unfavorable vegetation succession along the river's sandbars, which has discouraged breeding. The species generally winters along the Gulf Coast and south to South America. Interior least terns would not be found in or near the analysis area, and no breeding occurs near the site.

Whooping Crane. Whooping cranes winter in coastal Texas at the Aransas National Wildlife Refuge. The only self-sustaining wild population of whooping cranes migrates between the wildlife refuge and Wood Buffalo National Park in Canada. Whooping cranes neither breed nor winter at Lake Meredith. They are potential migrant visitors at Lake Meredith and would not be found in or near the analysis area.

Arkansas River Shiner. The Arkansas River shiner is a small fish that was historically widespread and abundant throughout the western portions of the Arkansas River basin in Kansas, New Mexico, Oklahoma, and Texas. The species is now almost entirely restricted to the Canadian (South Canadian) River in Oklahoma, Texas, and New Mexico. Typical habitat is flowing water over sand in streams or rivers. Adult shiners are uncommon in quiet pools or backwaters, and they rarely occur in tributaries having deep water and bottoms of mud or stone. No Arkansas River shiner habitat is located in or near the area of analysis.

Black-footed Ferret. The black-footed ferret is considered extirpated in Texas, but it historically was a potential inhabitant of any prairie dog town. (The last prairie dog town in Lake Meredith National Recreation Area perished from the plague during the winter of 2001). The ferret's former range stretched across the Great Plains from southern Canada to north Texas. The last known wild population in Wyoming was decimated by disease, but a few animals were salvaged for captive breeding and reintroduction efforts. Despite the success of such projects, the total number of ferrets is quite small (less than 600). Extensive poisoning of prairie dog towns, intended to reduce competition with domestic livestock, has all but eliminated the ferret as well. No black-footed ferrets have been documented in either park area.

Swift Fox. The swift fox, one of the smallest American foxes, can be distinguished from red and gray foxes by its black-tipped tail and black patches on both sides of its muzzle and at the base of its tail. Swift foxes generally occur in open desert or grassland areas, although they have adapted to pasture, plowed fields, and fencerows. Swift foxes are primarily nocturnal, with a diet consisting largely of small mammals, particularly rodents, but also insects, birds, lizards, amphibians, and fish. Breeding occurs from December to February, and most litters are born in large family dens in March or early April. Swift fox dens generally have multiple entrances, and entrances are 8 inches in diameter with a characteristic keyhole shape. No dens have been observed in the area around the analysis area.

American Peregrine Falcon, Arctic Peregrine Falcon, Lesser Prairie Chicken, Mountain Plover. These species are listed as potentially occurring in the counties in which the parks occur. However, none of these species have been documented in the park, and no habitat for them occurs within the analysis area.

Since the listed threatened, endangered, or species of management concern for the four-county area are not present in the analysis area, this topic has been dismissed from further analysis in this EA.

1.4.8. Wetands

Executive Order 11990, "Protection of Wetlands," states that it is the policy of the federal government "to avoid to the extent possible the long and short-term adverse impacts associated with the destruction or modification of wetlands."

Wetland systems occurring in the park include riverine, laclustrine, and palustrine. However, wetlands acreage is expected to fluctuate with changes to lake level. There are no sensitive springs or associated wetlands; within the analysis area, therefore, there would be no impact on these resources. Paul Eubank, Chief, Division of Resources Management, Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument confirmed that the Shelton A-2X natural gas well is not located near or adjacent to wetlands. Therefore, wetlands have been dismissed from further analysis in this EA.

1.4.9. Water Resources

Lake Meredith was created by the construction of Sanford Dam in the early 1960's. The Sanford Dam was designed to accommodate the following Lake Meredith Reservoir Pools:

- Conservation pool at 2,941 feet elevation
- Flood control pool at 2,965 feet elevation
- Surcharge pool at 3,005 feet elevation

In addition to these operating pool levels, the BOR has calculated estimated flood elevations that would result from the inflow of 100- and 500-year flood hydrographs. These estimated 100-year and 500-year flood elevations straddle the flood control pool elevation at 2,948 and 2,972 feet, respectively. The primary drainage into and out of Lake Meredith is the Canadian River. The watershed for the river encompasses over 13,000 square miles.

Surface Water

Water stored in Lake Meredith plays a dominant role in maintaining the ecological integrity of the park, providing recreational opportunities for area visitors and residents, and is the primary drinking water supply for 11 municipalities in the Panhandle and South Plains of Texas. Lake Meredith National Recreation Area contains important water resources, including the surface of the lake and tributaries, plus groundwater contained in various aquifers beneath the park. Much of the water has high concentrations of solids, and some shallow groundwater has been affected by non-point pollution sources such as sewage and oil field brine.

Under Alternative B, Proposed Action, Huber would re-enter and drill a lateral sidetrack of the Shelton A-2X gas well. The Plan of Operations, as submitted, includes procedures for erosion control measures, secondary containment, and routine maintenance of access roads, well pad and equipment for all current operations. All actions would adhere to the NPS's SOP for the Construction and Maintenance of Oil and Gas Access Roads in Lake Meredith National Recreation Area and Alibates Flint Quarries NM. This would ensure that soil erosion and sedimentation would be minimized. A spill control plan is in place for the response to accidental leaks and spills of drilling fluids during workovers, hazardous waste spills including diesel fuel, rupture of flowlines, spills from tanker trucks, and lubricant leaks from compressors. There are no streams or other bodies of water located directly adjacent to any well site, and there are many mitigation measures that would be followed to minimize the potential for adverse impacts to water quality.

Reclamation would include revegetation with native species to 70% cover, thereby ensuring that soil erosion would be minimized and sedimentation of waterways would be avoided or minimized.

Groundwater

The Tertiary age Ogallala Formation is the primary aquifer in the Canadian River Basin. It lies unconformed above the older rock units of the Cretaceous, Triassic, Jurassic, and Permian. The Ogallala Aquifer formed as a broad coalescing alluvial fan at the foot of the Rocky Mountain front. The thickness of the Ogallala Formation varies greatly from 900-feet to a minimum of 20-feet. Precipitation in the form of rain and snow is the source of water to the aquifer. However, only a small percentage of the precipitation actually reaches the zone of saturation due to high evaporation and low infiltration. Substantial amounts of useable water are found in the Cretaceous, Triassic, and Jurassic rocks; however, water within the Permian has been found to to saline and unusuable. Water is also present in the surficial Quaternary deposits, but is often unsuitable for most purposes due to pollutants caused by poor disposal of oil field brine and sewage.

Under Alternative B, Proposed Action, Huber would re-enter and drill a lateral sidetrack of the Shelton A-2X gas well. During drilling activities all water used would be brought in by a truck. A plastic liner would be placed under all equipment to prevent oil, chemicals or other substances from having direct contact with the ground. The well pad would be designed to slope toward the cellar to collect spilled substances and drainage. These substances would then be removed by pump to a holding tank and removed from the park for reuse or disposal at a licensed facility.

With application of the mitigation measures discussed above, impacts to water resources would be localized, short to long-term, negligible, adverse impacts. Therefore, this topic is being dismissed from further analysis in this EA.

1.4.10. Floodplains

Floodplains are defined as relatively flat, lowland areas adjoining inland and coastal waters. The 100-year floodplain is an area that is subject to a 1.0% or greater chance of flooding in any given year. Within the boundaries of Lake Meredith National Recreation Area, only the 100-year floodplains for Potter and Hutchinson Counties have been mapped by the Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Maps (FIRM).

Protection of floodplains for in the NPS Floodplain Management Guidelines, DO 77-2, which requires that the NPS recognize and manage for the preservation of floodplain values, in order to minimize potentially hazardous conditions associated with flooding, and to adhere to all federally mandated laws and regulations pertaining to the management of the activities in flood-prone areas.

Before an operator is permitted to undertake an action, it would be necessary to verify if the proposed action is to occur within a regulatory floodplain. This determination would be made based on the best available hydraulic information, with the FIRM considered the minimal level of the information. In the absence of FIRM, the operator would complete the appropriate hydrologic and hydraulic analysis to determine the location of the estimated 100-year and 500-year floodplains within its operations area.

Based on the field observations, topographic surveys, and review of the parks' Final Oil and Gas Management Plan/EIS, the proposed re-entry and drilling a lateral sidetrack of the Shelton

A-2X gas well is not located within either the estimated 100-year or 500-year floodplain. Therefore, this topic is being dismissed from further analysis in this EA.

1.4.11. Fish

Fish populations in Lake Meredith are plentiful, making the lake one of the most popular fishing areas of the region. Most fishermen use developed boat launch areas at Blue West, Fritch Fortress, Cedar Canyon and Sanford-Yake to access other areas of the lake. Fish species include walleye, catfish, largemouth and sand bass, crappie, bluegill, and carp. Some shoreline fishing takes place in these developed areas, but most fishing takes place from boats upon the waters of Lake Meredith. The gas well is not located adjacent to the lake waters. With application of the mitigation measures discussed under water resources, impacts to fish resources would be localized, short to long-term, negligible, adverse impacts. Therefore, this topic is being dismissed from further analysis in this EA.

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2.0. ALTERNATIVES

Two Alternatives, A and B, are described and evaluated in this EA. Three summary tables are provided that compare the two alternatives in terms of how well they meet project objectives (Table 5), and summaries of actions (Table 6), and impacts (Table 7). This section concludes with an analysis for selecting the environmentally preferred alternative.

2.1. Alternative A, No Action

The No Action Alternative is required under the National Environmental Policy Act (NEPA) and establishes a baseline or benchmark from which to compare the present management direction and environmental consequences of the action alternative. Under No Action alternative, Huber would continue to operate and maintain the Shelton A-2x gas well and associated pipelines and access roads as specified under their ratified Plan of Operations. However, the Shelton A-2X gas well would not be re-entered to drill a lateral sidetrack. Under No Action, there would be no additional impacts on the affected environment.

Description of Well

Oil and gas operations in Lake Meredith National Recreation Area are producing form the Panhandle Field, which is predominantly a gas field. Gas wells in the Panhandle Field are drilled to a shallow depth because the gas reservoirs in the Panhandle Field are under-pressurized; drilling is normally accomplished by air drilling rather than circulating drilling mud. The under-pressurized reservoirs require the use of compressors to bring the gas to the surface, and to transport product through flowlines and gathering lines.

The Shelton A-2x natural gas well, complete June 10, 1998 (Figure 3) at a total depth of 2,875-feet, is located within Lake Meredith National Recreation Area. The legal description of the location is:

Moore county, survey-H&TC, block-47, section-52, LSE-Shelton-A.

The existing well pad is a disturbed area of approximately 1,000 square feet.

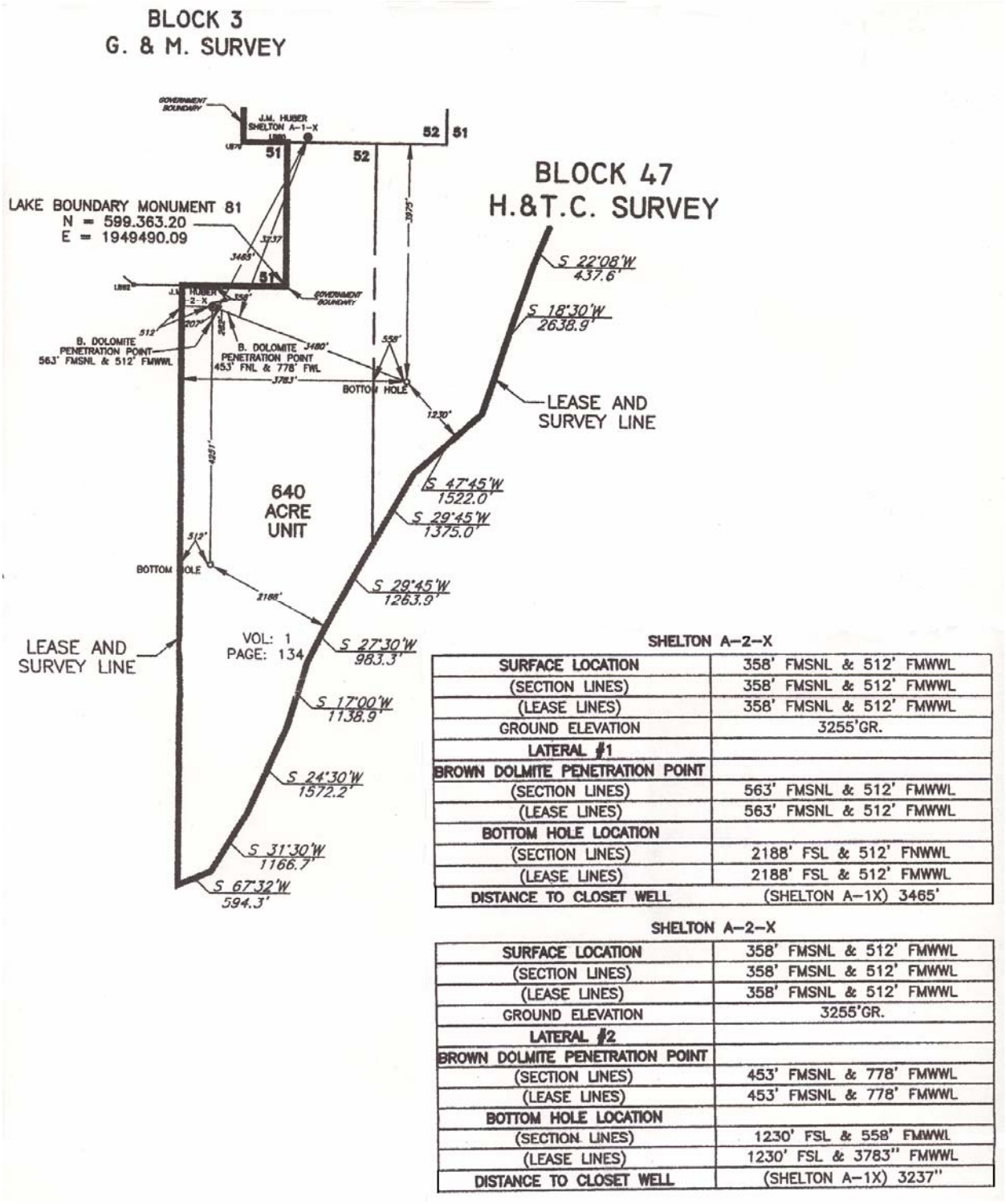
Pipeline Operations and Maintenance

Because of the high volume of gas wells, it is common at Lake Meredith National Recreation Area for one operator to own and operate a wellhead and the associated equipment to bring natural gas products to the surface, while another operator owns and operates the gathering system to transport the products to market. In this case, Huber owns and operates the natural gas well and the associated equipment to develop the natural gas products.

Leaks and spills of oil, gas and other contaminating and hazardous substances are a primary concern from all types of oil and gas operations. Leaks and spills could occur during drilling and routine workovers for both oil and gas wells. However, because of the under-pressurized nature of the Panhandle Field, the possibility for blowouts during well drilling is nonexistent. Leaks and spills during drilling and workovers are more likely to result from poorly maintained equipment or refueling of gasoline and diesel motors.

The potential for leaks and spills form the long-term operation of gas wellheads and appurtenant equipment is substantially less for gas well operations in comparison to oil wells primarily because of the lack of treatment and storage facilities. Gas wellheads have little or no potential for leaks and spills because they have no moving parts.

Figure 3. Diagram from well head to bottom hole location of the Shelton A-2X gas well



SHELTON A–2–X

SURFACE LOCATION	358' FMSNL & 512' FMWWL
(SECTION LINES)	358' FMSNL & 512' FMWWL
(LEASE LINES)	358' FMSNL & 512' FMWWL
GROUND ELEVATION	3255'GR.
LATERAL #1	
BROWN DOLMITE PENETRATION POINT	
(SECTION LINES)	563' FMSNL & 512' FMWWL
(LEASE LINES)	563' FMSNL & 512' FMWWL
BOTTOM HOLE LOCATION	
(SECTION LINES)	2188' FSL & 512' FNWWL
(LEASE LINES)	2188' FSL & 512' FMWWL
DISTANCE TO CLOSET WELL	(SHELTON A–1X) 3465'

SHELTON A–2–X

SURFACE LOCATION	358' FMSNL & 512' FMWWL
(SECTION LINES)	358' FMSNL & 512' FMWWL
(LEASE LINES)	358' FMSNL & 512' FMWWL
GROUND ELEVATION	3255'GR.
LATERAL #2	
BROWN DOLMITE PENETRATION POINT	
(SECTION LINES)	453' FMSNL & 778' FMWWL
(LEASE LINES)	453' FMSNL & 778' FMWWL
BOTTOM HOLE LOCATION	
(SECTION LINES)	1230' FSL & 558' FMWWL
(LEASE LINES)	1230' FSL & 3783'' FMWWL
DISTANCE TO CLOSET WELL	(SHELTON A–1X) 3237''

Over long term, leaks and spills at the well could occur as a result of failing or failed seals on the compressor, corrosion or rupture along flowlines and gathering lines, and collection of produced waters from the drip stations.

Huber has no plans to excavate/modify pipelines or drip stations as pertaining to this proposed plan of operation. Existing pipelines and drips would be utilized for the Shelton A-2X well. Only operation and maintenance of existing pipelines and drips would be required. In the future should the need for pipeline repair arise Huber would submit the repair procedures, site-specific description of the affected environment, and any reclamation actions to the NPS for approval, as needed.

The only routine surface operations to be conducted would be periodic visual checks by the company pipeline operator. Operators would drive on the existing roads to perform inspection of the pipeline. During site operations pipeline markers would be placed at every fence line. The markers would provide information on the pipeline contents, company name, and emergency phone number. Hot work permits and Texas Railroad Commission Permits would be obtained as necessary.

The pipelines and drip stations would be monitored for oxygen leaks as well as active cathodic protection. Periodic pigging of the line would also be performed. The product metering facilities, located off-site would be monitored to ensure that there is no loss of product and that any pipeline leaks are identified.

Huber would perform bi-annual meter checks and daily or weekly gauging on the well. Maintenance on compressors or other equipment would be performed as needed. Collection of condensation from drip stations would occur on a regular basis. Huber would also perform periodic road maintenance, which includes grading and fixing ruts.

Drip Stations
Drip stations are low points in the flowline where the heavier produced waters settle out, while natural gas products continue to move down the line. A truck routinely pumps the liquid from the drip location. The gas products are carried through the gathering lines system under pressure from the compressor. A vacuum truck routinely cleans out the drip stations.

Description of Access Road Maintenance
Lease roads used to access the natural gas well would continue to be maintained by Huber. Huber uses and maintains 0.25 of a mile of an access road within the park boundary (Figure 4) as it pertains to the Shelton A-2X well. Under Alternative A, Huber would maintain its access roads in accordance with NPS Nonfederal Oil and Gas Rights Regulations 36 CFR 9B 9.50 and the Plan of Operations. All maintenance actions would adhere to the NPS's SOP for the Construction and Maintenance of Oil and Gas Access Roads in Lake Meredith National Recreation Area and Alibates Flint Quarries NM.

Description of Reclamation Plan
At the completion of production operations, the well would be plugged and all above ground structures, equipment, and other man-made debris resulting form operations would be removed; and any contaminating substances would be removed or neutralized [36 CFR 9.39 (a) (2)]. During annual monitoring efforts, undesirable species would be controlled either by herbicide application or hand/tool removal, as approved by the NPS. Reclamation would not be acceptable unless it provides for the safe movement of native wildlife, the reestablishment of native vegetative communities, the normal flow of surface and reasonable flow of subsurface waters, and the return of the areas to condition which does not jeopardize visitor safety or public use of the unit.

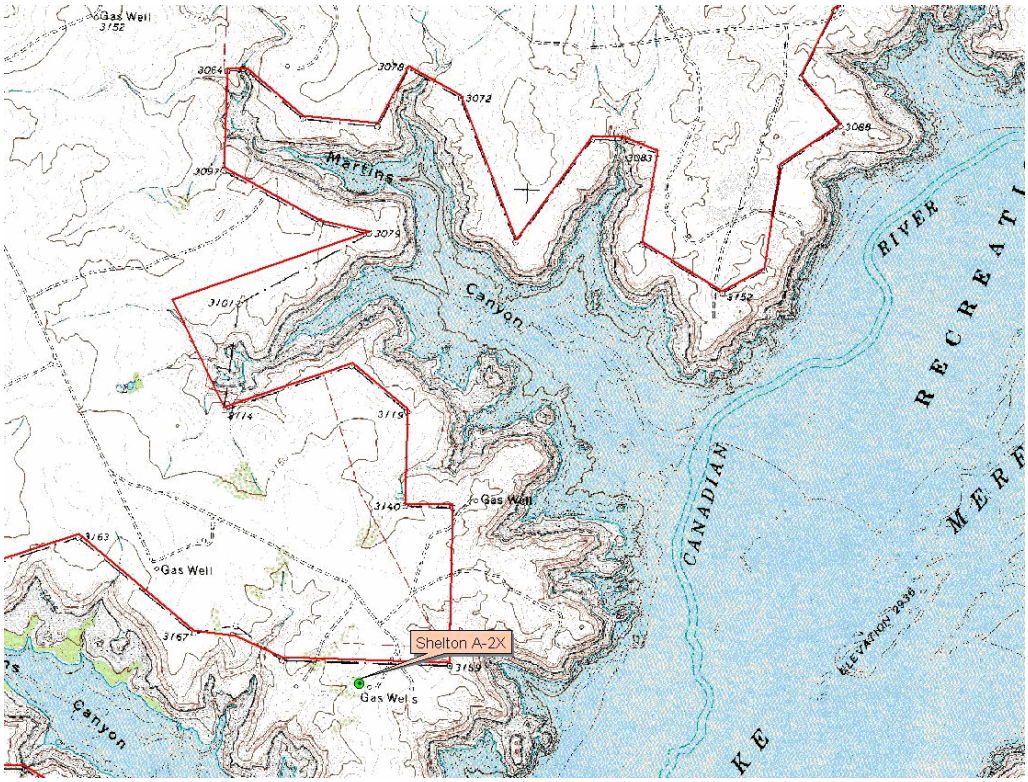


Figure 4. Map showing well location, park boundary, and existing roads

2.2 Alternative B, Proposed Action

2.2 Alternative B, Proposed Action

Under Alternative B, Proposed Action,Under Alternative B, Proposed Action, the NPS would approve Huber's Plan of Operation to re-enter and drill a lateral sidetrack of the Shelton A-2X gas well.

General Description of Construction and Drilling Activities Under Alternative B

Prior to construction and drilling activities, Huber would educate employees and contractors regarding the need for and ways of minimizing disturbances of the land, natural resources, and wildlife resources. If any known cultural resources are discovered during the conduct of approved construction or operations and such resources might be altered or destroyed by the activity, the operator would immediately cease operations in the immediate area and notify the Superintendent. The archeological professional, in conjunction with the NPS, would consult with the Texas State Historic Preservation Office to plan a course of action required to determine the National Register of Historic Places eligibility of the discovery and assist Huber in the decision to move construction site and/or enter into a data recovery program.

During site preparation (Figure 5), Huber would cut and store vegetation prior to ground disturbing activities for use in later mulching and native seeding for reclamation/vegetation. The fence around the original 1000-square foot well pad would be taken down and the compressor/meterhouse moved out of the way of activities. The area would be cleared and graded to an approximate size of 290-feet x 200-feet (58,000 square feet or 1.34 acres), The site would then be prepared for spill and storm water containment. A tinhorn cellar and

drainages would be used to pump the gathered liquids to steel tanks for reuse or disposal. Test procedures would include cleaning out the production casing and the production liner. A fence would be placed around the perimeter of the location immediately following pad construction to deter unauthorized persons from entering the operations area during drilling and completion operations.

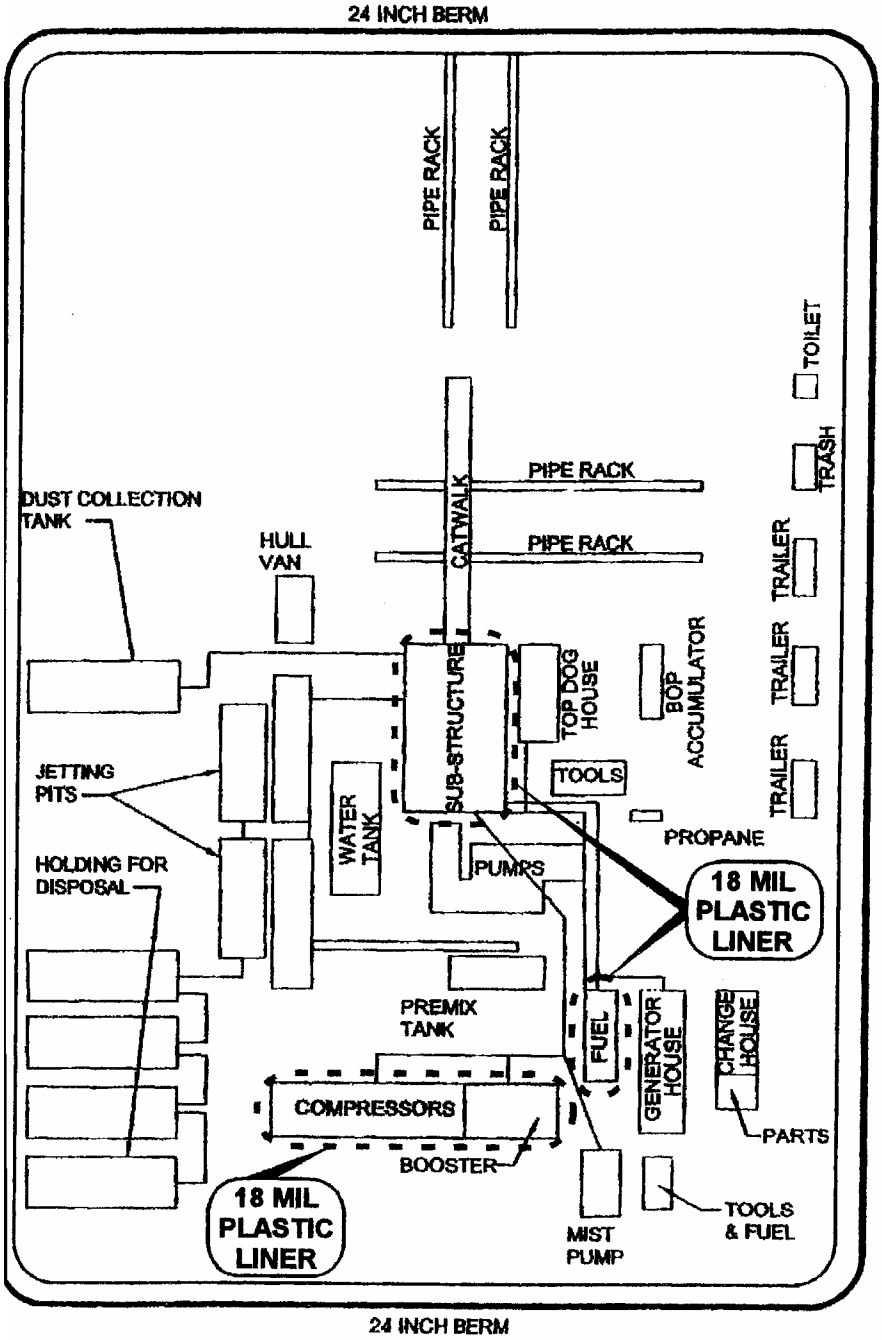


Figure 5. Diagram of equipment layout on the location Shelton A-2X well pad

A rotary drilling rig and air compression equipment would be used for the drilling operations. An estimated 2,500 bbls of fresh water would be required to complete the well. The required freshwater would be trucked to the well site from an available commercial source outside of the park.

Prior to the plug and abandonment of an exhausted producing well, Huber would submit a detailed plugging procedure to the NPS for approval. Once a procedure is approved, Huber may then plug and abandon the exhausted producing well. Upon completion of any plugging operations, Huber would provide the Superintendent with a copy of State of Texas Form W-3A, Plugging record, or its successor form. Well plugging would be performed according to NPS standards at the time of abandonment. If different than provided for in this plan, the NPS shall notify Huber of necessary changes to the plan in accordance with 36 CFR 9.40, Supplementation or Revision of a Plan of Operations.

Description of Access Road Maintenance

Specific to this plan of operation, J. M. Huber Corporation does not intend to construct new access roads to the proposed re-entry well. Only existing roads would be utilized. Enhancement of the existing road leading into the Shelton A-2X would be required to facilitate drilling, completion, and production activity. Road enhancements would be based on park superintendent approval. Lease roads used to access the natural gas wells would be maintained by Huber.

Huber uses and maintains 0.25 of a mile of an access road within the park boundary (Figure 4) as it pertains to the Shelton A-2X well. Lease roads used to access the natural gas wells would continue to be maintained by Huber. Under Alternative B, Huber would maintain its access roads in accordance with NPS Nonfederal Oil and Gas Rights Regulations 36 CFR 9B 9.50 and the Plan of Operations. All maintenance actions would adhere to the NPS's SOP for the Construction and Maintenance of Oil and Gas Access Roads in Lake Meredith National Recreation Area and Alibates Flint Quarries NM.

Description of Reclamation Plan

As soon as possible after completion of approved operations but no later than six (6) months thereafter (unless a longer period of time is authorized by the Regional Director), Huber would initiate reclamation. [36 CFR 9.39(a) (2)]. Reclamation would follow both the drilling and production phases of operations. After the wells are drilled (and if the well is placed in production), the well pad size would be reduced for the production phase.

As soon as all drilling operations cease atat the location, Huber would remove all foreign materials brought in to the park for construction, drilling, and production operations. This includes the impermeable liner and any contamination that might have occurred. The pad and road areas would be re-encountered as near as possible to the original contour. The re-contoured ground would be fertilized and then mulched with native vegetation from the previously existing vegetation. Once fertilizer and mulch have been applied, they would be disked into the soil's surface. During annual monitoring efforts, undesirable species would be controlled either by herbicide application or hand/tool removal. The restored areas would be monitored annually until 70% coverage of targeted species is achieved. Monitoring would cease after 70% of the original vegetation coverage is achieved, or after the site has been approved by the park Superintendent with a lesser coverage.

If the wells are visible, from the lake, a berm adequate in height and width to conceal the wells from the lake surface would be built. Slopes on this berm would be gentle to avoid the

appearance of an abrupt change and, as much as possible, the berm would conform to the surrounding topography. Steep hillsides would be bermed at an angle across the pipeline ditch to prevent water erosion.

Upon completion of production operations, the well would be plugged and all above ground structures, equipment would be removed; and any contaminating substances would be removed or neutralized [36 CFR 9.39 (a) (2)]. The pad and road areas would be re-encountered as near as possible to the original contour. The re-contoured ground would be fertilized and the area ripped to 18 inches and mulched with native seeds from the previously existing vegetation. During annual monitoring efforts, undesirable species would be controlled either by herbicide application or hand/tool removal, as approved by the NPS. Restored areas would be monitored annually until 70% coverage of targeted species is achieved. An annual report would be submitted to the park documenting restoration activities and results. Monitoring would cease after 70% of the original vegetative coverage was achieved or after the site has been approved by the park Superintendent.

In order to reduce the effects to park resources and values, the mitigation measures described in Table 4 would be applied to the oil and gas operations under Alternative B. These are based largely on the recommendations of the park's Final Oil and Gas Management Plan/Environmental Impact Statement (NPS, December 2002) for operating standards and other information. All of these are incorporated into the Plan of Operations. The location of each mitigation measure in Plan of Operations is included for ease of reference.

Table 4. Mitigation Measures

Mitigation Measures	Resources and Values Affected	Plan of Operation Reference
During construction, Huber would take precautions to prevent oil, chemical and other materials from reaching the ground. Precautions would include covering the entire pad with a plastic liner including beneath the pipe racks and other equipment, if necessary.	Soil, surface and groundwater, floodplains, vegetation, wetlands, fish and wildlife, human health and safety	Section V, Table 14, Pg 9
Huber has included a spill response plan (36 CFR 9.41 (f) and 9.45). Huber would report to the park within 24 hours of any release to the ground of 5 gallons or more of oil or contaminating substances, as defined by 36 CFR 9.31 (o). Huber would also report any discharge into a body of water to the EPA.	Soil surface and groundwater, floodplains, vegetation, lands fish and wildlife,	Sec VI, Pg 23
	visitor use and experience, human health and safety	Sec V, Pg 28
Operation areas would be fenced and gated and signed (36 CFR 9.41 (e)) and (36 CFR 9.41 (d))	Soil surface and groundwater, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety.	Sec V, N, Pg 17

Mitigation Measures	Resources and Values Affected	Plan of Operation Reference
The drill pad would be designed to slope to cellar to collect spilled contaminating substances, and drainage ditches would be dug that would route all runoff to the cellar. A portable sump pump would be used to pump the gathered liquids to steel tanks for reuse or disposal.	Soil surface and groundwater, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec V, Table 14, Pg 9
During workover and plugging operations, Huber would take precautions to prevent oil, brine, chemicals and other materials from reaching the ground. Precautions would include use of plastic liners beneath the workover rig, pipe racks and other equipment, as necessary. All fluids and solids returned to the surface from the wellbore would be collected in steel tanks and hauled to a regulated disposal facility outside the park.	Soil, surface and groundwater, floodplains, vegetation, wetlands, fish and wildlife, human health and safety	Sec V, Table 14, Pg 9
Compressors would be equipped with drip rails to catch any lubricant oils that would leak from the machine and prevent spilled or leaked substances from contacting the ground and being transported.	Soil, surface and groundwater, floodplains, vegetation, wetlands, fish and wildlife, human health and safety	Sec V, N #7, Pg 18
If shut-in of the well occurs when drilling or production operations are suspended for 24 hours or more, but less than 30 days, the drill pipe would be run in the hole to approximately 100 feet above the last casing depth. The pipe rams would be closed and locked, and at least one safety valve would be installed in the top of the drill pipe and closed.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec V, O#4, Pg 18
If production operations are suspended for 30 days or more, a backpressure valve would be installed in the tree, and the tree gate valves would be closed and the valve handles removed.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec V, O#4, Pg 18
To prevent accumulation of oil and other materials deemed to be fire hazards, all flammable liquids (i.e. condensate, compressor oil, etc.) would be stored in steel or fiberglass tanks and contained inside the firewall or a berm at the central facility. All materials not necessary for the operation of the well would be removed. Any surplus or emergency materials or supplies that need to be kept at the well site would be stored at the central facility in a locked storage shed or parts box.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec V, N#7, Pg 18

Mitigation Measures	Resources and Values Affected	Plan of Operation Reference
Huber has included a *Contaminating or Toxic Substance Spill Control Plan* in the Plan of Operations to describe actions to be performed in the event of any oil spill, brine spill, release of drilling fluids, blow-out or release of any toxic substance.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec VI, Pg 23
Each well would be plugged and abandoned within one year after cessation of production and a determination by Huber that commercial production cannot be reestablished. As soon as possible, and no later than 6 months after determining that production would not be reestablished, Huber would plug the well and proceed with reclamation (36 CFR 9.39(a) and (b)).	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec V, V.1, L, Pg 14
The well would be plugged in accordance with NPS plugging procedures (as per Federal Onshore Oil and Gas Order #2 and state requirements). Prior to future plug and abandonment of an exhausted producing well, Huber would submit a detailed plugging procedure to the NPS for approval. Once a procedure is approved, Huber may then plug and abandon the exhausted producing well. Upon completion of any plugging operations, Huber would provide the Superintendent with a copy of State of Texas Form W-3, Plugging Record, or its successor	Groundwater	Sec V, V.1, L, Pg 14
Well plugging would be performed according to NPS standards at the time of abandonment. If different than provided for in this plan, the NPS shall notify Huber of necessary changes to the plan according to 36 CFR 9.40, Supplementation Plan Operations.	Groundwater	Sec V, V.1, L, Pg 15
Production from the natural gas well would be monitored remotely on a daily basis utilizing electronic metering equipment at the meter-run facility that sends pertinent flow data to the district office via a cellular signal. Any interruption in flow would alert Huber of a possible leak in the flowline.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec V, V.2, L, Pg 19
Any soil contaminated by oil, brine, chemicals or other substances that would inhibit reestablishment of natural vegetation would be removed from the park and replaced with clean fill.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec VI, C, Pg 26

Mitigation Measures	Resources and Values Affected	Plan of Operation Reference
After reseeding, the area would be monitored to assess revegetation progress. Revegetation would be considered successful when plant coverage is uniform over the site and is at least 70% of the plant coverage in adjacent undisturbed areas. If successful revegetation does not occur after a period of two years, Huber would take corrective action acceptable to the NPS to ensure the reclamation standards of 36 CFR 9.39 are achieved.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec VII, B, Pg 33
Prior to any workover or plugging operations, Huber would notify the park Superintendent in writing and would provide the park Superintendent with verbal notification within at least 48 hours prior to the start of activities.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec V, V.1, Pg 8
Fresh water needed for operations, including workovers and plugging operations, would be delivered by truck and obtained from sources outside the park (36 CFR 9.35)	Municipal water supply	Sec V, V.1, Pg 13
Huber would paint well head and associated equipment and support buildings a sand color during the next painting cycle.	Visual quality	Sec V, V.2, A, Pg 19
Huber would make all provisions to limit construction in an area within 300' where caprock is exposed at the surface. In order to prevent any entry beyond this point, a barricade would be set up to prevent vehicles and personnel from entering the area, eliminating impacts to the Alibates Dolomite Caprock during drilling and operations. The location of the well pad was oriented so that it caused the least intrusion within the 300 foot setback SMA of the Dolomite Caprock	Geologic resources	Sec V, V.1, Pg 8
For all existing and proposed operations below the estimated flood elevation of 2972 feet, Huber would submit emergency flood procedures to the NPS for approval in order to minimize the risk to structure, the environment and human health and safety. Those preventative measures (e.g. erosion control structures, facility modification needs such as secondary containment and spill-proofing equipment for conditions of inundation, and maintenance procedures for equipment, roads and well pads) identified in developing the emergency flood procedures would be implemented as soon as possible.	Soil, water resources, floodplains, vegetation, wetlands, fish and wildlife, human health and safety	Sec V, V.1, N, Pg 18, #10

Mitigation Measures	Resources and Values Affected	Plan of Operation Reference
Lease roads used to access the natural gas wells would be maintained byHuber in accordance with the Standard Operating Procedures for the Construction and Maintenance of Oil and Gas Access Roads in Lake Meredith NRA and Alibates Flint Quarries NM.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec V, V.1, N, Pg 18, #10
Requirements include the following: All vehicles used by the operator, contractors and other parties associated with the maintenance and operation of oil and gas access roads shall not travel outside of the road prism.		Sec V, V.1, N, Pg 18, #10
• Where multiple roads lead to the same well pad, only one road shall remain open to vehicular traffic. Nonessential roads must be barricade, permanently closed, removed, and the area reclaimed. • Roads that are used by oil and gas operators that do not provide access to Lake Meredith or visitor facilities would be gated and locked. • Operators would be required to complete necessary preventative and corrective road maintenance for the duration of the oil and gas operation. Maintenance activities may include, but are not limited to; grading, gravel surfacing/resurfacing; constructing adequate drainage structures; cleaning ditches, culverts, and other drainage structures; dust abatement; reseeding side slopes; noxious weed control; and other requirements as directed by the NPS. • Roads would be inspected by a NPS representative at least twice annually and after any large storms that have the potential to cause severe resource damage. Road maintenance would be completed by the oil and gas operator or the road may be subject to closure. • As deemed necessary by a NPS representative, operators would post appropriate warning signs to alert park visitors to avoid hazard areas and to adhere to appropriate speed limits on the roads.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec V, V.2, C, Pg 20

Mitigation Measures	Resources and Values Affected	Plan of Operation Reference
• Where multiple roads lead to the same well pad, only one road shall remain open to vehicular traffic. Nonessential roads must be barricade, permanently closed, removed, and the area reclaimed. NPS-approved pesticides/herbicides must be used to control vegetation where mechanical or physical methods are ineffective. Pesticides/herbicides must be applied when visitors are not in the vicinity. Signs must be posted in areas that have been treated to warn park visitors of the health and safety risk. Apply pesticides/herbicides according to label directions and do not apply during windy conditions. • All disturbed areas, including deep ruts, would be recontoured.		Sec V, V.2, C, Pg 20
The NPS would retain the financial surety until the affected operation areas are restored to 70% cover by native vegetation.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec VII, B, Pg 33
Upon completion of construction and/or production activities, operator shall: • Barricade access road • Remove all drainage structures (i.e., culverts), signs and road base materials such as gravel • Restore topography of disturbed area to approximately pre-existing contours. • Reclaim water courses that have been altered • Revegetate disturbed area with native vegetation • Monitor the reclamation efforts to ensure that revegetation efforts are successful and that potential run-off and erosion problems have been (remediated).	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec VII, A&B, Pg 32-33

Mitigation Measures	Resources and Values Affected	Plan of Operation Reference
Ground disturbance, previously undisturbed areas, is proposed by Huber for the construction of the well pad. "Ground disturbing" activities involve any excavation below 2 inches of ground surface. Huber would notify the park Superintendent prior to proceeding with any ground disturbing activity. Ground disturbance activities with the potential to encounter significant cultural or paleontologic resources would require Huber to perform resource surveys (already completed) and arrange for qualified specialists to monitor the affected ground disturbing work to identify the presence of buried cultural or paleontologic resources. The Standard Operation Procedure (SOP) for *Locating and Protecting Paleontologic Resources* prepared by NPS Paleontologists Vincent Santucci and H. Greg McDonald, November 2000, shall be followed.	Buried cultural and paleontologic resources	Sec V, V.1, Pg 8
Due to a re-entry well operation, Huber would replace the mud motor with an air motor to drill the curves and windows. This method would drastically reduce mud volumes/ingredients and truck traffic for bringing and removing mud, as well as reducing the chance of spillage.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Sec V, V.1, D, Pg 13
Should ground disturbing activities unearth previously undiscovered archeological or paleontologic resources, work in the immediate area of any discovery would cease, and Huber, or its contractors, shall notify the park Superintendent. In the event of an inadvertent discovery of cultural resources, the professional archeologist monitoring the project for Huber, in conjunction with the NPS, would consult with the Texas State Historic Preservation Office to plan a course of action required to determine the National Register of Historic Places eligibility of the discovery and assist Huber in the decision to re-route around the site or enter into a data recovery program without constructing the well pad.	Buried cultural and paleontologic resources	Sec V, V.1, Pg 8
Huber would educate all employees and contractors working at the PARK about the need for and methods of minimizing disturbances to the land, natural resources and wildlife.	Buried cultural and paleontologic resources	Sec V, V.1, Pg 8

Mitigation Measures	Resources and Values Affected	Plan of Operation Reference
Huber would be held fully accountable for its contractor's or subcontractor's compliance with the requirements of the approved Plan of Operations. Huber would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting paleontologic resources or artifacts, or for intentionally damaging archeological sites or historic properties. Contractors and subcontractors would also be instructed on procedures to follow in case previously unknown archeological resources are uncovered during constructions.	Buried cultural and paleontologic resources	Sec V, V.1, Pg 8
A fresh water spray system would be used to minimize dust.	Air Quality	Sec V, V.1, D, Pg 13, #3
A closed loop "zero discharge system" for drilling the well would be used. No earthen pits would be utilized. All mud, drill cuttings, sewage and produced water would be collected in steel tanks for re-use or hauled by sealed dump trucks for disposal at state-approved disposal facilities outside of the park boundaries.	Air Quality	Sec V, V.1, D, Pg 13, #3
Care should be taken to ensure that no soil from construction activities drift into any rare and/or imperiled plant community. A fence would be placed three or more feet from the drop-off into this community to keep heavy equipment out of the imperiled area.	Vegetation	Sec X, Pg 48 - Vegetation
Huber would continually monitor all areas of operations for erosion problems and would promptly implement erosion control structures satisfactorily to the NPS where necessary. Erosion control would apply to all operations (well pad, as well as roads).	Soil, surface and ground water, floodplains	Sec V, V.2, Pg 22
Surface reclamation would be performed according to NPS standards at the time of abandonment. If different than provided for in this plan, the NPS shall notify Huber of necessary changes to the plan in accordance with 36 CFR 9.40 Supplementation or Revision of a Plan of Operations.	Soil, surface and ground water, floodplains	Sec VII, B, Pg 33
An affidavit by Huber to operate and comply in compliance with all applicable Federal, State and local laws and regulations.	Soil surface and ground water, floodplains, vegetation, wetlands, fish and wildlife, visitor use and experience, human health and safety	Appendix H – Plan of Operations

Mitigation Measures	Resources and Values Affected	Plan of Operation Reference
In the future, should the need for pipeline repair arise, Huber would submit the repair procedures, site-specific description of the affected environment, and any reclamation actions to the NPS for approval, as needed. In addition, if maintenance, repair or renovation operations, even in previously disturbed areas, are expected to adversely impact more than 0.1 acres of a wetland, then a Wetland Statement of Findings (SOF) would need to be prepared. Even though the impacts may be temporary, the primary issues are the magnitude of the impact, adequate compensation for the impacts and restoration of the wetland. These issues would be defined in a SOF and the necessary reclamation requirements incorporated into the Plan of Operations. Cultural and plaeontological clearances and monitoring may also be necessary. Huber would obtain NPS approval prior to initiating repair work of this nature.	Wetlands, paleontology and cultural resources	Sec V, V.2, Pg 19-20

2.3 Alternatives Considered but Dismissed From Further Analysis

NPS Acquisition of the Mineral Rights that are Part of Huber's Proposal

In the event that a proposed operation cannot be sufficiently modified to prevent the impairment of park resources and values, the NPS may seek to extinguish the associated mineral right through acquisition, subject to the appropriation of funds from Congress. With respect to the Huber proposed Plan of Operations, mitigation measures were identified and applied, which substantially reduced the potential for adverse impacts to park resources and values. As a result, the acquisition of mineral rights was dismissed from further consideration in this EA.

2.4 NPS Environmentally Preferred Alternative

Section 101 of NEPA states that "…it is the continuing responsibility of the Federal Government to…(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings; (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice; (5) achieve a balance between population and resource use which would permit high standards of living and a wide sharing of life's amenities; and (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources" [42 U.S.C. §4321 *et seq.* §101 (b)].

Under Alternative A, No Action,Huber would continue to operate and maintain the existing well and its associated pipelines and access roads; and would not re-enter and drill a lateral sidetrack of the Shelton A-2X gas well. Because there would be no new impacts from these

activities, and the current existing operations would be under a ratified Plan of Operations, Alternative A would provide the greatest protection of area and park resources and values. Alternative A meets five of the six criteria (1 through 4, and 6) and is therefore the environmentally preferred alternative.

Despite the added assurance that the oil and Gas Management Plan/EIS would provide specific mitigation measures to protect park resources and values, Huber's Proposal, Alternative B, would have greater effects on the environment because of the new operations proposed, including well pad expansion and re-entry of the existing well. Alternative B meets four of the six criteria (1, 2, 4, and 5). Although mitigating measures would reduce effects to park resources and values, there would still be effects, and therefore this alternative would not meet the Park Service's environmental policy goals as well as the No Action Alternative.

2.5 NPS Preferred Alternative

The environmentally preferable alternative is Alternative A because it surpasses Alternative B in realizing the full range of national environmental policy goals as stated in §101 of NEPA. However, because the enabling legislation of the park respects the exercise of nonfederal oil and gas rights, the environmentally preferred alternative was not selected as the NPS preferred alternative. The NPS preferred alternative is Alternative B, Proposed Action. The NPS believes this alternative would fulfill its mandates and direction, giving due consideration to environmental, economic, technical, and other factors. Table 5 outlines both alternatives and how well each alternative meets the objectives of this project. The actions required for this project and to what extent park resources are impacted are summarized in Tables 6 and 7.

Table 5. Extent that each Alternative Meets Objectives

OBJECTIVES	DOES ALTERNATIVE A, NO ACTION, MEET OBJECTIVE?	DOES ALTERNATIVE B, PLAN OF OPERATIONS, AS SUBMITTED, MEET OBJECTIVE?
Avoid or minimize impacts on park resources and values, visitor use and experience, and human health and safety.	**Yes (Meets Objective)** Under Alternative A, Huber would not re-enter and drill a lateral side track of the Shelton A-2X gas well but would continue to operate the existing well and associated pipelines and access roads under its ratified Plan of Operations. These existing operations are not "grandfathered" from the 9B regulations. Therefore, mitigation measures would be applied and impacts would be avoided or minimized to acceptable levels. However, operations and maintenance would not meet all of the requirements specified in the Final Oil and Gas Management Plan (April 2002) for maintenance of access roads, operations occurring in floodplains, and reclamation requirements.	**Yes (Meets Objective)** Under Alternative B, Huber would re-enter and drill a lateral side track of the Shelton A-2X gas well and continue to operate associated pipelines and access roads. Mitigation measures would avoid or minimize impacts and operations and maintenance would meet all of the requirements specified in the Final Oil and Gas Management Plan (April 2002).

OBJECTIVES	DOES ALTERNATIVE A, NO ACTION, MEET OBJECTIVE?	DOES ALTERNATIVE B, PLAN OF OPERATIONS, AS SUBMITTED, MEET OBJECTIVE?
Protect and prevent impairment of park resources and values.	**Yes (Meets Objective)** Under Alternative A, Huber would not re-enter and drill a lateral side track of the Shelton A-2X gas well, but would continue to operate its existing well and associated pipelines and access roads under its Plan of Operations. Under Alternative A, adherence to mitigation measures would result in no impairment of park resources and values.	**Yes (Meets Objective)** Under Alternative B, Huber would re-enter and drill a lateral side track of the Shelton A-2X gas well and continue to operate associated pipelines and access roads. Under Alternative B, adherence to mitigation measures would result in no impairment of park resources and values.
Provide Huber, as a holder of nonfederal oil and gas mineral interests, reasonable access for exploration and development.	**No (Does not meet Objective)**[1] Under Alternative A, this objective would only partially be met. Huber would continue to operate is existing well and associated pipelines and access roads; however, the well would not be permitted to be re-enter and drill a lateral side track of the Shelton A-2X gas well, precluding Huber reasonable access to develop its nonfederal oil and gas mineral interests.	**Yes (Meets Objective)** Under Alternative B, Huber would re-enter and drill a lateral side track of the Shelton A-2X gas well and continue to operate associated pipelines and access roads. Under Alternative B, with the application of mitigation measures would meet other objectives for protecting park resources.

[1]The No Action Alternative is not required to fully meet all of the planning objectives.

Table 6. Comparative Summary of Alternatives

ACTIONS	ALTERNATIVE A NO ACTION	ALTERNATIVE B PROPOSED ACTION
Access	Additional use of existing access roads would not be required because the Shelton A-2X well would not be re-entered.	Additional use of the access road would be required to conduct re-entry drilling operations at the Shelton A-2X well.
Well Pad	A new well pad would not be installed.	A new well pad would be installed around the Shelton A-2X well. A berm would be constructed around the well pad perimeter and all equipment, tanks and machinery would be placed on the pad. The well pad would be constructed so as to limit surface disturbance (1.34 acres), and would be removed as soon as re-entering is complete and the well placed back in production
Production Facility	The existing production facility would remain as permitted under Huber's current approved Plan of Operations.	No new production facility would be constructed, but a larger compressor may replace the existing compressor.

ACTIONS	ALTERNATIVE A NO ACTION	ALTERNATIVE B PROPOSED ACTION
Flowline	The existing flowline for the Shelton A-2X well would remain as permitted under Huber's current approved Plan of Operations.	No change to flowline.
Reclamation Plan	No additional reclamation would be needed because the proposed re-entering into the Shelton A-2X well would not be re-entered.	Reclamation of temporary expansion area would involve removal of pad material, removal of the liner, and natural revegetation so as to avoid surface disturbance. Eventual well plugging and reclamation of disturbed areas associated with the Proposed Action would follow the specifications outlined in their current Plan of Operations. Huber would remove all foreign materials from the park. All surface disturbances would be re-contoured as near as possible to the original contour. Disturbed areas would be revegetated with native species, and would use methods to minimize ground disturbance during reseeding. Hand tools or herbicides would control undesirable species. The restored area would be monitored until 70 percent native vegetation cover was achieved, as specified in the Final Oil and Gas Management Plan (NPS, 2002).

Table 7. Comparative Summary of Impacts

IMPACT RESOURCE	ALTERNATIVE A NO ACTION	ALTERNATIVE B PROPOSED ACTION
Soil recources	Under Alternative A, No Action, the Shelton A-2X well would not be re-entered, resulting in no new impacts on geology or soils. However, existing impacts would continue from Huber's operation of the existing gas well and the associated flowline, compressor, and access roads under a current approved Plan of Operations. With the mitigation measures included in the current Plan of Operations, these operations would result in localized, short- to long-term, negligible to minor, adverse impacts on soil resources for the duration of operations. Cumulative impacts to soils and geology would be localized, short- to long-term, minor to moderate, and adverse.	Under Alternative B, Proposed Action, Huber would conduct re-entry drilling operations for the Shelton A-2X well. Impacts from continuing operation of existing gas well and the associated flowline, compressor, and access roads would be similar to those described under Alternative A, with localized, short- to long-term, negligible to minor direct and indirect adverse impacts on soil resources. Impacts to geology and soils from construction activity associated with re-entering the Shelton A-2X well would result in localized, short-term, negligible to minor, adverse impacts. Cumulative impacts to soils and geology would be localized, short- to long-term, minor to moderate, and adverse.

IMPACT RESOURCE	ALTERNATIVE A NO ACTION	ALTERNATIVE B PROPOSED ACTION
Vegetation	Under Alternative A, No Action, the Shelton A-2X well would not re-entered, resulting in no new impacts on vegetation. However, the continuing operation and maintenance of the other wells and associated access roads, compressor and flowline under Huber's Plan of Operations would result in the continuing loss of vegetation in these areas. The continued operation and maintenance would result in localized, negligible to minor, direct and indirect, adverse impacts on vegetation for the duration of the existing operations (up to 10 to 25 years), until the wells are plugged and the pad, flowline, and access roads are reclaimed. Cumulative impacts to vegetation would be localized, short- to long-term, negligible to minor, direct and indirect, and adverse.	Under Alternative B, Proposed Action, the re-entering of the Shelton A-2X well and associated activities would result in localized, short- and long-term, minor to moderate adverse impacts. Cumulative impacts would be similar to Alternative A, and would result in localized, minor, direct and indirect, adverse impacts on vegetation.
Wildlife	Under Alternative A, No Action, the Shelton A-2X well would not be re-entered, resulting in no new impacts on wildlife. However, the continuing operation and maintenance of the existing natural gas wells and associated features (including access roads, well pad, compressor, and flowline) would result in the loss of minimal wildlife habitat for up to 10 to 25 years, or longer, with localized, short- to long-term, negligible to minor, adverse impacts on wildlife. Vehicle access, construction activities, and leaks and spills could injure or kill some individuals, but impacts to species would be very limited. Plugging and reclamation according to the existing approved Plan of Operations would reestablish wildlife habitat. Cumulative impacts to wildlife	Under Alternative B, Proposed Action, Huber would continue operation of existing wells and their associated access roads, compressor, and flowline, and in addition would directionally drill the Shelton A-2X gas well. Impacts would result in the loss of wildlife habitat and impacts similar to Alternative A, with additional temporary adverse effects from the relatively small, temporary well pad expansion area that would be disturbed during construction. Impacts would be localized, negligible to minor and adverse on wildlife for the duration of operations. Cumulative impacts to wildlife would be similar to Alternative A, and would be localized, short- to long-term, direct to indirect, negligible to minor, and adverse.
Visitor Use and Experience	Under Alternative A, No Action, the Shelton A-2X well would not be re-entered, resulting in no new impacts on visitor use and experience. Continued operations under the current Plan of Operations with its stipulations, and mitigation measures, would result in localized, short- to long-term, and negligible to minor adverse impacts on visitor use and experience. Cumulative impacts to visitor use and experience would be short- to long-term, negligible to minor, and adverse.	Under Alternative B, Proposed Action, the Shelton A-2X well would be re-entered resulting in the short-term loss of natural scenery. These activities would result in localized, short-term, negligible to moderate, adverse impacts on visitor use and experience. Cumulative impacts would be similar as those discussed under Alternative A, No Action, with an increase of surface disturbance and added protection of mitigation measures, resulting in short- to long-term negligible to minor, adverse impacts on visitor use and experience

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3.0. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Methodology
This section describes direct, indirect, and cumulative impacts under the two alternatives. Impacts are described in terms of context, duration, and intensity. The context or extent of the impact may be **localized** (affecting the project area) or **widespread (**affecting other areas of the park and/or the project area). The duration of impacts could be **short-term**, ranging from days to three years in duration, or **long-term**, extending up to 20 years or longer. Generally, short-term impacts would apply to construction activities and long-term impacts would apply to roads, production operations, and pipelines. The intensity and type of impact is described as negligible, minor, moderate, or major, and as beneficial or adverse. Where the intensity of an impact can be described quantitatively, the numerical data are presented. However, most impact analyses are qualitative.

Cumulative Impacts
The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq*.), require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). The following descriptions of park development and operations, and nonfederal oil and gas development in the park provide the basis for analyzing cumulative impacts in this chapter:

Park Development and Operations
Currently, there are two main information stations located within the park: The District Ranger Station and the Alibates Contact Station. In addition to the stations there are 16 day and overnight visitor use areas, an established hiking trail (Alibates Trail), two off-road vehicle use areas (Big Blue Creek and the Rosita Area), Sanford Dam and the lake. Sanford dam is a primary visitor attraction within Lake Meredith National Recreation Area. The park maintains 53 miles of dirt and paved roadways, occupying an estimated 193 acres (based on a typical 30-foot wide road corridor). Due to the isolated nature of the 16 discrete use areas, visitors must navigate their way over a road and highway system consisting of farm-to-farm market roads, county roads, and State and U.S. Highways.

Park activities that could contribute to impacts on park resources and values include prescribed fires, routine maintenance of the park roads, park and visitor vehicle use, and public recreational activities such as motor boating, and burning of campfires.

Oil and Gas Developments
Oil and gas exploration and production have been actively pursued at Lake Meredith National Recreation Area and Alibates Flint Quarries since the late 1920's. Currently, there are 173 active nonfederal oil and gas operations within Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument, evidence of 15 abandoned operation sites, 40 miles of active oil field access roads, 104 miles of abandoned roads, and 39 miles of existing transpark and gas pipelines. The existing roads are used by 17 nonfederal oil and gas operators to access their operations located throughout the park, by park staff to conduct routine park operations, and by park visitors.

Impairment
For each Park resource or value evaluated, an assessment of potential impairment is made. Impairment is a major, adverse impact to a resource or value whose conservation is:

1) necessary to fulfill a specific purpose identified in the establishing legislation;

2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or

3) identified as a goal in the park's Oil and Gas Management Plan or other relevant NPS planning documents.

The impact analyses are organized by impact topic. Under each impact topic, the affected environment is described, impacts under each alternative are evaluated, a cumulative impact analysis is provided (analysis area is park wide), and a conclusion is stated. The conclusion section summarizes key findings, including whether or not an impairment of resources or values is likely or would occur. Impairment analyses are only performed for park resources and values.

3.1 Impacts on Geology and Soils

Methodology
To analyze the impacts on geology and soils, all available information on geological resources in the park was compiled including: research, previous plan of operations and the Park's approved Oil and Gas Management Plan (OGMP).

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: an action that could result in a change to a natural physical resource, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor: an action that could result in a change to a natural physical resource, but the change would be small and of little consequence.

Moderate: an action that could result in a change to a natural physical resource; the change would be measurable and of consequence.

Major: an action that would result in a noticeable change to a natural physical resource; the change would be measurable and result in a severely adverse or major beneficial impact.

Affected Environment
Lake Meredith National Recreation Area is located near the geographic center of the Texas Panhandle, about 40 miles northeast of Amarillo and 15 miles west of Borger. Its key feature is the Canadian River that flows eastward across the Texas Panhandle. The Canadian River carved a narrow steep-walled canyon that is 200 to 300 feet deep and up to 2 miles wide. Between this canyon and the caprock, many tributary streams have caused a rough and broken topography known as the Canadian River Breaks. The construction of Sanford Dam between these "breaks" created Lake Meredith.

Over 67% of the land base of the park is comprised of slopes greater than or equal to 12%. Maintenance of drill pads, access roads, and flowlines can be difficult on steep slopes, and

without adequate erosion control measures, would result in landslides, soil erosion, and increased sedimentation in Lake Meredith.

Surface Geology

Geologic research of the well site was conducted by Llano-Permian Environmental (LPE) in January 2005 to identify the geologic units located at the well pad in preparation of this Plan of Operations. The surface geology in the area of the Shelton A-2X has been distinguished as the Permian Quartermaster Formation. The general area surrounding the existing pad-site exhibits some outcrops of the Alibates Dolomite with the silica-formed chert lenses in rare isolated locations. Such a location exists to the west of this well and has been appropriately addressed in the Cultural Resources section of this document.

Surface soils in the area of the park are represented by several different soil series as described by the USDA Natural Resource Conservation Service (formerly USDA Soil Conservation Service). The representative profile is a reddish brown, very fine sandy to clay loam to an approximate depth of 50 inches. This soil is well drained and is characterized by rapid permeability. The existing natural gas well is predominantly located in an area of slight to moderate erodible soils.

Soils at the well site are classified primarily as either Dumas Series within the Dumas-Dalhart association or Tascosa Series within the Mobeetie-Tascosa-Pastura association as described by the Natural Resource Conservation Service. This area encompasses not only the proposed site of operations but also the directly correlated surrounding surface area. These two major soil series are outlined below:

Dumas Series. The Dumas Series consists of deep, loamy, nearly level to gently sloping soils on the uplands. These soils are moderately permeable and have high available water capacity. They are well drained and runoff is slow to medium.

Tascosa Series. The Tascosa Series consist of deep, calcareous, gravelly loam soils formed in stratified outwash beds of quartz gravel and sand. They are characterized as being deep, well-drained, gravelly soils formed in beds of water worn gravel and sand. Because these soils are well-drained and their run-off is rapid, they have low available water capacity in the upper part of the profile.

The identifiable soil unit that is site specific to the ground surface of the proposed operation of well re-entry is the *Dumas and Tascosa soils, rolling (DtC)*. These gently to undulating or rolling soils are on smooth knolls and ridges 10 to 20 feet high. Dumas soils occupy the lower parts of the knolls and ridges and have slopes of 2 to 5 percent. Tascosa soils have slopes of 5 to 10 percent and are on the smooth, convex crests of the knolls and ridges. The Dumas loam makes up 60 to 80 percent of this undifferentiated group while the Tascosa gravelly loam makes up 15 to 30 percent; Ulysses, Dalhart, and Manzano soils, in narrow valleys between the ridges consists of the remaining 5 to 15 percent. The Dumas soil is deep and has high available water capacity whereas the Tascosa soil is shallow to caliche and has low available water capacity.

The lack of proper maintenance for oilfield access roads has resulted in severe erosion problems in some areas of the park. Most of the oilfield access roads are unsurfaced, are not adequately sloped, and lack drainage structures, such as culverts and ditches. During rainstorms, water flows down the road and erodes the surface of the road. In some areas, the overland flow of water has resulted in the formation of gullies on the roads and down slopes from the roadways. However, the point of access to the park for this well site and its

corresponding access road has been well maintained and rests upon a negligent slope gradient thereby neglecting to contribute to the overall erosion problem.

There are no filled chimneys or other unique geologic features within or near the natural gas well proposed for re-entry.

Impacts of Alternative A, No Action, On Geology and Soils
Under Alternative A, No Action, Huber would not re-enter and drill a lateral sidetrack of the Shelton A-2X gas well, resulting in no new impacts on soil resources. However, Huber would continue operating and maintaining the Shelton A-2X gas well, pipelines and access roads within the park, resulting in some continued impacts on geology and soils.

Existing impacts on soil resources in the analysis area would continue from the operation of the existing gas well and their associated pipelines and access roads under their ratified Plan of Operations, resulting in localized, short to long-term, negligible to minor, adverse impacts on geology and soils within the park boundary. Park staff, visitors, as well as other oil and gas related vehicles would continue to use the existing roads. Access roads pertinent to Huber's operations would continue to be maintained by the company. Huber's Plan of Operations includes a spill control plan, a reclamation plan and an affidavit by Huber to operate in compliance with all applicable Federal, State, and local laws and regulations.

There is the potential for hydrocarbons, produced waters, or treatment chemicals to be released during production or transport and contaminate soils. Impacts from spills could be localized, with minor to major, short-term adverse impacts on geology and soils; however, with the mitigation measures, cathodic protection, and prompt response in the event of a spill, the intensity of impacts would be reduced to negligible to minor, localized, short-term adverse impacts.

During reclamation operations, well plugging, shutting-down, and abandoning or removing production equipment and flowlines, and the use of heavy equipment and vehicles to recontour sites could cause soil erosion, additional disturbances, and contaminate soils. However, mitigation would result in localized, short-term, and negligible to minor, adverse impacts on soils around park or oil and gas developments.

Cumulative Impacts
Under Alternative A, No Action, cumulative impacts on geology and soils throughout the park would result from the continuing operation of 173 nonfederal oil and gas operations within the park, park developments, future drilling and production of wells and associated access roads projected in the park's reasonably foreseeable development scenario. As some oil and gas operations are developed in the park, others would be plugged, abandoned, and reclaimed; therefore, impacts would be distributed over time.

Leaks and spills from oil and gas operations in the park could result in localized, negligible to moderate, impacts on geology and soils. Park, commercial and recreational vehicle use along the access roads and off road vehicle use within park would continue to compact and rut soils. Cumulative impacts on geology and soils throughout the park are expected to be localized near developments, with short to long-term, negligible to minor, adverse impacts.

Over time, protection provided to geologic resources in the park under the Oil and Gas Management Plan is expected to improve the condition of soil resources. The cumulative effects of existing wells and roads, along with other actions that could affect soils and geology,

would result in localized, short to long-term, negligible to minor adverse impacts to soil resources.

Conclusion
Under Alternative A, No Action, Huber would not re-enter and drill a lateral sidetrack of the Shelton A-2X gas well, resulting in no new impacts on soil resources. The continuing operation of the natural gas well with associated use and maintenance of access roads, well pad, compressors, and flowlines, could compact and rut soils, potentially increase surface run-off and erosion, and reduce soil permeability, resulting in localized, short to long-term, negligible to minor, adverse impacts on geology and solids resources for the duration of operations.

Existing uses, including park, commercial and recreational vehicle access the various access roads, continuing operation of other operations, would result in localized, negligible to moderate, adverse impacts on geology and soils within the area. Cumulative impacts from existing and future oil and gas operations in and adjacent to the park, park developments and operations, and visitor uses are expected to result in short- to long-term negligible to minor, adverse impacts, localized near developments throughout the park. However, the event hydrocarbons, produced waters, or treatment chemicals are released during production or transport, impacts could be short- to long-term, localized, ranging from negligible to moderate adverse impacts. No impairment to geologic resources would result from implementations of this alternative.

Impacts of Alternative B, Proposed Action, on Geology and Soils
Under Alternative B, Proposed Action, Huber would re-enter and drill a lateral sidetrack of the Shelton A-2X gas well, resulting in short-term disturbance on 1.34 acres to expand the wellpad. Upon completion of the re-entry, the well pad would be reduced to approximately a 1,000-square foot area. Existing impacts on geology and soils within the analysis area would be similar to Alternative A, No Action, with localized, long-term, negligible to minor, adverse impacts associated with vehicle use and continuing operation and maintenance of pipelines, access roads, and the Shelton A-2X gas well.

Construction of the well/production pad would require leveling of 1.34 acres of land, resulting in direct adverse impacts with localized, short-to long-term loss of soil productivity, and negligible to moderate impacts on geology and soils. Mitigation measures to protect soils during the re-entering and production phase of operations would include constructing a sloped well cellar and utilizing a polyethylene liner under equipment to contain any spills. These measures are intended to contain any spilled substances and prevent the downward percolation into native soil underlying the pad.

If the well is placed in production, the expanded well pad would be reduced and the well reconnected to existing pipelines. The continued use of the site for production operations would result in localized, long-term, minor to moderate, adverse impacts on geology and soils. Well pad reduction would involve removing imported material, re-contouring the site to natural conditions, and re-establishing native vegetation to meet 70% cover.

There is the potential for hydrocarbons, produced waters, or treatment chemicals to be released during production or transport and contaminate soils. Impacts from spills could be localized, with minor to moderate, short-term adverse impacts on geology and soils; however, with the mitigation measures, cathodic protection, and prompt response in the event of a spill, the intensity of impacts would be reduced to negligible to minor, localized, short-term adverse impacts.

During reclamation operations, well plugging, shutting-down, and abandoning or removing production equipment and flowlines, and the use of heavy equipment and vehicles to re-contour sites would cause soil erosion, and additional disturbances, and contaminate soils. However, mitigation would result in localized, short-term, negligible to minor, adverse impacts on soils

Cumulative Impacts
Under Alternative B, Proposed Action, cumulative impacts on geology and soils throughout the park would be similar to those described under No Action, with an increase of surface disturbance and added protection to mitigation measures, overall impacts from existing and future oil and gas operations in the park, park developments and operations, would result in localized, short to long-term, negligible to moderate adverse impacts near developments.

Conclusion
Under Alternative B, Proposed Action, Huber would re-enter and drill a lateral sidetrack of the Shelton A-2X gas well, resulting in the short-term disturbance to geology and soils on 1.34 acres and the long term disturbance to the 1,000-square foot production area.

Huber's adhering to mitigation measures concerning the NPS's SOP for the Construction and Maintenance of Access Roads and revegetating criteria with native species during reclamation would minimize soil erosion. Utilizing the mitigations found in Table 4 during construction, drilling, and producing the well, would result in localized, short- to long-term, and negligible to moderate direct and indirect adverse impacts on soil resources.

Cumulative impacts on geologic resources throughout the park would be localized, short to long-term, negligible to minor and adverse around park and oil and gas developments. No impairment to soil resources would result from implementation of this alternative.

3.2 Impacts on Vegetation

Methodology
To analyze the impacts on vegetation, all available information on vegetation in the park was complied including park-specific research, other park planning documents, the park's approved Oil and Gas Management Plan, personal observations, consultation with other permitting agencies, and a vegetation survey.

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: an action that could result in a change to a population or individuals of a species or a resource, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor: an action that could result in a change to a population or individuals of a species or a resource. The change would be small and of little consequence.

Moderate: an action that could result in a change to a population or individuals of a species or a resource. The change would be measurable and of consequence to the species or resource.

Major: an action that would have a noticeable change to a population or individuals of a species or a resource. The change would be measurable

and result in a severely adverse or major beneficial impact, or possible permanent consequence, upon the species or resource.

Affected Environment

The following is a description of the major vegetation types within the park and within the proposed project well pad area. A biological survey was conducted in January and February of 2005. The survey focused specifically on the area where construction would occur and in the immediate area surrounding the proposed well re-entry location.

The vegetation of the park is relatively sparse, due to soil and climatic conditions. Constant winds and high temperatures contribute to high evaporative rates, which reduce the effectiveness of precipitation for plant growth, which consists primarily of grasses and drought-tolerant shrubs. The vegetation in the well pad expansion area (construction site) consists primarily of mesquite shrub grassland with ragweed (*Ambrosia psilostachya*) as the most common herbaceous plant and yucca (*Yucca angustifolia*) and mesquite (*Prosopis glandulosa*) as the most common shrubs. Grasses are abundant, and include a couple of dozen different species. The most common forbs and grasses found in and around the well pad expansion area is blue grama (*Bouteloua gracilis*), sand dropseed (*Sporobolus cryptandra*) , annual broomweed (*Amphiachyris dracunculoides*), sawleaf daisy (*Prinonopsis ciliate*), three awn grass (*Aristida purpurea*), little bluestem (*Schizachyrium scoparium*), buffalo grass (*Buchloe dactyloides*), sideoats grama (*Bouteloua curtipendula*), hairy grama (*Bouteloua hirsuta*), and silverleaf nightshade (*Solanum eleagnifolium*).

No endangered or threatened plants exist within the boundaries of the parks. There is one state-listed rare vascular plant known in Potter County, but it is not known or expected at the well site. No prime or unique farmlands or endangered or threatened plants exist within the boundaries of the parks.

In 1999, land cover in the park was classified by NPS, with involvement by the US Geological Survey, National Wetlands Research Center, Lafayette, Louisiana, into 11 cover types that include major vegetation types, water, bare land, and urban (developed) areas. The land cover classification used the park boundary map that was derived from rudimentary survey methods of the 1940's and early 1950's. As shown in Table 8, thirteen cover types have been classified, which include major vegetation types, water, bare land, and urban (developed) areas.

Table 8. Land Classification Type and Percentage at Lake Meredith National Recreational Area

Land Classification Type	Acres*	Percentage of Park
Water	10,547.86	25.39
Yucca Grassland	4,382.83	10.55
Mesquite Grassland	2,820.79	6.79
Mixed Grassland	5,263.54	12.67
Vegetated Cliffs	8,674.26	20.88
Riverine Grassland	2,056.40	4.95
Emergent Vegetation	764.40	1.84
Emergent Scrub/Shrub	1,370.93	3.30
Unconsolidated Shore	195.25	0.47
Mixed Forest	4,033.86	9.71
Bare Land	951.34	2.29
Urban	12.46	0.03
Total	**41,453.36**	**100.00**

SOURCE: NPS 200b
*Acres are derived from the existing Lake Meredith boundary map, which does not **account for approximately 3,434 acres (7.6%) of the park's administered land.**

A description of the vegetative classifications that occur at the well locations is provided below.

- **Mesquite Grassland.** Mesquite grasslands are densely vegetated areas comprising small soapweed yucca, blue stem grasses, grama grasses, purple three-awn, and others, dominated by mesquite.

- **Mixed Grassland.** The mixed grasslands areas are densely vegetated with mesquite, small soapweed yucca, blue stem grasses, purple three-awn, and others. Mixed large vegetation may include mesquite, yucca, or other woody plants.

- **Yucca Grassland.** The yucca grasslands are areas that are densely vegetated with mesquite, small soapweed, yucca, bluestem grass, grama grasses, purple three-awn, and others, with predominant larger vegetation of yucca.

- **Disturbed Grassland.** Disturbed grasslands are sparsely vegetated with switch grass, common reed, seep willow baccharis, salt cedar, yellow or white sweet clover, and other.

- **Riverine Grassland.** The riverine grasslands are densely vegetated with switch grass, common reed, seep willow baccharis, salt cedar, yellow or white sweet clover, and others.

Rare and/or Imperiled Plant Communities of Texas.
The State of Texas Natural Heritage Program maintains a list of Plant Communities of Texas. Protection of plant communities, particularly rare or imperiled plant communities, is important because they provide biological diversity, aesthetics, nutrient cycling, gene-banks, and food and shelter for both migrating and resident wildlife. Such plant communities are also important for future science and technological discovery. Five plant communities are likely to occur in the park: Blue Grama-Buffalo Community, Cottonwood-Tallgrass Community, Oneseed Juniper Community, Redberry Juniper-Midgrass Community, and the Sideoats Grama Series. Three of the plant-communities are classified by the State of Texas as rare, or imperiled globally or in the state: Blue Grama-Buffalograss Community, Cotton wood-Tallgrass Community, and the Sideoats Grama Series.

Impacts of Alternative A, No Action, on Vegetation
Under Alternative A, No Action, Huber would not re-entered and drill a lateral sidetrack of the Shelton A-2X gas well, resulting in no new impacts on vegetation. However, the continuing operation and maintenance of the existing natural gas well (including access roads, well pad, and compressors would result in the continuing direct loss of vegetation in these areas.

Over the long-term operation of the pipelines/flowlines, occasional disturbance of vegetation within the flowline corridors could occur as a result of continued maintenance, including access over the corridor by truck to inspect surface equipment, and on occasion excavating a section of the flowline to inspect the integrity of the line. The potential for leaks and spills exists during all phases of oil and gas operations, resulting in impacts on a very local level, with minor to moderate, short-term adverse impacts on vegetation; however, with the mitigation measures included with this alternative, the intensity of impacts would be reduced to negligible to minor.

Well plugging, shutting down, and abandoning or removing flowlines, and use of heavy equipment and vehicles to recontour sites could result in accidental releases of oil and other contaminating and hazardous substances, which could harm or kill vegetation. However, the application of mitigation measures, including the careful use of NPS-approved herbicides, would result in localized, short- to long-term, negligible to minor adverse impacts on vegetation.

Direct and indirect impacts on vegetation could occur as a result of the introduction of exotic vegetation resulting from the placement of fill material or the use of construction equipment. However, with the mitigation measures included with this alternative, the potential for and intensity of impacts would be reduced to negligible to minor.

Huber's Plan of Operations includes a reclamation plan, a spill control plan, and an affidavit by Huber to operate in compliance with all applicable Federal, state, and local laws and regulations. These elements, in addition to Huber's previous requirement to tender a performance bond, would ensure rapid response in the event of a leak or spill, thereby providing better assurance that adverse impacts on vegetation would be minimized. The continued operation and maintenance would result in localized, negligible to minor, direct and indirect, adverse impacts on vegetation for the duration of the existing operations, until the well is plugged and the pad, flowlines, and access roads are reclaimed.

Cumulative Impacts
Under Alternative A, No Action, cumulative impacts on vegetation throughout the park could result from the continuing operation of 173 nonfederal oil and gas operations within the park, current park development, and future drilling and production. As some oil and gas operations are developed in the park, others would be plugged, abandoned, and reclaimed; therefore, impacts would be distributed over time. Other park activities that could contribute to impacting vegetation park-wide include prescribed fires, routine maintenance of park roads, and park and visitor vehicle use, and recreational activities.

Existing and future development of oil and gas-related roads, pads and flowlines within the park could directly and indirectly impact vegetation. Leaks and spills from oil and gas operations could be localized, short to long-term, minor to moderate, adverse impacts on vegetation. However, with the mitigation measures and prompt response in the event of a spill, the intensity of impacts is reduced to negligible to minor.

The cumulative impacts on vegetation throughout the park are expected to result in short to long-term, negligible to minor, direct and indirect, adverse impacts, localized near developments throughout the park.

Conclusion
Under Alternative A, No Action, Huber would not re-enter and drill a lateral sidetrack of the Shelton A-2X gas resulting in no new impacts on vegetation. However, the continuing operation and maintenance of the natural gas well under the Plan of Operations (including access roads, well pads, and compressors) would result in the continuing direct loss of vegetation in this area. The continued operation and maintenance would result in localized, negligible to minor, direct and indirect, adverse impacts on vegetation for the duration of the existing operations until the well is plugged and the pad, flowlines, and access roads are reclaimed.

Cumulative impacts from existing and future oil and gas operations in and adjacent to the park, routine park operations, and visitor uses are expected to result in short to long-term, negligible to minor, direct and indirect, adverse impacts in the localized areas around the park on oil and

gas developments throughout the park. No impairment to vegetation would result from implementation of this alternative.

Impacts of Alternative B, Proposed Action, on Vegetation
Under Alternative B, Proposed Action, Huber would re-enter and drill a lateral sidetrack of the Shelton A-2X gas well. The well pad expansion would directly impact 1.34 acres of vegetation. After re-entry is complete, the well pad would be reduced to approximately 1,000-square foot area, resulting in localized, short-term, minor to moderate adverse impact on vegetation until the site is satisfactorily reclaimed. Over the long-term operation of the pipelines/flowlines, occasional disturbance of vegetation within the flowline corridor could occur as a result of routine maintenance, including access over the corridor by truck to inspect surface equipment, and on occasion excavating a section of the flowline to inspect the integrity of the line.

The potential for leaks and spills exists during all phases of oil and gas operations, resulting in impacts that could be serious on a very local level, with minor to moderate, short-term adverse impacts on vegetation. However, with the mitigation measures included with this alternative, the intensity of impacts would be reduced to negligible to moderate. Mitigation measures include the construction of a sloped well cellar and utilizing a polyethylene liner under equipment. These measures are intended to contain any spilled substances and prevent the downward percolation of any contaminants.

Well plugging, shutting down, and abandoning or removing flowlines, and use of heavy equipment and vehicles to recontour the site could result in accidental releases of oil and other contaminating and hazardous substances, which could harm or kill vegetation. However, the application of mitigation measures, including the application of secondary spill containment to prevent the release of any leaked or spilled hydrocarbons and contaminating or hazardous substances in to the adjacent vegetation communities, preventing the introduction of exotic plant species, and careful use of NPS-approved herbicides, would result in localized, short- to long-term, negligible to minor adverse impacts on vegetation.

Direct and indirect impacts on vegetation could occur as a result of the introduction of exotic vegetation resulting from the placement of fill material or the use of construction equipment. However, with the mitigation measures included with this alternative, the potential for and intensity of impacts would be reduced to minor.

Cumulative Impacts
Under Alternative B, Proposed Action, cumulative impacts would be similar to those described under Alternative A, with impacts from existing and future oil and gas operations in the park, park developments and operations, and visitor uses, resulting in localized, short to long-term, minor to moderate, direct and indirect, adverse impacts, in the localized areas around park or oil and gas developments.

Conclusion
Under Alternative B, Proposed Action, Huber would re-enter and drill a lateral sidetrack of the Shelton A-2X gas well. During the drill operation, there would be localized, short-term loss of vegetative cover until the well pad is reduced and revegetation completed.

Huber's adhering to mitigation measures concerning the NPS's SOP for the Construction and Maintenance of Access Roads and revegetating criteria with native species during reclamation would minimize soil erosion. Utilizing the mitigations found in Table 4 during construction, drilling, and producing the well, would result in localized, short- to long-term, and negligible to

moderate direct and indirect adverse impacts on vegetation. No impairment to vegetation would result from implementation of this alternative.

3.3. Impacts on Wildlife

Methodology

To analyze the impacts on wildlife, all available information on wildlife in the park was compiled including park specific research, other park planning documents; the park's approved Oil and Gas Management Plan, personal observations, and consultation with other permitting agencies.

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: an action that could result in a change to a population or individuals of a species or a resource, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor: an action that could result in a change to a population or individuals of a species or a resource. The change would be small and of little consequence.

Moderate: an action that could result in a change to a population or individuals of a species or a resource. The change would be measurable and of consequence to the species or resource.

Major: an action that would have a noticeable change to a population or individuals of a species or a resource. The change would be measurable and result in a severely adverse or major beneficial impact, or possible permanent consequence, upon the species or resource.

Affected Environment

Lake Meredith National Recreation Area provides important habitat for wildlife in the region, especially species dependent on water. The area lies within a major migratory bird corridor. Reservoirs, playa lakes, and the river systems are used as important stopover points during migration. No recent biological surveys have been completed on terrestrial wildlife species, but inventories of mammals, reptiles, amphibians, and birds were completed between the late 1970's and the late 1980's. According to these inventories and other known-information about the area, the following species are believed to be native to the parks: 60 species of mammals, 15 species of fish, 32 species of reptiles, 11 species of amphibians, and over 200 species of birds. Common wildlife species known to occur in and around the park are discussed in the following sections.

Mammals

The National Park Service estimates that 60 species of mammals occur in the PARK. The major species of wildlife in the park includes mule deer (*Odocoileus virginiana*), white-tailed deer (*Odocoileus virginianus*), pronghorn antelope (*Antilocapra americana*), and coyote (*Canis latrans*). Populations of smaller mammals, such as porcupine (*Erethizon dorsatum*), raccoon (*Procyon lotor*), skunk (*Spilogale putorius, Mephitiis mephitis*), ground squirrel (*Spermophilus tridecimlineatus*), rabbit (*Sylvilagus audubonii, Sylvilagus floridanus, Leous californicus*), pocket gopher (*Geomys bursari*us), mole (*Scalopus aquaticus*), some bats and several varieties of rats and mice occur on a relatively permanent basis.

During the biological survey, signs of the desert cottontail, coyote, ground squirrel, kangaroo rat, and cattle were present at the location of proposed activity and adjacent private property. Also, during the biological survey, a mule deer doe and two yearlings were observed on private property directly adjacent to the NPS property boundary where the Shelton A-2X natural gas well is located.

Birds
Over 200 species of birds are present at Lake Meredith. Lake Meredith exists along the Central Flyway and large number of ducks, geese, and other migratory birds occur. Migratory birds use open water areas or wetlands from fall to spring. Migratory waterfowl use open water wetland areas below the stilling basin.

Prominent birdlife consists of wild turkey (*Meleagris gallopavo*), bobwhite (*Colinus virginianus*), scaled quail (*Callipepla squamata*), mourning dove (*Zenaida amcroura*), roadrunner (*Geococcyx californinaus*), and red-winged blackbird (*Agelaius phoeniceus*). Lake Meredith exist along the Central Flyway and large numbers of ducks, geese, and other migratory birds occur seasonally to utilize open water areas, as well as wetland areas, during the fall through spring months. Other migratory waterfowl use open water wetland areas below the Stilling Basin. These varieties of migratory waterfowl include mallards (*Anas platyrhynchos*), blue and green winged teals (*Anas discors, Anas crecca*), the common golden eye (*Bucephala clangula*), and great blue heron (*Ardea herodius*). Additional birds commonly seen include willets, wrens, yellowlegs, bitterns, morrhens, coots, gulls, terns, pie-billed and horned grebes, yellow-throated warbler, black-crowned night heron, yellow-crowned night heron and several species of swallows. Hawks are known to frequent areas below the Stilling Basin (Spring Canyon). During the aforementioned biological survey, four wild turkey toms and three roadrunners were observed at the location of proposed activity and adjacent private property.

Great blue herons are common year-round residents at the lake, often seen wading in the shallows looking for bass or other large fish. Great blue herons build nests of a flat loose construction, located high in trees, and may be used for more than one season. Females lay up to four eggs per year. The one rookery area in Lake Meredith is well away from established roadways. The existing Shelton A-2X natural gas well is not located near this rookery.

Reptiles and Amphibians
Eleven amphibian species and 32 reptile species are found at Lake Meredith. Reptiles and amphibians are considered indicators of aquatic health because they are sensitive to pollution and loss of habitat. They are important in the food chain and comprise a large portion of the vertebrate population in certain ecotypes. Turtles, lizards and snakes, including two poisonous species (prairie rattlesnake and diamondback rattlesnake), can be found in the park. Although these species were not observed during the biological survey of the well location proposed for re-entry, it is probable that these reptiles are likely to occur at or near the well site. During well pad extension, they could be encountered on an intermittent basis.

Game Species
Hunting is permitted in the following areas of the PARK: Plum Creek, Blue West, Big Blue Creek, Bugbee, The Triangle, Alibates, McBride and Mullinaw Canyons, Big Canyon, Saddle Horse Canyon, Devils Canyon, Rosita area, Bonita Creek, Chicken Creek and Coetas Creek. Hunting season begins September 1 and continues through May 10 each year. Texas state seasons and bag limits are enforced during this period for Wild Turkey *(Meleagris gallopavo)*, mule and white-tailed deer (*Odocoileus hemionus, Odocoileus virginianus*), bobwhite and scaled quail (*Colinus virginianus, Callipepla, squamata*), mourning dove (*Zenaida macroura*), as

well as a variety of ducks and geese. Hunting is permitted for designated game species only (with the exception of coyotes, rabbits and raccoons). Pronghorn antelope (*Antilocapra americana*) may occasionally stray into the area, but they are primarily found in the flatter topography in upland prairies away from the Canadian River. Hunting areas are not closed to the general public during hunting season.

Impacts of Alternative A, No Action, on Wildlife

Under Alternative A, No Action, Huber would not re-enter and drill a lateral sidetrack of the Shelton A-2X gas well, resulting in no new impacts on wildlife. However, during the continuing operation and maintenance of the existing natural gas well and its associated pipelines and access roads under Huber's Plan of Operation, there is a remote possibility for the incidental take of wildlife during the course of operations and maintenance from vehicle use, or from wildlife ingesting leaked or spilled hydrocarbons and contaminating or hazardous substances. Damage or removal of soil and vegetation would result in the short-term modification of wildlife habitat. Existing operation and maintenance of the well pad, access roads, drip stations and pipelines under Huber's Plan of Operation would be subject to 9B regulations and could result in the loss of habitat for 10 to 25 years The established mitigation measures (in the Plan of Operation), providing better assurance that adverse impacts on wildlife would be minimized, resulting in localized, short to long-term, negligible to minor, direct and indirect, adverse impacts on wildlife localized around oil and gas operations.

Cumulative Impacts

Under Alternative A, No Action, cumulative impacts on wildlife throughout the park could result from the continuing operation of 173 nonfederal oil and gas operations, park developments, future drilling and production of wells projected in the park's reasonably foreseeable development scenario. Existing surface disturbances located throughout the park, in combination with other park developments and activities including park roads, visitor use areas, recreational activities, hunting, and prescribed fire management practices, have changed or reduced the amount of habitat available for use by wildlife. However, since the establishment of the park, development decisions have been applied under a well-defined regulatory process that has limited any additional potential impacts on wildlife.

It is possible that some past developments altered habitat utilized by wildlife. Past impacts have included direct loss of terrestrial habitat at various sites. Also, the construction of roads flowlines, and pipelines that cross the lake and its tributaries, or other areas developed near the lake and its tributaries, increased erosion and sedimentation that adversely affected water quality and aquatic habitats, particularly during construction activities. These combined effects have caused long-term impacts on vegetation, fish, and wildlife in and around the park, resulting in removal of vegetation or a change (decrease) in site productivity and habitat value. These adverse impacts would remain until disturbed areas are reclaimed.

Existing and future construction operations would be required to meet Current Legal and Policy Requirements, particularly compliance with the Endangered Species Act. If proposed operations have the potential to impact any fish and wildlife species and/or its habitat, the NPS consults with the U.S. Fish and Wildlife Service and Texas Parks and Wildlife Department on a project-by-project basis and develops measures to avoid impacting wildlife.

Reclamation of disturbed areas in the park must reestablish natural topographic contours and native vegetative communities, and provide for the safe movement of native wildlife and the normal flow of surface waters. Wherever possible, habitats would be improved to perpetuate their visibility and increase the survivability of wildlife. Any adverse impacts on protected plants,

fish, and wildlife habitat resulting form reclamation operations would add to the existing adverse impacts on wildlife and their habitat within and adjacent to the park.

In combination with human-induced activities, including the park's prescribed fire management program, recreational uses and nonfederal oil and gas operations, natural events such as fire, flood, and drought would also contribute to cumulative adverse effects on wildlife. These cumulative effects cause stress that reduces the resiliency of the local populations.

Overall the effects described above would have a cumulative, short to long-term, negligible to minor, direct and indirect, adverse impacts on wildlife localized near developments and activities throughout the park.

Conclusion
Under Alternative A, No Action, Huber would not re-enter and drill a lateral sidetrack of the Shelton A-2X gas well, resulting in no new impacts on wildlife. However, current operations and maintenance of the existing well and associated pipelines and access roads would continue under their existing Plan of Operations, resulting in localized, short to long-term, negligible to minor, direct and indirect, adverse impacts on wildlife. Cumulative impacts from existing and future oil and gas operations in and adjacent to the park, park developments and operations, and visitor uses are expected to result in short to long-term, negligible to minor, direct and indirect, adverse impacts, localized near developments throughout the park. No impairment to wildlife would result from implementation of this alternative.

Impacts of Alternative B, Proposed Action, on Wildlife
Under Alternative B, Proposed Action, Huber would re-enter and drill a lateral sidetrack of the Shelton A-2X gas well. Construction and maintenance of the well pad area and pipeline would result in direct loss of various types of wildlife habitat. Displaced wildlife could potentially die of natural causes or displace other wildlife. There is a remote possibility for the incidental take of wildlife during the course of operations from vehicle use, construction activities, or from ingesting leaked or spilled hydrocarbons and contaminating or hazardous substances. Elevated noise levels, particularly during drilling operations, could displace wildlife, but most wildlife is expected to return after becoming acclimated to some noise disturbances. However, the application of mitigation measures, including fencing the operations area to exclude wildlife, using secondary containment to prevent leaks and spills of hydrocarbons and contaminating or hazardous substances from being released into the environment, covering all open-topped tanks to minimize accidental injury or death of birds, preventing the introduction of exotic plant species, careful use of the NPS-approved herbicides, and routine monitoring and inspection of the operations are expected to reduce the impacts to wildlife to localized, shot- to long-term, negligible to minor adverse impacts. NPS's Oil and Gas Management Plan to establish native vegetation to 70%, would ensure the long-term revegetation success of the operations area, and provide better assurance that habitat would be recovered. These measures, in addition to Huber's existing performance bond, would ensure rapid response in the event of a leak or spill, thereby providing better assurance that adverse impacts on wildlife would be minimized.

Cumulative Impacts
Under Alternative B, Proposed Action, cumulative impacts on wildlife would be similar to those discussed for Alternative A, but with an increase of surface disturbance and added protection of mitigations measures, resulting in short- to long-term, negligible to minor, adverse impacts on wildlife in the region around park or oil and gas developments.

Conclusion
Under Alternative B, Proposed Action, Huber would re-enter and drill a lateral sidetrack of the Shelton A-2X gas well and its associated pipelines and access roads would result tin localized, short- to long-term, negligible to minor adverse impacts on wildlife. Cumulative impacts would be similar to those described under Alternative A, No Action, but with an increase of surface disturbance (1.34 acres) and added protection of mitigation measures, resulting in short- to long-term, negligible to minor, direct and indirect, adverse impacts, localized around park and oil and gas developments. No impairment to wildlife would result from implementation of this alternative.

3.4. Impacts on Visitor Use and Experience

Methodology
Visitor surveys and personal observations of visitation patterns combined with and assessment of what is available to visitors under current management were use to estimate the effects of the actions in the alternatives.

The impact intensity thresholds used were:

Negligible: The impact is barely detectable, and/or would affect few visitors.

Minor: The impact is slightly detectable, and/or would affect few visitors.

Moderate: The impact is readily apparent and/or would affect some visitors.

Major: The impact is severely adverse or exceptionally beneficial and/or would affect many visitors.

Affected Environment
Lake Meredith is a water supply reservoir for 11 cities and provides the major resource in the Panhandle Region for water-based recreation, including sailing, boating, fishing and swimming. Other recreational activities include picnicking, hiking, off-road vehicle (ORV) use and hunting.

Three information stations, 1 developed trail, 16 day and overnight use areas, two ORV use areas and 53 miles of park-maintained dirt and paved roadways provide recreational opportunities for approximately 1,600,000 annual visitors to Lake Meredith National Recreation Area. Visitor use patterns are generally marked by weekend use in the spring, when visitors from the region go fishing, boating, horseback riding, bird watching and four-wheeling. In the summer, lake use increases dramatically by boaters and campers. Users are families from the four-state region who come for extended periods. In the fall, use of the lake diminishes slightly, with fishing becoming a primary use once again, while various seasons open for hunting. Winter use of the lake is light, consisting of regional visitors. During hunting season, visitor uses, such as hiking, off-road bicycling and horseback riding are limited due to safety issues and concerns.

Impacts of Alternative A, No Action, on Visitor Use and Experience
Under Alternative A, No Action, Huber would not re-enter and drill a lateral sidetrack of the Shelton A-2X gas well, resulting in no new impacts to visitor use and experience. However, impacts on visitor use and experience would continue as the result of vehicle use along the existing access routed during the continued operation and maintenance of the wells and access

roads. During all phases of operations, spilled hydrocarbons and contaminating or hazardous substances could pose a health and safety hazard to park visitors. However, the application of mitigation measures to prevent leaks and spills of hydrocarbons and contaminating or hazardous substances from being released into the environment; to prevent the introduction of exotic plant species; and to routinely monitor and inspect the operations are expected to substantially reduce the impacts on visitor use and experience to localized, long-term, negligible to minor adverse impacts.

Cumulative Impacts
Under Alternative A, No Action, cumulative impacts on visitor use and experience throughout the park could result from the visual impact of human developments on the natural scenery associated with the continuing operation of the existing 173 nonfederal oil and gas operations within the park, park developments, and future drilling and production. Other park activities that could contribute to impacts include prescribed fires, routine maintenance of park roads, and park and visitor vehicle use.

Cumulative impacts on visitor use and experience would result from human developments on the natural scenery from existing oil and gas wells, production facilities, and pipelines; future exploration and development of wells projected under the NPS's RFD scenario; and existing park developments. Most park developments provide essential support services and facilities for visitor use, resource interpretation, and education. Some park and oil and gas operations would cause elevated noise levels and odors. Human health and safety hazards include the potential for visitors or hazardous substances at oil and gas operations. With the application of mitigation measures detailed in the park's Oil and Gas Management Plan (April 2002), and incorporated into operators' Plans of Operations, impacts would be avoided or minimized. Cumulative impacts from the continued operation and maintenance of the well and access roads, plus the other actions in the park, would be localized, negligible to minor and short-term.

Conclusion
Under Alternative A, No Action Huber would not re-enter and drill a lateral sidetrack of the Shelton A-2X gas well. Therefore, there would be no new impacts on visitor use and experience associated with these activities. Existing impacts on visitor use and experience would result from operation and maintenance of the existing well, associated pipelines, and access roads, resulting in localized, short-term to long-term, negligible or minor, adverse impacts on visitor use and experience.

Cumulative impacts from existing and future oil and gas operations in the park, park developments and operations, and visitor uses are expected to result in localized, short- to long-term, negligible to minor adverse impacts. No impairment to visitor use and experience would result from implementation of this alternative.

Impacts of Alternative B, Proposed Action, on Visitor Use and Experience
To some visitors, the sight of oil and gas operations in a park is upsetting; while to others, it is viewed as a sign of economic prosperity. Under Alternative B, Huber would re-enter and drill a lateral sidetrack of the Shelton A-2X gas well, construction, operation and maintenance of the access roads, and well/production pads and pipelines would continue.

During the drilling phase, transporting the drill rig and associated drilling equipment to and from the well pad could cause deeper rutting on some of the existing dirt access roads. Standard Operating Procedures for the construction and maintenance of the oil and gas access roads would occur. Drilling would elevate noise levels; the visual presence of the rig and associated

equipment would result in localized, short-term, minor to moderate adverse effects on visitor use and experience.

During all phases of operations, spilled hydrocarbons and contaminating or hazardous would pose a health and safety hazard to park visitors. However, the application of mitigation measures, including fencing and signing the operations area to exclude visitors; using primary and secondary contaminant to prevent leaks and spills of hydrocarbons and contaminating or hazardous substances from being released into the environment, reclaiming the area around the well pad, preventing the introduction of exotic plant species, and routinely monitoring and inspecting the operations are expected to substantially reduce the impacts on visitor use and experience to localized, long-term, negligible to minor adverse impacts.

Cumulative Impacts
Cumulative impacts would be similar as those discussed under Alternative A, No Action, but with an increase of surface disturbance and added protection of mitigation measures, resulting in short- to long-term negligible to minor adverse impacts on visitor use and experience, localized around existing and future developments throughout the park.

Conclusion
Under Alternative B, Huber would re-enter enter and drill a lateral sidetrack of the Shelton A-2X gas well. These activities would result in localized, short-term, negligible to moderate, adverse impacts on visitor use and experience. Cumulative impacts would be similar as those discussed under Alternative A, No Action, with an increase of surface disturbance and added protection of mitigation measures, resulting in short- to long-term negligible to minor, adverse impacts on visitor use and experience, localized around existing and future developments throughout the park. Reclamation of the construction area would result in a minor to moderate beneficial impact on visitor use and experience. No impairment to visitor use and experience would result from implementation of this alternative.

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4.0. CONSULTATION AND COORDINATION

A Notice of Availability for the Plan of Operations and EA would be published in the *Federal Register* and the local Amarillo and Borger newspapers, announcing the availability of these documents for a 30-day public review and comment period.

Following the 30-day public review and comment period, NPS would consider written comments received. Additional mitigation measures resulting from the public involvement process may be applied by the NPS as conditions of the Plan of Operations. Copies of the decision document would be sent to those who comment on the Plan of Operations and EA during the public review period, or request a copy.

4.1 Agencies and Individuals Consulted

Federal, state, and local agencies and private organizations/agencies and tribes that were contacted during the course of preparing this *Environmental Assessment* and that assisted in identifying important issues, developing alternatives, or analyzing impacts are listed below:

U.S. Fish and Wildlife Service
- Ecological Services, Arlington, Texas

Texas Parks and Wildlife Department
- Threatened and Endangered Species Division

Texas State Historic Preservation Office

National Park Service
- Linda Dansby, Intermountain Regional Minerals Coordinator, Santa Fe, New Mexico
- Cheryl Eckhardt, NEPA/106 Specialist, Office of Environmental Quality, Intermountain Regional Office, Denver, CO

Llano-Permian Environmental, Amarillo, TX
- Stefan K. Dorman, Project Manager,
- Stacy M. Dowell, Environmental Scientist
- Lorie M. Kiehl, Environmental Scientist

4.2 List of Document Recipients

Canadian River Municipal Water Authority
J. M. Huber Corporation, Mr. John M. Vigil
Stallion Energy LLC, Mr. Paul King
Llano-Permian Environmental, Amarillo, TX, Mr. Stefan K. Dorman, Project Manager

Federal and State Agencies
Bureau of Reclamation
National Park Service:
- Intermountain Regional Office Minerals Coordinator
- Intermountain Regional Office NEPA/106 Specialist

U.S. Fish and Wildlife Service

Culturally Affiliated Indian Tribes
Apache Tribe of Oklahoma, OK
Caddo Tribe, OK
Cheyenne-Arapaho Tribe, OK

Comanche Tribe, OK
Delaware Nation of Oklahoma, OK
Fort Sill Apache Tribe, OK
Jicarilla Apache Tribe, NM
Kiowa Tribe, OK
Mescalero Apache Tribe, NM
Wichita and Affiliated Tribes, OK

4.3 Preparers

Arlene A. Wimer, Environmental Protection Specialist, National Park Service, Lake Meredith National Recreational Area

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5.0 BIBLIOGRAPHY

Bailey, L.H. 1930. The Standard Cyclopedia of Horticulture; MacMillan Co

Bowers, Roger Lee. 1975. *Petrography and Petrogenesis of the Alibates Dolomite and Chert (Permian)*, Northern Panhandle of Texas Master's Degree Thesis; UT, Arlington.

Boyd, Douglas K. 1998. *Geology of the Canadian River and the Alibates Formation in the Texas Panhandle in Etchieson;* Gerald Meeks and James E. Couzzourt; *Shoreline survey at Lake Meredith area in the Texas Panhandle*; United States Department of the Interior, Bureau of Reclamation, Southwest Region, Amarillo, Texas.

Brown, Lauren. 1985. *Grasslands; Audubon society Nature Guide:* Houghton Mifflin Co., New York, Boston, London.

Correll, Donovan Stewart and Marshall Conring Johnston. 1970. *Manual of the Vascular Plants of Texas.* Texas Research Foundation, Renner, Texas.

Dalquest, Walter W. and Gerald E. Schultz. 1992. *Ice Age Mammals of Northwestern Texas,* Midwestern University Press, Wichita Falls, Texas.

Duffield, L. F. 1964. *Panhandle Aspect Sites at Sanford Reservoir, Hutchinson County, Texas*: Bull. of Texas Archeological Society., vol. 35, pp. 19-81

Eck, William. 1963. *Geology of Sanford Dam, Borger, Texas* in "Panhandle Geological Society Field Trip, September 14.

Gould, C.N. 1906. *The Geology and Water Resources of the Eastern Portion of the Panhandle of Texas:* U.S. Geological Survey, W_SP no. 154, 64pp.

Headlee, R. L. 1964. *Subfossil Pollen recovery from Antelope Creek:* Term paper submitted for credit, Antrho. 421, West Texas State University, 9 pp.

Katz, Susana R., and Paul Katz. 2000. *Archeological Survey of the Spring Canyon and Stilling Basin Burn Units, Lake Meredith National Recreation Area, Hutchinson County, Texas.* PRIAM, Panhandle, TX.

Katz, Susana R., and Paul Katz. 2001. *Archeological Survey of the Spring Canyon and Stilling Basin Burn Units, Lake Meredith National Recreation Area, Hutchinson County, Texas.* PRIAM, Panhandle, TX.

Katz, S. R., and P. Katz. 2003. *An Archeological Survey at 28 Pioneer Natural resources Gas Wells, Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument, Moore and Potter Counties, Texas.* Report prepared for Pioneer Natural Resources and the National Park Service, Lake Meredith National recreation Area.

Martin, Alexander C. Herbert S. Zim and Arnold L. Nelson. 1951. *American Wildlife and Plants; A Guide to Wildlife Food Habitats.* Dover Publications, New York.

National Park Service, U.S. Department of the Interior. 1998. *Management Plan for Lake Meredith National recreation Area and Alibates Flint Quarries National Monument.* September 1998.

National Park Service, U.S. Department of the Interior. 2000a. *Management Policies 2001.* Washington, DC. Available at <http://www.nps.gov>.

National Park Service, U.S. Department of the Interior. 2000b. *Strategic Plan for Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument FY2001-FY2005.* Lake Meredith National Recreation Area, Fritch, TX.

National Park Service, U.S. Department of the Interior. 2000. *Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-making, and handbook.* Washington DC. Available at: http://www.nps.gov/policy/DOrders/Dorder12.html and <hhtp://www.nps.gov/policy/DOrders/RM12.pdf>.

National Park Service, U.S. Department of the Interior. 2001. *Final Oil and Gas Management Plan Environmental Impact Statement for Lake Meredith National recreation Area and Alibates Flint Quarries National Monument.* Lake Meredith National Recreation Area, Fritch, Texas.

National Park Service, U.S. Department of the Interior. 2002b. "*Lake Meredith National Recreation Area*." Available at <http://www.nps.gov/lamr>.

National Park Service, U.S. Department of the Interior. 2002c. "*Public Use Statistics, Lake Meredith National Recreation Area, 1992-2001."* Public Use Statistics Office, Denver, CO. Available at <http://www2.nature.nps.gove/stats>.

Patton, L.T. 1923. *The Geology of Potter County.* University of Texas, Bullitin no. 2330, 180 pp.

Phillips, John W. 2000. *Natural History Survey of the Spring Canyon and Triangle Recreation Area,* Hutchinson County, Texas. October 2000.

Schmude, James E. 1993. *The Geology of Southeastern Hartley and Northeastern Oldham Counties, Texas Master's Degree Theses;* West Texas A&M University, Canyon, Texas; August.

Schultz, Gerald E. 1978. *The Paleontology of Palo Duro Canyon in Panhandle Plains Historical Review.* Vol. LI.

Speer, Roberta. 1971. *The Relationship of Archeology to the Geology of the Antelope Creek Valley*; Graduate Problem in Geology #581, (WTSU).

Stubbendieck, J., Stephen L. Hatch and Kathie J. Hirsch. 1986. *North American Range Plants;* University of Nebraska Press, Lincoln and London.

Texas Park <http://www.tpwd.state.tx.us/nature/endang/endang.htm>

U.S. Fish and Wildlife Service 2003. Endangered Species Listing. Available at : <http://www.endangered.fws.gov>.

Vines, Robert A. 1960. *Trees, Shrubs, and Woody Vines of the Southwest;* University of Texas Press, Austin.

Whitson, Tom D. 1990. Editor; *Weeds of the West;* Pioneer of Jackson Hole, Wyoming

Wilson, Gregory Allen. 1988. *The Effects of Subsurface Dissolution of Permian Salt on the Deposition, Stratigraphy and Structure of the Ogallala Formation (Late Miocene Age) Northeast Potter County, Texas.* West Texas State University, Canyon, Texas, Master's Degree Thesis.

Wood, H.E., R.W. Chaney, J. Clark, E.H. Colbert, G.L. Jepson, J.B. Reside Jr. and C. Stock. 1941. *Nomenclature and Correlation of the North American Continental Tertiary.* Bulletin of the Geologic Society of America 52:p. 1-48.

Zukosky, W. and W. Cozby. 1999. *Inventory-level Prescribed Burn Survey of Three Proposed Burn Units within Lake Meredith National Recreation Area.* Letter report to the Texas Historical Commission from Mr. Charles M. Haecker, Project Director, National Park Service, Santa Fe, New Mexico.

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6.0 APPENDIX ONE

Federally Listed Threatened and Endangered Species

Bald Eagle (T) *Haliaeetus leucocephalus*
Interior Least Tern (E) Sterna *antillarum*
Lesser Prairie Chicken (C) *Tympanuchus pallidicintus*
Mountain Plover (PT) *Charadrius montanus*
Whooping Crane (E) *Grus americana*
Black-footed Ferret (E) *Mustela nigripes*
Black-tailed Prairie Dog (C) *Cynomys ludovicianus*
Arkansas River Shiner (T) *Notropis girardi*

State Listed Threatened and Endangered Species

American Peregrine Falcon (E) *Falco peregrinus anatum*
Baird's Sparrow (SC) *Ammondramus bairdii*
Bald Eagle (T) *Haliaeetus leucocephalus*
Ferruginous Hawk (SC) *Buteo regalis*
Interior Least Tern (E) Sterna *antillarum*
Snowy Plover (SC) *Charadrius alexandrius*
Western Burrowing Owl (SC) *Athene cunicularia hypugaea*
Whooping Crane (E) *Grus americana*
Black-footed Ferret (E) *Mustela nigripes*
Cave Myotis Bat (SC) *Myotis velifer*
Plains Spotted Skunk (SC) *Spilogale putorius interrupta*
Prairie Vole (SC) *Microtus orchrogaster taylori*
Texas Garter Snake (SC) *Thamnophis sirtalis annectens*
Texas horned lizard (T) *Phrynosoma cornutum*
Arkansas River Speckled Chub (SC) *Macrhybopsis aestivalis tetranemus*

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C=Candidate; E=Endangered Species; P=Proposed; SC= Special Concern Species listed by Texas Heritage Program/Conservation Data Center (no regulatory status)