DOE/EA-1956

FINAL

Site-Wide Environmental Assessment

And

Finding of No Significant Impact

For the Divestiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No. 3

Natrona County, Wyoming

January 2015

Prepared for

Department of Energy
Rocky Mountain Oilfield Testing Center
907 N. Poplar Street, Suite 150
Casper, WY 82601

Prepared by

Navarro Research and Engineering, Inc.
Subcontract No. DE-DT0005155

FINDING OF NO SIGNIFICANT IMPACT
For the
ROCKY MOUNTAIN OILFIELD TESTING CENTER/
NAVAL PETROLEUM RESERVE NO. 3
SITEWIDE ENVIRONMENTAL ASSESSMENT

AGENCY: Department of Energy, Naval Petroleum Reserve No. 3/Rocky Mountain Oil Field Testing Center

ACTION: Finding of No Significant Impact

SUMMARY: The Secretary of the U.S. Department of Energy (DOE) has determined that continued operation of Naval Petroleum Reserve No. 3 (NPR-3) by DOE is no longer in the national interest. Therefore, DOE is proposing to discontinue government operations at the Rocky Mountain Oilfield Testing Center (RMOTC) and sell NPR-3 to a private entity or entities via competitive bid for continued petroleum and natural gas production. For the most part this Proposed Action represents a return to those actions previously addressed in the 1998 *Site-wide Environmental Assessment for Preparation for Transfer of Ownership of Naval Petroleum Reserve No. 3 (NPR-3)* (DOE 1998). However, the current Proposed Action also includes the conveyance of a 520-acre conservation easement would protect areas of Tribal concern and Historic Properties on the property.

DOE is required to evaluate the Proposed Action to sell NPR-3 to determine whether or not it is in compliance with the NEPA (42 U.S.C. 4321) and the DOE's NEPA implementing regulations (10 CFR section 1021.330) and procedures. In the Site-Wide Environmental Assessment (SWEA), DOE evaluated four alternative operating futures for NPR-3 and RMOTC:

- Sale of NPR-3 to a private entity or entities for continued petroleum and gas production, including the conveyance of a conservation easement to protect areas of Tribal interest and historic properties (Proposed Action).
- Transferring the property to another federal agency that would then lease the property to private entities for continued production.
- Sale of NPR-3 for utility scale renewable energy development, including the conveyance of a conservation easement to protect areas of Tribal interest and historic properties.
- No Action (DOE would retain ownership of NPR-3, continue to produce petroleum using current techniques, and continue to provide a field testing platform for private enterprise).

Under the Proposed Action DOE anticipates that the new owner(s) would continue to use conventional oil exploration and production methods similar to those DOE has employed at the site since 1976, as well as implementing Enhanced Oil Recovery (EOR) techniques such as carbon dioxide (CO_2) flooding because such activities could enhance the economic value of the oilfield. DOE believes that these EOR techniques could be implemented at NPR-3 because they are similar to EOR methods DOE has tested on-site in the past and some of these methods are currently being implemented by private industry in the adjacent Salt Creek oilfield.

Under the Lease Alternative, DOE would shut down operations, remediate environmental liabilities, and transfer NPR-3 to the DOI to be managed by BLM. Cleanup efforts would include remediating petroleum-contaminated soil, removing structures, plugging/abandonment of all wells, removing tanks, closing and abandoning pipelines, and re-grading and seeding roads (DOE 2007). The permitted inactive solid industrial waste landfill would be closed per WYDEQ requirements and post-closure monitoring responsibilities would be negotiated between BLM and DOE before the property transfer. This option would maintain federal ownership of the cultural and historic sites associated with NPR-3. However, DOE would not meet its mandate to maximize revenue for the field. Under the Renewable Energy Development Alternative, DOE would sell and transfer NPR-3 to a private entity for utility-scale renewable energy development. The sale and transfer would include the conveyance of a conservation easement encompassing approximately 520 acres of land at NPR-3. The conservation easement would prohibit development, subdivision, and a host of other measures to preserve the conservation area. The conservation easement would be routinely monitored by a qualified non-profit trust entity to ensure that the private entity is adhering to the terms of the conservation easement and to document the condition of the conservation area.

On the basis of the information and analyses presented in the final SWEA, DOE has determined that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment, as defined by NEPA. Therefore, preparation of an environmental impact statement is not required and DOE is issuing this Finding of No Significant Impact (FONSI). Based on this determination DOE will implement the Proposed Action.

SUPPLEMENTARY INFORMATION:

Background

DOE has operated the Teapot Dome Oil Field, also known as NPR-3, since 1976. It is the only producing oil field in the continental United States owned by the U.S. Government. NPR-3 is located in Natrona County, Wyoming, approximately 35 miles north of the City of Casper, and covers an area of 9,481 acres. Production at NPR-3 peaked in 1981; since then, production has declined. Currently NPR-3 is a mature stripper field with an average well yield of less than two barrels per day.

Production facilities include pumping units, treaters, and tanks for storing petroleum and produced water; a gas plant which includes gas compressors and driers in operation on the main line (two sets in parallel for safety purposes) which produce sufficient gas to operate some of the field machinery and heat the buildings); water and gas injection facilities; a wastewater treatment facility and disposal

system; and flow lines. In addition there are numerous support facilities, including: electrical power distribution systems; cathodic protection systems; potable water and sewer systems; road; bridges and fences; and buildings for maintenance, production support, administration, safety, security, and environmental purposes.

From 1977 through 2010 an average of 100 to 200 contractor and DOE personnel were employed at NPR-3. Over the same time-frame, approximately 40 personnel were employed in DOE's Casper office. Since 2010, employment has dropped to approximately 40 personnel at NPR-3 and 8 at the Casper office.

RMOTC was established in 1993 as an endeavor to utilize NPR-3 resources and facilities to help strengthen the domestic energy industry by providing a test bed for new petroleum and environmental technologies in an operating oil field. Commercial field testing at RMOTC began in 1995 and continued until 2014. The majority of the technologies and processes field tested at RMOTC have included drilling, oil production, enhanced recovery, alternative/renewable energy, and production cost reduction.

Purpose and Need

DOE has made the determination that the public interest is best served by selling NPR-3 to a private operator for continued production, potentially including EOR activities. This represents a reversal of the previous Congressional mandate for DOE to produce oil and gas from NPR-3 as assessed in the 2008 *Rocky Mountain Oilfield Testing Center/Naval Petroleum Reserve No. 3 Site-wide Environmental Assessment and Finding of No Significant Impact.* Consequently, new NEPA documentation was required.

Proposed Action

Under the Proposed Action, the infrastructure and facilities at NPR-3 would remain in place and the transfer of the land to a private entity would include the conveyance of a conservation easement encompassing approximately 520 acres of land at NPR-3. The conservation easement would prohibit development, subdivision, and a host of other measures to preserve the conservation area. The conservation easement would be routinely monitored by a qualified non-profit trust entity to ensure that the private entity is adhering to the terms of the conservation easement and to document the condition of the conservation area. Development outside of the easement would be at the discretion of the new owner(s).

Environmental Impacts of the Proposed Action

Land Resources

The Proposed Action would transfer ownership of NPR-3 to a private entity or entities. Oil and gas production would continue and would not present a conflict with adjacent landowners. Currently no recreational facilities are present at NPR-3 and no recreational activities (such as hunting) are permitted; DOE expects that these standard industry practices will be maintained under new ownership.

With respect to land use, the Proposed Action is a continuation of current land use (oil and gas production). Therefore, no new impacts are expected. If the new owner prohibits grazing it could affect the current grazing lease holder, but it would not impact regional grazing operations.

NPR-3 is located in an area which is rated as having a low level of visual sensitivity due to prior modifications of the natural setting in the area. The Proposed Action consists of a continuation of historic activities and related operations, so it will not change the visual sensitivity rating.

Air Quality

NPR-3 does not currently have any permitted air emissions sources and a continuation of existing operations under the Proposed Action will not cause any National Ambient Air Quality Standards to be exceeded. The construction of EOR systems may cause a temporary increase in dust and emissions from heavy equipment, but these would be transitory. If production increases such that throughput at existing facilities exceeds the limits shown in their respective WYDEQ Air Quality permit waivers, the new owner would be required to submit new documentation to WYDEQ for evaluation to determine if a Title V Air Quality permit is required. The Proposed Action is expected to increase emissions of NOx, CO, H2S, VOCs, and HAPs, but not to the extent that NAAQS would be exceeded. Overall, the air quality impacts are similar to impacts observed during peak oil production and are not significant.

Noise

The Proposed Action may increase noise levels temporarily as EOR systems are constructed, primarily as a result of heavy equipment use and increased vehicular traffic. Because there are no noise sensitive areas within or around NPR-3, the temporary noise increase is not a significant adverse impact.

Water Resources

Current operations at NPR-3 generate approximately 957,000 gallons of produced water per day, more than 99 percent of which comes from 5 Tensleep wells. This water is treated by oil-water separators and temperature reduction ponds before being discharged to a WYPDES-permitted outfall. If average water production is maintained in the future, each new Tensleep well would increase water production by approximately 180,000 gallons per day. Up to nine new wells could be drilled into the Tensleep formation before water discharges would exceed those proposed in the 2008 SWEA and deemed at the time to be insignificant.

Incremental increases in produced water volume from routine operations and down-hole stimulation are expected to be less than five percent of existing water production and are therefore deemed insignificant. The geology at NPR-3 is not suitable for long-reach horizontal drilling and water impacts are not expected from this technique.

All groundwater at NPR-3 is non-potable due to naturally occurring TDS, salinity, and (where present) contact with hydrocarbons. However, groundwater is being impacted by benzene from an inactive industrial waste landfill (IND-2). The nature and extent of this impact has not been determined and will be addressed with WYDEQ through the closure process for that landfill. DOE will remain financially

responsible for determining the nature and extent of this contamination until after the new owner(s) demonstrate financial assurance and WYDEQ transfers the final closure permit to the new owner(s). Because the benzene is coming from an inactive landfill currently undergoing closure, the Proposed Action will not significantly alter groundwater quality.

With respect to potable water, there are no potable water aquifers in the vicinity of NPR-3 and the Proposed Action will therefore not affect this resource. The anticipated increase in employment at the field will not significantly impact potable water usage in the area.

Geology, Soils and Prime and Unique Farmlands

The Proposed Action will not have any impact to the geology on the site, or to Prime or Unique Farmlands.

The Proposed Action may increase the potential for erosion temporarily as EOR systems are constructed, primarily as a result of heavy equipment use, excavation, and land disturbance. This will be mitigated with standard erosion controls and re-vegetation efforts required by Storm Water Pollution Prevention Plan requirements.

Wetlands and Floodplains

Wetlands on-site are predominantly supported by process water discharges. The Proposed Action will not significantly impact wetlands because maintaining the discharges would preserve current conditions and eliminating the discharges would return these areas to their natural conditions.

Floodplain maps do not exist for NPR-3 because there are no large population centers in the vicinity. Flood-prone areas are generally low-lying areas adjacent to wetlands and drainages, but are limited to lands within the embankments of the draws. The Proposed Action will not significantly impact floodplains because anticipated future activities on the site are not expected to permanently or substantially eliminate vegetation or increase runoff volume.

Biological Resources

The Proposed Action will have minimal impact on biological resources. Temporary impacts are expected for terrestrial vegetation during EOR construction and routine operations. These will only impact a small percentage of the total NPR-3 area and are considered insignificant. Aquatic vegetation on NPR-3 is the result of human activity (predominantly discharge of produced water from the Tensleep formation). In the unlikely event that the new owner shuts down the Tensleep wells, the riparian vegetation would return to a natural condition, which is not considered a significant impact.

Impacts of the Proposed Action to raptors, waterfowl, other avian species and big-game species are expected to be insignificant. Raptor habitat at NPR-3 is predominantly included in the Conservation Easement. There are no expected impacts of the Proposed Action on threatened, endangered, and rare species.

Cultural Resources

There are 18 properties at NPR-3 that are eligible for listing or are listed on the NRHP. As part of its Section 106 process and its consultations with the Consulting Parties, DOE has modified the Proposed Action to include a conservation easement as part of the sale and transfer of NPR-3 to a private entity. The conservation easement will provide adequate and legally enforceable restrictions or conditions to ensure the long-term preservation of areas of Tribal interest, as well as the historic significance for 16 historic properties; therefore, the proposed action would have no adverse effect on the historic properties and areas of Tribal interest. Also, the Proposed Action would have no adverse effect on the Bozeman Trail (48NA3024) because no intact segments of the trail are located within NPR-3.

Site 48NA831, the Historic Teapot Dome Oilfield property and its associated contributing components, would be adversely affected by the Proposed Action because the land will no longer be managed or controlled by the Federal government. The Proposed Action would alter, directly or indirectly, the characteristics of the historic property that qualify it for inclusion in the NRHP, because NPR-3 would no longer be managed by the Federal government and afforded the associated Federal stewardship under the NHPA. Through the Section 106 process, DOE has consulted with the Consulting Parties and has developed and executed a Programmatic Agreement (PA) to avoid, minimize, or mitigate the adverse effects of the Proposed Action on site 48NA831. A summary of the stipulations contained in the PA include:

- DOE will update and amend the existing Teapot Rock site (48NA213) NRHP listing with additional documentation about site 48NA831, the Historic Teapot Dome Oilfield property
- DOE will prepare Historic American Engineering Record (HAER) documentation for Tank Ring #5 which is associated with the Teapot Dome Oilfield site 48NA831 for submittal to the NPS.
- DOE will prepare HAER documentation for the Mammoth Camp Sewer Facility (48NA831_13), a contributing component of the historic Teapot Dome Oilfield site (48NA831) for submittal to the NPS.
- DOE will develop, produce and disseminate an interpretative brochure, audio file, web site, and smart phone application describing the history of the Teapot Dome Oilfield.
- DOE will donate selected NPR-3 historic artifacts and other modern effects to local museums and repositories.
- DOE will prepare NPR-3 prehistoric artifacts for permanent curation at the Archaeological Repository of the University of Wyoming in Laramie.

The execution of the PA and future implementation of the stipulations demonstrate DOE's compliance with Section 106.

Socioeconomics

DOE anticipates that the Proposed Action along with full EOR implementation will likely result in an increase of as many as 100 additional employees at NPR-3. However, given the large pool of oilfield

workers due to the adjacent, larger Salt Creek field, the increased employment will not significantly impact the overall employment, population, housing, community services, or traffic in the area.

Waste Management

Currently, all wastes generated by on-site activities are properly characterized, containerized, and transported off-site for appropriate disposal (with the exception of petroleum contaminated soils, which are treated in four on-site composting facilities that comply with Wyoming Oil and Gas Conservation Commission requirements). The Proposed Action may increase the quantities of some of these categories, but will not change their appropriate handling and disposal.

DOE has applied for a Closure Permit for its existing, inactive landfill (IND-2) and the final permit is pending. The existing cover on IND-2 meets WYDEQ regulatory requirements and will have to be maintained in perpetuity. Deed notices for IND-2 and two other pre-regulatory landfills (IND-1A and IND-1B) informing the new owner(s) of the landfill locations and prohibiting disturbance of those areas will be included in the sale documentation. Additional regulatory actions may be required at IND-2 as the permit process continues.

Accidents and Intentional Destructive Acts

By the nature of their products and operations, oilfields have the potential for various types of accidents. The Proposed Action would not change this at NPR-3, nor would the Proposed Action make NPR-3 a more attractive target for terrorism or other intentionally destructive act than it is currently.

Cumulative Effects

The Proposed Action may result in approximately 630,612 metric tons of additional carbon dioxide emissions per year, not accounting for any carbon dioxide that may end up sequestered due to implementing carbon dioxide flooding. While the release of anthropogenic greenhouse gases and their potential contribution to global climate change are inherently cumulative phenomena, this amount of increased emissions is approximately 1/1000th of the total U.S. greenhouse gas emissions in 2012 (6,526 million metric tons).

COPIES OF THE FINAL EA ARE AVAILABLE FROM:

Until September 30, 2015:
DOE NEPA Compliance Officer
DOE RMOTC/NPR-3
U.S. Department of Energy
907 N. Poplar Street, Suite 150
Casper, WY 82601
Fax: (307) 233-4851
Toll Free Voice: 1-888-599-2200, Email: RMOTCSWEA@rmotc.doe.gov

Starting October 1, 2015:
Office of NEPA Policy and Compliance
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585
(202) 586-4600 or (800) 472-2756

FOR FURTHER INFORMATION ON THE DOE NEPA PROCESS CONTACT:

Office of NEPA Policy and Compliance
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585
(202) 586-4600 or (800) 472-2756

DETERMINATION:

Based on the information presented in the Final SWEA (DOE/EA 1956), DOE determines that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act. Therefore, the preparation of an Environmental Impact Statement is not required, and DOE is issuing this Finding of No Significant Impact. Based on this determination DOE will sell NPR-3 to the highest bidder.

Issued in Casper, Wyoming this 27 day of January, 2015.

CLARKE D. TURNER

Director, NPR-3/RMOTC

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Acronyms

ac	Acre
ACHP	Advisory Council on Historic Preservation
ASP	Alkaline-Surfactant-Polymer
bbls	Petroleum Barrels
bgs	Below Ground Surface
BLM	Bureau of Land Management
BMP	Best Management Practice
B.P.	Before Present
bpd	Barrels per Day
°C	Degrees Celsius
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COD	Chemical Oxygen Demand
cm	Centimeter
dBA	Decibels
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
EA	Environmental Assessment
E.O.	Executive Order
EOR	Enhanced Oil Recovery
EPA	U. S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
°F	Degrees Fahrenheit
FHWA	Federal Highway Administration
ft	Feet
ft^3/s	Cubic Feet per Second
FWS	U.S. Fish & Wildlife Service
FY	Fiscal Year

Gal.	Gallon
ha	Hectare
in.	Inch
IND-1A	Industrial Landfill No. 1A
IND-1B	Industrial Landfill No. 1B
IND-2	Industrial Landfill No. 2
km	Kilometer
kph	Kilometers per Hour
L	Liters
lbs	Pounds
L/s	Liters per second
m	Meters
MER	Maximum Efficient Rate
m^3	Cubic Meters
Mcf	Mil Cubic Feet or 1,000 Cubic Feet
mg/L	Milligrams per Liter
$\mu g/m^3$	Microgram per Cubic Meter
mi	Mile
mph	Miles per Hour
N/A	Not Available
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NORM	Naturally Occurring Radioactive Material
NOx	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPR-3	Naval Petroleum Reserve No. 3
NREL	National Renewable Energy Laboratory
NRHP	National Registry of Historic Places
PA	Programmatic Agreement
PIE	Pressure-Induced Event
pCi/L	Picocuries per Liter
ppb	Parts per Billion
ppm	Parts per Million

RCRA	Resource Conservation and Recovery Act
RF	Ranching and Farming District
RMOTC	Rocky Mountain Oilfield Testing Center
SHWD	Solid and Hazardous Waste Division
SQC	Scenic Quality Class
SR	State Road
SPCC	Spill Prevention Control and Countermeasure
S.U.	Standard Units
SWEA	Site-wide Environmental Assessment
TDS	Total Dissolved Solids
TRI	Toxic Release Inventory
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USC	United States Code
USN	U.S. Navy
VRM	Visual Resource Management
WAS	Wyoming Archaeological Society
WGFD	Wyoming Game and Fish Department
WOGCC	Wyoming Oil and Gas Conservation Commission
WYDEQ	Wyoming Department of Environmental Quality
WYDOT	Wyoming Department of Transportation
WYGISC	Wyoming Geographical Information Science Center
WYPDES	Wyoming Pollutant Discharge Elimination System
WYSHPO	Wyoming State Historic Preservation Officer
WYWTS	Wyoming State Chapter of the Wildlife Society

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1.0 INTRODUCTION

The U.S. Department of Energy (DOE) is proposing to discontinue government operations at the Rocky Mountain Oilfield Testing Center (RMOTC) and Naval Petroleum Reserve No. 3 (NPR-3) and divest the property and mineral rights to a private entity or entities for continued commercial oil and gas production. Divestment would include the conveyance of a conservation easement encompassing approximately 520 acres of land at NPR-3 would prohibit development, subdivision, and a host of other measures to preserve the conservation area. The conservation easement would be routinely monitored by a qualified non-profit trust entity to ensure that the private entity is adhering to the terms of the conservation easement and to document the condition of the conservation area.

NPR-3 and RMOTC are located in Natrona County, Wyoming, approximately 35 mi (56 km) north of Casper. This Site-Wide Environmental Assessment (SWEA) was being prepared under the regulations of the National Environmental Policy Act (NEPA) established by the Council on Environmental Quality (CEQ) and DOE.

The Proposed Action – sale of NPR-3 to a private entity or entities and conveyance of a conservation easement – represents a shift in DOE policy from the expanded operations of RMOTC and continued operations of NPR-3 assessed in the 2008 *Rocky Mountain Oilfield Testing Center/Naval Petroleum Reserve No. 3 Site-wide Environmental Assessment and Finding of No Significant Impact*, and a return to the proposed actions addressed in the 1998 *Site-wide Environmental Assessment for Preparation for Transfer of Ownership of Naval Petroleum Reserve No. 3 (NPR-3)* (DOE 1998). Whereas the 1998 Site-wide Environmental Assessment (SWEA) addressed the actions DOE intended to perform in preparation for transferring ownership of the property, this SWEA addresses the property transfer itself, as well as the environmental consequences of actions that a new owner(s) is(are) reasonably expected to take after obtaining the property. As such, this SWEA incorporates both the 1998 and 2008 documents in their entireties and addresses environmental issues that were not fully analyzed in the previous documents.

1.1 Proposed Action and Alternatives

Under the Proposed Action (which is also the preferred action), DOE would discontinue testing at RMOTC, and sell NPR-3 to one or more entities for use in commercial oil production, and convey a conservation easement that protects areas of Tribal concern and historic properties at the site in perpetuity. DOE expects that the new owner(s) would continue to use conventional oil exploration and production methods similar to those DOE has employed at the site since 1976. This is likely to include well maintenance and rework, various down-hole stimulation activities, and drilling new wells as needed. Additionally, DOE expects private owners to implement Enhanced Oil Recovery (EOR) techniques such as carbon dioxide (CO_2) and/or steam flooding similar to those DOE has tested in the past and of the type private companies in adjacent oil fields are currently implementing.

One alternative to selling the property involves transferring NPR-3 to another federal agency that would then lease the property to private entities for continued oil production. This option would maintain federal ownership of the cultural and historic sites associated with NPR-3. For the purposes of this SWEA, DOE assumes that the property would be offered for lease and ultimately produced using EOR techniques similar to what would likely occur if the property was sold. However, because the new agency will not have the same operational authority that DOE currently holds, transferring the property to another agency would require full environmental restoration on DOE's behalf prior to the transfer.

Given the current energy production environment, another alternative is to sell or lease the property for utility-scale renewable energy production. This would involve placing a wind farm, solar farm or geothermal plant on the property.

Under the No Action alternative, DOE would not sell or transfer the property and would continue operating it at current levels. Well maintenance and rework, down-hole stimulation and new well development would be the same as in the Proposed Action, but it is unlikely that DOE would implement site-wide EOR projects in the foreseeable future.

1.2 National Environmental Policy Act and Related Procedures

The CEQ regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508) and DOE's implementing procedures for compliance with NEPA (10 CFR Part 1021) require that DOE, as a federal agency:

- Assess the environmental impacts of its proposed actions;
- Identify any adverse environmental effects that cannot be avoided should a proposed action be implemented;
- Evaluate alternatives to the proposed action, including a no action alternative;
- Describe the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity; and
- Characterize any irreversible and irretrievable commitments of resources that would be involved should the proposed action be implemented.

These requirements must be met before a final decision is made to proceed with any proposed federal action that could cause significant impacts to human health or the environment, including the sale of NPR-3 to a private entity.

This SWEA is part of an extensive collection of NEPA documentation that has been developed since 1976 to assess NPR-3 and RMOTC operations for environmental impact. This documentation includes the following:

- *Strategic Petroleum Reserve: Final Environmental Impact Statement*, which addressed the original plan to establish a national strategic petroleum reserve, including NPR-3 (U.S. Navy [USN] 1976)
- *Environmental Assessment EA-0334 Divestiture of Naval Petroleum Reserves Nos. 1 and 3*, which covered selling NPR-3 (DOE 1988)
- *Final Site-wide Environmental Assessment EA-1008 for Continued Development of Naval Petroleum Reserve No. 3 (NPR-3)*, which covered expanded operations, including drilling an additional 250 wells and increased use of Enhanced Oil Recovery (EOR) techniques (DOE 1995)
- *Final Site-wide Environmental Assessment EA-1236 for Preparation for Transfer of Ownership of Naval Petroleum Reserve No. 3 (NPR-3)*, which covered activities necessary for selling NPR-3 (DOE 1998)
- *Environmental Assessment EA-1350 for Preparation for Production of Crude Oil from a Subterranean Facility*, which covers the construction and operation of a subterranean facility with radiating horizontal wells and the related reclamation and restoration of the site (DOE 2001)
- *Final Site-wide Environmental Assessment for the Rocky Mountain Oilfield Testing Center/Naval Petroleum Reserve No. 3*, which covers additional drilling, EOR and renewable energy projects (DOE 2008)
- Numerous Categorical Exclusions pertaining to well and pipeline maintenance, experimental activities, and similar work

All EAs associated with NPR-3 have resulted in Findings of No Significant Impact.

1.3 Background

NPR-3 (Teapot Dome) is a 9,481-ac (3,837 ha) oilfield located in Natrona County, Wyoming, approximately 35 mi (56 km) north of the City of Casper (Figure 1-1). Production at NPR-3 began in the 1920's when leases were issued by the Interior Department under the Mineral Leasing Act. Production was discontinued after 1927 and renewed between 1959 and 1976 in a limited program to prevent the loss of U.S. Government oil to privately-owned wells on adjacent land. In 1976, Congress passed the Naval Petroleum Reserves Production Act (Public Law 94-258), which requires that the Naval Petroleum Reserves be produced at their maximum efficient rate (MER), consistent with sound engineering practices, for a period of six years. The law also provides that at the conclusion of the initial 6-year production period, the President (with the approval of Congress) could extend production in increments of up to three years each, if continued production was found to be in the national interest. The President has routinely authorized continued production at NPR-3, extending production through April 15, 2015.

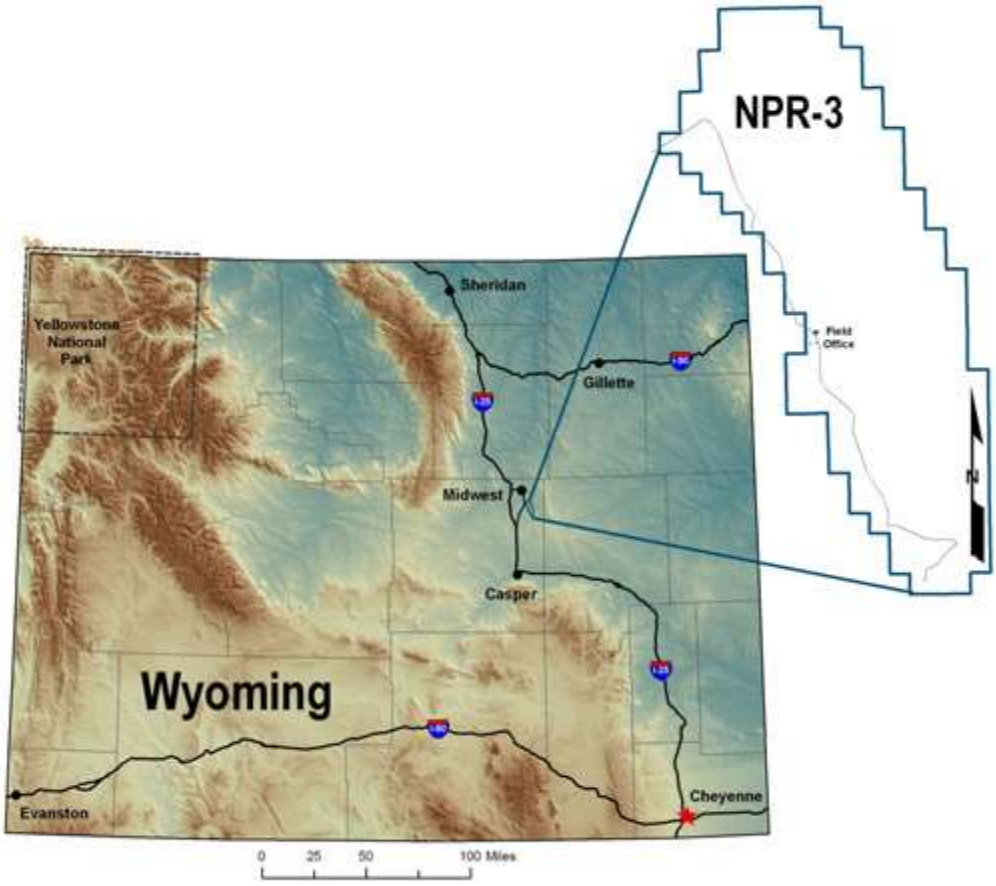

Figure 1-1: NPR-3 Location Map

Since 1976, DOE has employed both traditional and enhanced oil production techniques at NPR-3. Production facilities at NPR-3 include pumping units, treaters, and tanks for storing petroleum and produced water; a low-temperature-separation gas plant; water and gas injection facilities; wastewater disposal system; wastewater treatment facility; and flow lines. In addition, there are numerous support facilities, including electric power distribution systems; cathodic protection systems; potable water and sewer systems; roads; bridges and fences; and buildings for maintenance, production support, administration, safety, security, and environmental purposes.

Production peaked in 1981 at about 4,000 barrels (bbls) per day. Since then, production has steadily declined due to dropping pressure and NPR-3 is now a mature stripper field producing approximately 216 bbls of oil per day in 2014.

DOE has continuously employed production techniques in an effort to maintain underground pressure and improve production. Enhanced techniques included the following:

- Water Flooding: DOE injected approximately 420,000 gal. (1.6 million L) of water per day into the Second Wall Creek sand unit of the Frontier shale formation from March 1979 through 1986, at which point water injection was reduced to 168,000 gal./day (0.6 million L/day). Water flooding in Second Wall Creek was discontinued in March 1994 due to reduced production.
- Natural Gas Injection: Starting in 1979, between 2.0 and 4.0 million standard cubic feet of natural gas per day has been injected into the Second Wall Creek unit. Initially, this gas came from the Muddy, Lakota and Dakota formations. However, gas production from the Second Wall Creek quickly increased to match the injection rate and currently gas removed from Second Wall is recycled back into the formation.
- Polymer/Water Flood: In 1981 a test of a polymer-waterflood injection was conducted in the Shannon unit of the Steele Shale. The goal of the injection was two-fold: 1) increase the reservoir pressure, and 2) reduce the channeling of migrating fluids through natural fractures, which bypassed much of the remaining petroleum reserves. Unfortunately, severe channeling continued to occur and the project was discontinued that same year.
- Fireflood: In the early 1980s an in-situ combustion pilot project was tested in the Shannon. It did not produce positive results and was discontinued in 1986.
- Steamflood: DOE employed a steam flooding program at NPR-3 from 1988 through 1998 in the Shannon. As many as five steam generators and a water treating facility were installed and operated to support this program. In 1994, DOE estimated that steamflooding produced approximately 301 bbls of oil per day. The practice was discontinued in 1998 in anticipation of NPR-3 being sold and has not been re-started.
- Huff and Puff: In 1992, DOE tested Huff and Puff in the Shannon. While this technique increased oil production by about 100 bbls/day,it was discontinued in 1995 due to frequent vapor lock in treated production wells and excessive manpower demands that it placed on site personnel.

Carbon dioxide (CO_2) flooding in the Tensleep formation was proposed in 2008 and analyzed according to NEPA requirements (DOE 2008). The original cost estimate to implement the project exceeded $5 million and required Congressional line-item funding for implementation. Congress has not funded the CO_2 project and the political climate for the foreseeable future is such that Congressional action is unlikely. Implementing CO_2 or other Enhanced Oil Recovery (EOR) techniques site-wide would be even more expensive and less likely to gain Congressional approval.

In addition to the lack of funding for the CO_2 project, DOE's administrative costs have disproportionally increased on upon NPR-3. Originally, NPR-3 was one of six properties making up the Naval Petroleum Reserves and serving as a contingency source of fuel for the U.S. military (DOE 2014a). Since 1998, DOE has systematically divested itself of the other five Naval Petroleum Reserve properties. NPR-1 (Elk Hills), located in California, was sold to Occidental Petroleum Corporation in 1998. Naval Oil Shale Reserve 1 (NOSR-1) and NOSR-3 (located in Colorado) were transferred to BLM and have been offered for commercial mineral leasing. NOSR-2 (located in Utah) remained undeveloped by DOE and was transferred to the Northern Ute Indian Tribe in 2001. NPR-2 (also located in California) was partially transferred to the Department of the Interior in 2005, with other portions of the property being transferred

to the City of Taft, CA, and the remaining portions staying under DOE jurisdiction until after environmental assessments are completed (DOE 2014a).

With the other Naval Petroleum Reserve properties having been sold or transferred, DOE's administrative costs have increasingly fallen upon NPR-3 operations. Combined with Congressional inaction on the CO_2 project and lower overall oil production, the increase in administrative cost burden drove the DOE Secretary to determine that DOE would soon be unable to fulfill its mandate to produce the field at MER and that continued government operation of NPR-3 was not in the national interest. Therefore, DOE developed a disposition plan, which it presented to Congress, and is now pursuing divestment of the property (DOE 2013a).

1.4 Scoping Process

On February 15, 2013, DOE announced its intent to prepare this SWEA to its mailing list of 260 interested parties. The Notice Letter and the distribution list of agencies, Tribes, and members of the public are included in Appendix A. Comments on the scope of this EA were received from the Wyoming Archaeological Society (WAS), various tribal agencies, U.S. Department of Interior (DOI) Bureau of Land Management (BLM), Solid and Hazardous Waste Division (SHWD) of the Wyoming Department of Environmental Quality (WYDEQ), Wyoming Game and Fish Department, and the Water Division of the WYDEQ. The following Sections summarize the scoping comments received from various organizations, agencies and tribes.

1.4.1 Summary of Wyoming Archaeological Society Scoping Comments

The WAS noted that the potential impacts of the Proposed Action on cultural resources and historic properties are required to be evaluated within this SWEA. Further, WAS stated that its preference was that NPR-3 remain under federal jurisdiction and recommended the completion of a Class III cultural resources inventory to modern standards, evaluation of all sites for inclusion in the National Registry of Historic Places (NRHP), and the development and implementation of conservation and preservation measures for sites of significance prior to title transfer. Additionally, WAS recommended that protection measures for historic properties be included as part of the bill of sale to assure continuation of the conservation and preservation efforts. DOE has reviewed these recommendations and addresses them in Sections 4, Affected Environment, and 5 Environmental Consequences.

1.4.2 Summary of Tribal Agency Scoping Comments

Several tribal agencies also noted that the potential impacts of the Proposed Action on cultural resources and historic properties are required to be evaluated within this SWEA. DOE concurred with this observation and addresses cultural resources in Sections 4, Affected Environment, and 5 Environmental Consequences. Moreover, additional Class II and III inventories have been completed and conservation/preservation measures are being addressed under the process outlined in Section 106 of the NHPA.

As part of its scoping comments, the Northern Arapaho Tribe sent a letter to the Bureau of Indian Affairs (BIA) and Bureau of Land Management (BLM) requesting those Agencies' support in transferring NPR-3 surface rights to BIA and mineral rights to BLM for the benefit of the Tribe. The Northern Arapaho Tribe asserted that NPR-3 was within the Tribe's aboriginal lands and within the area originally set aside for the Tribe for its reservation in the Fort Laramie Treaty of 1851.The DOE, BIA, and BLM jointly investigated this claim and determined that the property was not subject to the Fort Laramie Treaty.

1.4.3 Summary of Bureau of Land Management Scoping Comments

The BLM Wyoming State Director issued a letter to DOE in which BLM explained that the transfer of NPR-3 to BLM would not be in the interest of the public and requested that the Lease Alternative be

dropped from this SWEA. BLM noted the potential complexities of continuing oil production on the property under potential multiple lease holders, as well as potential environmental liabilities discussed in previous Phase I Environmental Site Assessments (which are discussed in detail in Section 4, Affected Environment).

Moreover, BLM noted that President Wilson's Order of Withdrawal (1915) establishing NPR-3 would need to be retracted in order for BLM to assume responsibility for the property.

1.4.4 Summary of WYDEQ Solid and Hazardous Waste Division Comments

WYDEQ SHWD noted that an inactive industrial waste landfill and associated landfarm do not currently have an approved closure permit. In response, DOE has confirmed that the landfill cover meets WYDEQ requirements and submitted a closure permit application to WYDEQ on November 18, 2014. The closure permit application included a Post Closure Environmental Monitoring Plan that provides for quarterly groundwater sampling, analysis and submittal of groundwater monitoring reports in accordance with WYDEQ regulations for up to 30 years. These comments are addressed in Sections 4.8 and 5.1.9.

1.4.5 Summary of Wyoming Game and Fish Department Comments

The Wyoming Game and Fish Department (WGFD) commented that the area had incurred vegetation damage over time, including cheatgrass invasion. WGFD recommended that cheatgrass control measures be implemented during reclamation and restoration activities associated with post construction site stabilization and well plug and abandonment. Moreover, WGFD noted that steps be taken to prevent the spread of aquatic invasive species. DOE concurs with the WGFD comments and addresses them to the extent possible in Sections 4 and 5, with the understanding that the Proposed Action is to sell the property to a private entity which will then be responsible for implementing invasive species controls.

1.4.6 Summary of WYDEQ Water Division Wyoming-Specific National Pollutant Discharge Elimination System (NPDES/WYPDES) Program Comments

The WYDEQ Water Division WYPDES Program commented on the transition requirements for DOE's existing WYPDES permit. Specifically, WYDEQ noted that a Notice of Transfer and Acceptance will have to be completed by both DOE and the purchasing entity in order to transfer the existing WYPDES permit to the new field owner. If the new owner were to choose to not operate the field for oil production, DOE would complete a Notice of Termination to cancel the existing permit. These comments are addressed in Sections 4.3 and 5.

1.5 Public Comments on Draft SWEA

In March 2014, DOE published a draft of this SWEA for public comment. This Section summarizes the comments received from various organizations and individuals. DOE has considered these comments and modified the final SWEA accordingly. Appendix C shows the individual comments and DOE's response to them.

1.5.1 Summary of Standing Rock Sioux Tribe Comments

The Standing Rock Sioux Tribe submitted extensive comments on the Draft SWEA. Specifically, the Tribe questioned the following:

- DOE's use of a subcontractor to develop the SWEA;
- The SWEA's analysis of significance in a number of areas, including cultural resources;
- The lack of information regarding previous environmental liabilities reports;
- The necessity of the Proposed Action;

- DOE's conclusions on the potential for utility-scale alternative energy development at NPR-3;
- The impact the Proposed Action would have on water resources and wetlands; and
- The adequacy of the Cumulative Effects section.

DOE has modified several Sections of the SWEA in response to the Standing Rock Sioux Tribe's comments. In addition, the Proposed Action was modified to incorporate a conservation easement to address the Tribe's concerns regarding cultural resources.

1.5.2 Summary of Bureau of Land Management Comments

The BLM submitted comments regarding the existing environmental liabilities at NPR-3, DOE assumptions regarding actions and responsibilities of a lessee if the property were to be transferred, the potential for full remediation of the site, and the necessity of the Proposed Action. In response, DOE has included a new section addressing prior Phase I and II environmental site assessment findings, modified the Lease Alternative, and revised the discussion regarding the necessity for the Proposed Action to clarify language accordingly

1.5.3 Summary of WYDEQ Solid and Hazardous Waste Division Comments

The WYDEQ SHWD commented that it was unclear that the existing groundwater monitoring system was adequate and requesting information about existing composting facilities. In addition, WYDEQ SHWD noted that the existing industrial landfill was still undergoing closure and that groundwater monitoring had indicated potential contamination from the landfill. DOE has modified its discussion of the landfill, composting facilities, and groundwater monitoring activities to address these concerns.

1.5.4 Summary of Wyoming Game and Fish Department Comments

The Wyoming Game and Fish Department (WGFD) provided comments on the Draft SWEA regarding the potential impact of carbon dioxide flooding on terrestrial wildlife. DOE has modified the SWEA accordingly.

1.5.5 Summary of EPA Comments

In its comments on the Draft SWEA, EPA recommends that DOE continue to work with WYDEQ on any outstanding issues related to the landfills and composting facilities. Further, EPA expressed concern that the Draft SWEA did not adequately address hazardous substances used onsite. DOE has modified its discussion of waste disposal sites to clarify the status of the landfill closure. In addition, DOE has incorporated a new section explicitly addressing the results of previous and current Phase I and II environmental site assessments and the report findings regarding hazardous substances.

1.5.6 Summary of the Wyoming State Chapter of the Wildlife Society (WYTWS) Comments

The WYTWS provided comments related to the Proposed Action's impact on wildlife and its habitat. DOE has modified the appropriate sections of the SWEA accordingly.

1.5.7 Summary of U.S Fish and Wildlife Service Comments

The USFWS provided comments regarding the potential for carbon dioxide leaks from EOR activities to result in the death of birds and other wildlife. DOE has incorporated these comments in sections relating to terrestrial wildlife.

1.6 Organization of the SWEA

Section 1 of this SWEA provides an overview of the Proposed Action, places the SWEA within the overall NEPA context for NPR-3, summarizes background information, and summarizes comments and responses received during scoping and public comment. Section 2 provides DOE's detailed statement of the purpose and need for its proposed action. Section 3 defines the Proposed Action, reasonable alternatives, and the No Action Alternative. Section 4 characterizes the affected environment. Section 5 assesses the impacts that the Proposed Action, reasonable alternatives and No Action Alternative would have on the affected environment if implemented. Section 6 identifies the various agencies and personnel consulted in developing this SWEA. References cited throughout the SWEA are listed in Section 7. The Appendices include a copy of the scoping letter and distribution list.

1.7 Preparation of the SWEA

This SWEA has been prepared by Navarro Research and Engineering, Inc., on behalf of the DOE. In fulfillment of 40 CFR §1506.5, DOE has made its own evaluation of the environmental issues associated with the proposed action and alternatives and takes full responsibility for the scope and content of the SWEA. Moreover, no firm, including Navarro Research and Engineering, Inc., has been promised future construction, design, or operational work at NPR-3 regardless of the outcome of the decision. All future owners or lessees shall be determined by competitive bid.

2.0 PURPOSE AND NEED FOR AGENCY ACTION

As stated previously, Public Law 94-258 required DOE to operate NPR-3 at its maximum efficient rate. In addition, Title XXXIV of the National Defense Authorization Act for Fiscal Year 1996 directed the Secretary of Energy to maximize the value for NPR-3 under various scenarios, including continued operation and full divestment. At the time, DOE determined that the maximum value for NPR-3 would be achieved by continued DOE operation of the field.

However, in preparing the most recent authorization for continued drilling (Congressional Record 2011), DOE projected that minimally profitable operations would continue into the 2012 to 2015 authorization period, but that continued DOE production would become unprofitable by 2015. As such, continued DOE operation of the field no longer represents its maximum value and President Obama proposed the development of a disposition plan for the field in his FY 2012 Budget Request.

In response, DOE commissioned a utility analysis of the field to determine the economic feasibility of several disposition options and determine which one represented the maximal economic benefit for the public (Frahme and Moritz 2012). That report indicated that the best value option was to transfer the property to another federal agency to oversee leasing the field to private entities for continued oil production. However, additional analysis by GSA identified that private industry was more likely to want to perform work at NPR-3 if the entire field was available as a block. The Leasing Alternative would necessitate that the field be broken into no fewer than four parts, which would significantly reduce interest and result in substantially lower returns that had previously been suggested. Therefore, DOE determined that sale of the property was the best option to meet the legislative requirement to maximize value for the property. With that determination made, DOE developed the *Naval Petroleum Reserve No. 3 Disposition Plan*, which was delivered to Congress in January 2013 (DOE 2013a).

As such, DOE is proposing to sell NPR-3 per the conditions listed in Public Law 94-258, the National Defense Authorization Acts for 1996 and 1999, the November 2011 *Authorization of Continued Production* document and the President's FY 2012 Budget Request. These documents specify that the recommended disposal path maximize the value obtained for NPR-3 by the U.S. Government while minimizing the cost of remediation.

In accordance with DOE NEPA implementing regulations (10 CFR 1021), DOE is required to evaluate the potential environmental impact of this decision. DOE has prepared this SWEA to comply with NEPA regulations.

The proposed sale of NPR-3 is similar to what was assessed in the *Site-wide Environmental Assessment EA-1236 for Preparation for Transfer of Ownership of Naval Petroleum Reserve No. 3 (NPR-3)* (DOE 1998). The primary difference between the 1998 Proposed Action and the current Proposed Action is the conveyance of a conservation easement to protect areas of Tribal concern and historic properties in perpetuity. In addition, EA-1236 addressed the actions DOE expected to take in preparing for the transfer of ownership. This SWEA examines the actual transfer and reasonably expected uses of the property after transfer. DOE used the maximum economic benefit study (hereinafter referred to as the Gustavson Report, Frahme and Moritz 2012) as the basis by which to examine the potential impacts of the Proposed Action in this SWEA. The Gustavson report examined the economic feasibility of selling the oilfield, transferring it to BLM and then leasing it for oil and gas production, and selling the field for use in utility-scale alternative energy production.

EA-1236, as well as the NEPA documentation listed in Section 1.2 above, is incorporated into this SWEA by reference in its entirety.

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3.0 PROPOSED ACTION AND ALTERNATIVES

As stated in Section 2, DOE is required by federal legislation to maximize the value of NPR-3 and is proposing to divest the property in order to meet this requirement. Therefore, DOE has prepared this SWEA to evaluate the foreseeable environmental effects of the following scenarios:

- Sale of NPR-3 to a private entity for continued oil production, including the conveyance of a conservation easement to protect areas of Tribal interest and historic properties (Proposed Action),
- Transfer the property to another government agency who would then lease it to a private entity for continued oil production (Lease Alternative),
- Sale of NPR-3 for utility-scale alternative energy development, including the conveyance of a conservation easement to protect areas of Tribal interest and historic properties (Renewable Energy Alternative), or
- No Action Alternative.

3.1 Proposed Action (Preferred Alternative)

Under the Proposed Action, the infrastructure and facilities at NPR-3 would remain in place and the transfer of the land to a private entity would include the conveyance of a conservation easement encompassing approximately 520 acres of land at NPR-3 (Figure 3-1). The conservation easement would prohibit development, subdivision, and a host of other measures to preserve the conservation area. The conservation easement would be routinely monitored by a qualified non-profit trust entity to ensure that the private entity is adhering to the terms of the conservation easement and to document the condition of the conservation area.

Crude oil development and production in U.S. oil reservoirs typically falls into three distinct phases: primary, secondary, and tertiary (or enhanced) recovery (DOE 2013b). During primary recovery, the natural pressure in the reservoir and/or gravitational flow drive oil into the wellbore where it is then pumped to the surface. Primary production activities usually recover about 10 percent of the oil originally in place (OOIP) in a formation. Oil production at NPR-3 has predominantly been from the primary phase. The drop-off from peak production (approximately 4000 bpd) to current production (approximately 216 bpd) has been largely due to pressure depletion in the field.

Secondary recovery techniques typically involve injecting water or natural gas into an oil reservoir to displace the oil and drive it to a production wellbore. Water re-injection techniques were used at NPR-3 starting in 1987, but were stopped for various reasons. Tertiary or Enhanced Oil Recovery (EOR) techniques fall into three main categories: thermal recovery, miscible gas injection or chemical injection. As stated in Section 1.3 above, DOE has employed a number of EOR techniques at NPR-3with varying success.

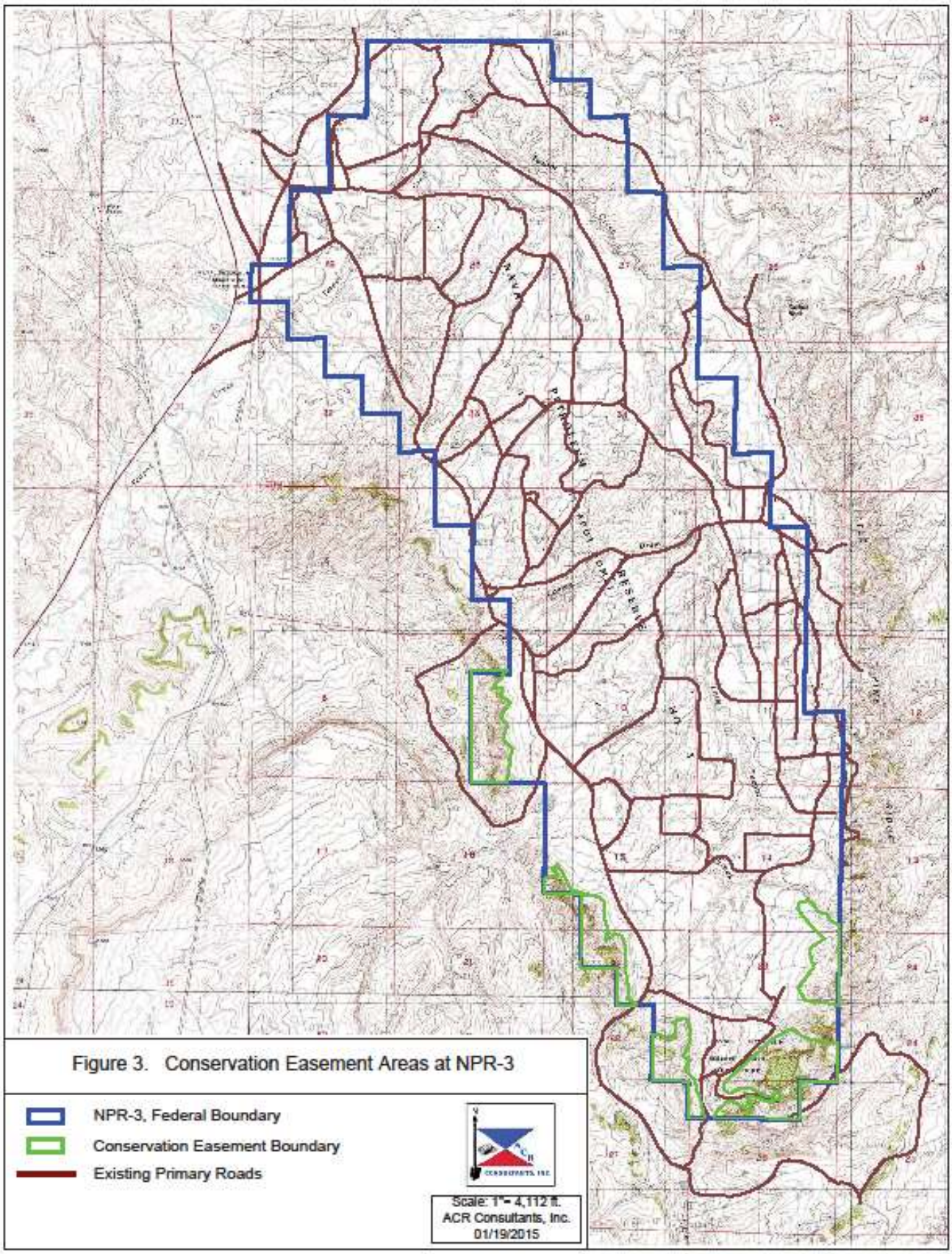

Figure 3-1: Conservation Easement Areas at NPR-3

3.1.1 Primary Production Activities to Incrementally Increase Oil Production

As previously stated, approximately 1,376 wells have been drilled on NPR-3. Of those, 769 have been formally plugged and abandoned. Of the remaining 607 wells, 227 have been shut-in for various reasons and 380 are currently producing oil. Many of the shut-in wells could be brought back online with moderate repair or refurbishment expenditures, including pump replacement, pipeline repair or replacement and manifold repair or replacement. Work on pipelines and manifolds would eliminate leaks that have caused some wells to be shut-in.

Well refurbishment activities (including swabbing and/or re-perforating wells as necessary, squeeze cementing corrosion holes and recompleting wells) are expected to continue under new ownership. Swabbing involves sending a wire rope and cup assembly down the well casing to remove material built up on the perforations that is blocking oil flow. Re-perforating involves cementing existing unproductive perforations and using shape charges to perforate a different area of the casing, which may be in the same area as the original perforations or a different formation entirely. Squeeze cementing involves placing a bridge plug underneath a corroded spot within the casing and then pumping in cement to seal any corroded holes and surrounding annular space. Recompletion involves squeeze cementing and abandoning existing perforations, extending the well to a deeper formation (if necessary), and/or re-perforating in a different location or formation to access additional oil flow.

Further, new owners are expected to continue to implement down-hole stimulation activities such as hot oiling and acidizing. Hot oiling involves pumping heated oil into the well casing in order to melt paraffin that has solidified and is blocking oil flow. Once the paraffin is melted, flow returns and the hot oil is pumped out along with regular crude oil. To acidize a well, operators inject an acid solution (generally 15 percent hydrochloric acid) into the casing, out of the perforations and into the surrounding oil-producing rock formation. This process removes scale and improves permeability in carbonate formations or formations with carbonate cement. Table 3-1 lists the primary production activities expected to continue under new management.

Together, these routine activities could increase oil production by approximately 15 percent over current levels (Frahme and Moritz 2012).

Table 3-1: Primary Production Activities Expected to Continue Under New Ownership

Technique	Used previously at NPR-3	Likelihood of future use by private entity	Formations
Swabbing	Yes	High	All
Acidizing	Yes	High	All
Re-perforating	Yes	High	All
Squeeze Cementing	Yes	High	All
Recompletion	Yes	High	All
Well Rework	Yes	High	All
Pump Maintenance or Replacement	Yes	High	All
Pipeline Repair and Enhancement	Yes	High	All
Manifold Repair and Enhancement	Yes	High	All
Berm and Storage Tank Installation	Yes	High	NA
Hot Oiling	Yes	High	All

3.1.2 Potential Secondary Production

Secondary production typically entails injecting water or gas into a formation to displace the oil and drive it to production wells (DOE 2013b). This maintains or increases reservoir pressure, which may increase

production from the affected wells. Secondary recovery reaches its limit when the production wells start recovering excessive amounts of the injected fluid and oil production drops off (Schlumberger 2013). Table 3-2 lists potential secondary production activities.

Table 3-2: Secondary Production Activities Expected to Continue Under New Ownership

Technique	Used previously at NPR-3	Likelihood of future use by private entity	Formations
Natural Gas Reinjection	Yes	High	All
Process Water Reinjection	Yes	Low	All

DOE implemented water flooding at NPR-3 in 1987 in the Second Wall Creek formation and in 1997 in the Third Wall Creek formation (BLM 2005). As such, water flooding has apparently already run its course in these two formations. While it is possible that water flooding could be employed in other formations at the site, DOE does not anticipate that future owners will employ additional water flooding at NPR-3. It is far more likely that future owners will use EOR techniques such as steam flooding, CO_2 injection or polymer flooding.

DOE previously implemented natural gas reinjection to maintain pressure in various formations at NPR-3 and believes it is likely that future owners will employ similar techniques.

3.1.3 Enhanced Oil Recovery

As mentioned above, EOR techniques generally fall into three main categories: thermal recovery, gas injection or chemical injection. Historically, a number of EOR techniques have been employed in the Shannon and Second Wall Creek units at NPR-3, as discussed in Section 1.3 above.

The highest potential for new EOR activities at NPR-3 continues to be in the Shannon and Second Wall Creek Formations, with the Tensleep formation coming in at a distant third (Frahme and Moritz 2012). Table 3-3 lists potential EOR activities expected to be implemented under new ownership.

Table 3-3: EOR Activities Expected to be Implemented Under New Ownership

Technique	Used previously at NPR-3	Likelihood of future use by private entity	Formations
Nitrogen Gas Injection	No	Low	Second Wall Creek
Carbon Dioxide Injection	No	High	Shannon Second Wall Creek
Miscible Gas Injection	Yes	Moderate	Shannon Second Wall Creek
Polymer Water Flooding	Yes	Moderate	Shannon Second Wall Creek Tensleep
SP/ASP	No	High	Shannon
Steam Flooding	Yes	High	Shannon
Combustion	Yes	Low	Shannon

Predictive screening results suggest that the Shannon Formation would respond favorably to miscible gas injection (including CO_2 injection), surfactant-polymer/alkaline surfactant-polymer (SP/ASP) water flooding, or steam flooding (Frahme and Moritz 2012). Likewise, the Second Wall Creek Formation is predicted to respond favorably to SP/ASP flooding or miscible gas injection (Frahme and Moritz 2012). However, CO_2 flooding is an obvious choice for Second Wall Creek given that Anadarko Petroleum is using CO_2 flooding in this formation in the Salt Creek oil field northwest of and adjacent to NPR-3.

DOE anticipates that implementing EOR at NPR-3 will involve drilling several new injection wells and laying down pipelines to these new injection wells for the delivery of surfactant or CO_2. For the purposes of this assessment, DOE assumes that the new ownership will drill 100 new injection wells and disturb 300 ac (121.4 ha) for pipeline installation. Moreover, DOE anticipates that the new owners will follow existing crude oil product pipeline routes for EOR chemical distribution pipelines, so no additional disturbance will result.

3.1.4 Additional Drilling and Fracking

While NPR-3 has been extensively drilled over the past 35 years, there remain areas in the field where additional drilling and subsequent fracking of vertical wells may result in additional production. These are primarily in the Goose Egg (a cap rock for the Tensleep Formation) and Tensleep Formations (Frahme and Moritz 2012).

Nearly all wells drilled to date at NPR-3 have been vertical boreholes and most have been previously fracked. Fracking is a process by which rock formations are artificially fractured to improve their permeability and the subsequent oil yield. Typically, fracking is accomplished by pumping high-pressure water into oil bearing formations until new fractures form and propagate into the rock. Proppants and chemicals are mixed with the water to keep the fractures open and improve oil flow.

Prior investigation indicates that there is the potential to drill long reach horizontal wells in the Niobrara and Steele Shale Formations (Frahme and Moritz 2012). The Niobrara Shale is being actively horizontally drilled for petroleum production in other parts of Wyoming, as well as in Kansas, Colorado, and Nebraska. In most cases, horizontal boreholes are fracked using similar methods as for vertical wells. However, because horizontal boreholes are much longer than vertical wells, there is a much greater potential for fracking to create environmental issues.

Other issues complicating the decision to drill long-reach horizontal wells at NPR-3 include that directional drilling requires both a knowledge of the three dimensional geometry of the target formation and sophisticated equipment to direct the boring so it passes through the center of the formation as it is advanced. At NPR-3 the formations are cut by as many as ten faults per mile (6 faults/km). The faults may offer shortcuts for contaminants to migrate into other formations. The faulting also displaces the formation on one side relative to the other. In order to keep the boring in the target formation it may be necessary for the horizontal boring to follow a complicated pathway, repeatedly offset during drilling to attempt to remain near the center of the formation.

In addition, the easiest formation to drill horizontally is a flat lying unit. At NPR-3, the Niobrara Shale is doubly folded, which would require the drill bit to be sequentially turned in compass orientation to remain near the center of the formation. This further complicates the process of completing, perforating and maintaining the resulting well.

These factors have combined to influence Anadarko Petroleum's decision to not drill horizontal wells in the Salt Creek field adjacent to NPR-3 (and with a similar structural geology) to date. Officials with the company have indicated that such drilling is a very low priority given that more economical means to improve oil production have been demonstrated for the area. DOE expects the eventual buyer of the property to reach similar conclusions and de-emphasize horizontal drilling within NPR-3. Table 3-4 lists potential additional drilling activities expected to continue under new ownership.

Table 3-4: Additional Drilling Activities Expected to Continue Under New Ownership

Technique	Used previously at NPR-3	Likelihood of future use by private entity	Formations
Vertical Drilling and Subsequent Fracking	Yes	High	All
Horizontal Drilling and Subsequent Fracking	No	Low	Niobrara Shale Steele Shale

3.1.5 Summary of the Proposed Action

In summary, DOE proposes to sell NPR-3 to a private entity and that the new owner will continue routine operations to promote primary production while also employing an EOR strategy to increase oil production. This would be consistent with the site's highest economic use (Frahme and Moritz 2012; GSA 2013). While several EOR techniques are possible, DOE believes that CO_2 flooding is the most likely in the Shannon and Second Wall Creek Formations because this process is being used currently in those units on property adjacent to NPR-3. Further, DOE does not expect long-reach horizontal drilling in the Niobrara in the foreseeable future because this process is technically difficult at this site and substantially cheaper alternatives are available.

3.2 Property Transfer and Lease of NPR-3 to a Private Entity for Continued Oil Production

Under the Lease Alternative, DOE would shut down operations, remediate environmental liabilities, and transfer NPR-3 to the DOI to be managed by BLM. Cleanup efforts would include remediating petroleum-contaminated soil, removing structures, plugging/abandonment of all wells, removing tanks, closing and abandoning pipelines, and re-grading and seeding roads (DOE 2007). The permitted inactive solid industrial waste landfill would be closed per WYDEQ requirements and post-closure monitoring responsibilities would be negotiated between BLM and DOE before the property transfer.

Upon completion of the transfer, BLM's Casper Field Office would most likely be responsible for the property and would either develop a new Land Use Plan or modify its existing Casper Resource Management Plan prior to making management decisions or taking management actions related to the field. Then, BLM would likely follow its internal process for offering competitive leases to private entities for continued oil and gas production at the site. Due to regulatory requirements limiting the size of an individual lease to 2,560 ac (1,036 ha), BLM would need to offer multiple leases for the property.

Per comments provided on the draft of this SWEA, only about six percent of land offered for oil production leases by BLM is ever actually developed. As such, there is no guarantee that oil production would ever be resumed. Regardless, for the purposes of this SWEA, DOE presumes that the site would be leased and re-developed using similar primary production and EOR techniques as described in Section 3.1. Pipelines would be installed, wells completed, tanks installed, roads graded, and facilities constructed to support oil production. Thereafter, well refurbishment, down-hole stimulation and pump and pipeline maintenance would be implemented in the same fashion as under the Proposed Action. CO_2 injection, SP/ASP flooding and steam flooding would be implemented in a similar fashion as the Proposed Action.

DOE has previously followed the requirements of its crosscut guidance document on property transfers (DOE 2005) and offered NPR-3 to BLM for management and lease. In July 2012, BLM sent formal correspondence declining to accept the property transfer.

Even if BLM changed course and accepted NPR-3 for lease, the property could not be leased in full because the Minerals Leasing Act (MLA) of 1920, as amended and administered by the Department of

the Interior, limits individual leases to no more than 2,560 ac (1,036 ha) each. This situation would reduce the pool of potential lessees and thereby significantly impact the revenue potential to be gained from offering the leases. Moreover, given that NPR-3 is a mature stripper field and that DOE would need to remove or close all existing infrastructure before transferring the property to BLM, it is not economically feasible that a private entity would lease the site, re-install the infrastructure, and then expend the funds necessary to implement EOR. Although the Lease Alternative likely represents the most environmentally favorable alternative, DOE has determined that it is not feasible because it does not allow DOE to meet its mandate to maximize revenue. As such, the Lease Alternative will not be further discussed in this SWEA.

3.3 Renewable Energy Development Alternative

Under the Renewable Energy Development Alternative, DOE would sell and transfer NPR-3 to a private entity for utility-scale renewable energy development. The sale and transfer would include the conveyance of a conservation easement encompassing approximately 520 acres of land at NPR-3 (Figure 3-1). The conservation easement would prohibit development, subdivision, and a host of other measures to preserve the conservation area. The conservation easement would be routinely monitored by a qualified non-profit trust entity to ensure that the private entity is adhering to the terms of the conservation easement and to document the condition of the conservation area.

3.3.1 Wind Power

National Renewable Energy Laboratory (NREL) and Gustavson Associates LLC (Frahme and Moritz 2012) have studied the potential for utility-scale wind power development at NPR-3. The Gustavson report (Gustavson 1996) noted that Wyoming has one of the strongest wind resources in the U.S. (Frahme and Moritz 2012) and the University of Wyoming has stated that Wyoming has one of the highest concentrations of Class 5 and 6 wind sites in the nation (UW 2014). There are several areas within the State that exhibit NREL Class 7 wind power densities and therefore are ideal candidates for utility-scale wind farms (Figure 3-2, Source: DOE 2014). In contrast, wind power density at NPR-3 ranges from Class 2 to Class 4 (Frahme and Moritz 2012). These facts make NPR-3 a low quality candidate for utility-scale wind farm development in the foreseeable future. Sites throughout Wyoming are significantly more advantageous for wind farm development than is NPR-3. Additionally, BLM has initiated NEPA documentation for a number of potential high-energy transmission lines in the western U.S., several of which are planned to connect to potential high quality wind farm sites in southern Wyoming (BLM 2011). This indicates that priority wind farm development sites in Wyoming are in the southern part of the State.

Further, in 2004, staff from DOE's NREL and Gulf Engineers and Consultants assessed NPR-3 for wind power potential. They determined that utility-scale wind farming (30MW+) at NPR-3 was not economically viable due to a variety of reasons. First, they noted that wind farming would significantly impact cultural and historic sites, which would be avoided under this alternative by conveying a conservation easement that prohibits development, subdivision, and other measures. Additionally, NREL noted that insufficient land, poor ground conditions, and strong competition from other sites within the State with better wind resources make NPR-3 less than ideal for utility-scale wind power development. In 2012, the Gustavson report came to a similar conclusion. Therefore, DOE believes that utility-scale development of wind energy at NPR-3 is not feasible and it will not be further discussed in this SWEA.

3.3.2 Solar Power

DOE and the General Services Administration commissioned Gustavson Associates, LLC, to develop a highest and best use analysis for NPR-3 (Frahme and Moritz 2012), including an analysis of the potential for utility-scale solar power development at NPR-3. Based on electricity prices and demand in Wyoming at the time of the analysis, the Gustavson report concluded that electricity produced from a utility-scale

solar power installation at NPR-3 would be three times more expensive than current prices (Frahme and Moritz 2012) and therefore the authors concluded that NPR-3 was not a candidate for utility-scale solar farm development.

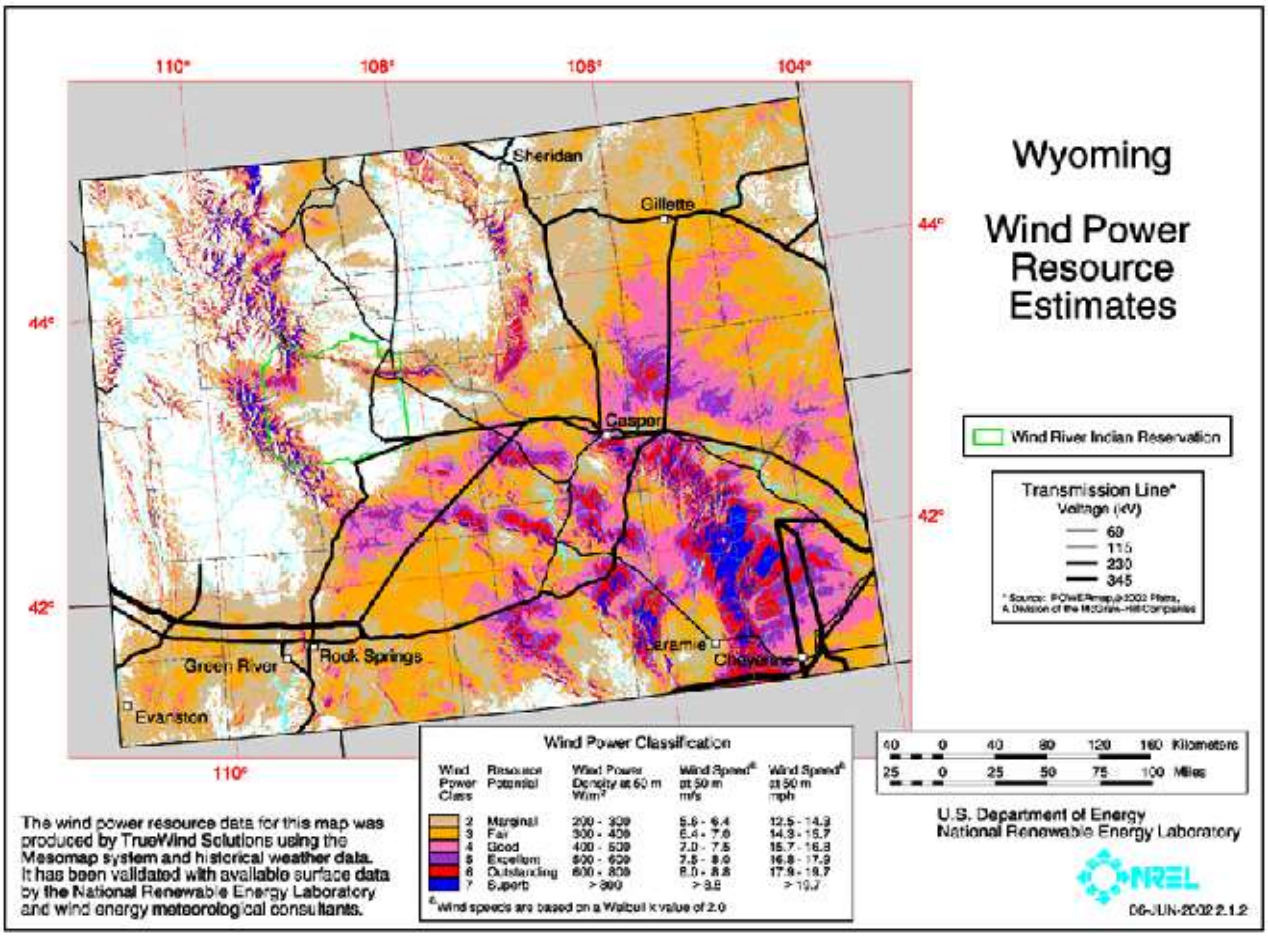

Figure 3-2: Wyoming Wind Map

The Gustavson report noted that Wyoming has an effective renewable solar resource rating that is fairly invariant, meaning that the ability to produce power from solar radiation is essentially the same throughout the state (Frahme and Moritz 2012). As such, the potential to produce utility scale solar power NPR-3 is the same as many other locations that are much closer to proposed high energy transmission lines proposed for the southern part of Wyoming. Entities interested in utility-scale solar power would find that infrastructure costs would be substantially lower at sites that are within five miles of those transmission lines. In addition, the federal government has pursued the establishment of solar power zones in the southwestern U.S. Therefore, DOE believes that utility-scale development of solar energy at NPR-3 is not feasible and will not be further discussed in this SWEA.

3.3.3 Geothermal Power

The geothermal gradient at NPR-3 is rather steep (approximately 20 ºF per thousand vertical ft.). The temperature of the water co-produced from the Pennsylvanian age Tensleep Sandstone (the deepest

formation from which oil is produced at NPR-3) is about 180 ºF. Production from this formation includes approximately 957,000 gal. of water (3.6 million L) per day.

For these reasons, DOE brought in a subcontractor to test the geothermal potential for electricity production. The goal was to determine if a geothermal system could produce electricity at competitive prices, either for use at the site or to sell to the regional electrical grid. Results of the test indicated that if the same geothermal gradient persists to greater depths, water would have to be extracted from approximately 12,000 ft. (3.6 km) below land surface to make electrical production economical. Unfortunately, the top of the Precambrian basement at NPR-3 starts at approximately 7,000 ft. (2.1 km). The basement is composed mostly of Archean granites and granitic gneisses. These types of rocks typically do not have enough natural permeability to provide sufficient fluid for a successful geothermal power plant. Therefore, DOE believes that utility-scale development of geothermal energy at NPR-3 is not feasible and will not be further discussed in this SWEA.

3.4 No Action Alternative

Under the No Action Alternative, DOE would retain ownership of NPR-3 and would continue to employ conventional techniques to produce oil and provide field testing. The property would not be sold and transferred to a private entity. Primary production activities discussed above would continue. Steam flooding (which has been employed previously at NPR-3) would be re-started as long as oil prices remain high. Activities addressed in the 2008 SWEA would be implemented as described in that document. Table 3-5 shows the estimated land requirements under the No Action Alternative.

Based on production activities of the last few years, it is estimated that under the No Action Alternative, the existing infrastructure of roads, facilities, power lines, pipelines, storage tanks, and treatment systems at NPR-3 would continue to be maintained or replaced as necessary. Due to the size of NPR-3, annual maintenance activities could require the replacement of several miles of pipelines, roads and power lines each year in order to keep up with new production.

Table 3-5: Land Required to Implement the No Action Alternative

Operation	Area Required	Area Reclaimed	Notes
New well development	30 ac/yr. 12 ha/yr	—	Assumes 15 wells/yr at 2 ac/well
Plug and Abandonment	—	10 ac/yr 4 ha/yr	Assumes 5 wells/yr at 2 ac/well
Repair or replace existing infrastructure	30 ac/yr 12 ha/yr	—	Assumes 6 mi/yr at 5 ac/mi

3.4.1 Primary Production Activities to Incrementally Increase Oil Production

Under the No Action Alternative, routine activities designed to incrementally increase oil production would be employed in a fashion similar to what was discussed in Section 3.1.1 above. DOE would likely bring shut-in wells back online with moderate repair or refurbishment expenditures, including pump replacement, pipeline repair or replacement and manifold repair or replacement. Work on pipelines and manifolds would eliminate leaks that have caused some wells to be shut-in. Well refurbishment activities would continue under DOE ownership. Further, DOE would continue to implement down-hole stimulation activities such as hot oiling and acidizing. Table 3-6 shows the primary production activities that are expected to continue under the No Action Alternative.

Bringing the 207 shut-in wells back online could reasonably improve oil production by 25 to 40 percent over current rates. As stated previously, the other these routine activities could increase oil production by approximately 15 percent over current levels (Frahme and Moritz 2012). Together, bringing shut-in wells back into production and successfully implementing other routine primary production activities could be expected to increase production to approximately 350 bbls/day.

Table 3-6: Primary Production Activities Expected to Continue Under No Action Alternative

Technique	Used previously at NPR-3	Likelihood of future use by DOE	Formations
Swabbing	Yes	High	All
Acidizing	Yes	High	All
Re-perforating	Yes	High	All
Squeeze Cementing	Yes	High	All
Recompletion	Yes	High	All
Well Rework	Yes	High	All
Pump Maintenance or Replacement	Yes	High	All
Pipeline Repair and Enhancement	Yes	High	All
Manifold Repair and Enhancement	Yes	High	All
Berm and Storage Tank Installation	Yes	High	NA
Hot Oiling	Yes	High	All

3.4.2 EOR Under the No Action Alternative

As discussed in Section 1.3, EOR projects have previously been implemented at NPR-3. Water flooding was implemented in the Second Wall Creek sand unit of the Frontier shale formation from March 1979 until March 1994. Production declined rapidly, even though more than 150 million gallons of water were injected per year through 1994. Natural gas reinjection at NPR-3 started in 1979 and is still on-going in the Second Wall Creek formation. Natural gas production from this formation essentially equals the injection rate, so this has become a gas recycling pathway. A polymer water flooding test was initiated in the Shannon unit of the Steele Shale in 1981 with the goals of increasing reservoir pressure and reducing channeling of migrating fluids through natural fractures.

Unfortunately, severe channeling continued to occur and the project was quickly discontinued. Fireflooding was tested in the Shannon in the early 1980's, but it did not produce positive results and was discontinued in 1986. A Steamflood test program in the Shannon ran from 1988 to 1998. The huff and puff EOR technique was used in the Shannon starting in 1992 and resulted in an increase in production of approximately 100 bbls/day. Huff and puff was discontinued in 1995 due to an increased incidence of gas lock in downstream, increased capital costs to install a collection system to recover excess natural gas before wells could be returned to production mode, and higher than expected labor costs to operate and monitor the system.

Given DOE's history with EOR at NPR-3, CO_2 flooding is likely the only EOR method that DOE would pursue under the No Action Alternative.

Implementation of CO_2 flooding in the Tensleep formation was addressed in a previous SWEA (DOE 2008) and determined to have no significant impact. DOE would perform a NEPA analysis of any CO_2 flooding larger than what was analyzed in 2008. Moreover, DOE implementation of CO_2 flooding at any scale would require Congressional line item budget approval because the construction cost would likely exceed $5 million.

4.0 AFFECTED ENVIRONMENT

4.1 Land Resources

The following discussion provides an overview of the existing local and regional human environments.

4.1.1 Land Uses

NPR-3 is located in an unincorporated area of Natrona County, Wyoming, south of the towns of Midwest and Edgerton. The property can generally be described by the following areas (HydroSolutions 2014):

- Township 39 North, Range 78 West:
    - Sections 21, 27, 28, 29, 33, 34
    - East ½ of Section 20
    - Southwest ¼ of Section 22
    - Northeast ¼ of Section 32
    - Southwest ¼ of Section 35
- Township 38 North, Range 78 West:
    - Sections 2, 3, 10, 11, 14, 15, 23
    - East ½ of Section 9
    - North ½, East ½, and Southeast ¼ of Section 22

Although NPR-3 is currently not zoned, Natrona County has established the area around NPR-3 as a Ranching and Farming District (RF) and DOE expects that NPR-3 would receive the same zone designation after the property is sold. Within a RF district, oil and gas development is considered to be an allowable use.

The land surrounding NPR-3 is currently used for the following activities:

- Oil and gas production intermingled with agricultural uses, primarily sheep and cattle grazing;
- Hunting (primarily big game), typically from September through November; and
- Recreational use of off-road vehicles.

However, hunting and recreational use of off-road vehicles use are currently prohibited on NPR-3.

Current land use activities at NPR-3 are associated with oil and gas development (including exploration, pumping, processing, and transport), research and development (related to stimulating and increasing oil production) and sheep grazing. Also, site personnel routinely perform infrastructure and road maintenance, including grading the dirt roads as necessary, maintaining erosion controls and performing bridge maintenance.

Within the NPR-3 site, developed features include gravel and dirt roads, wellheads and pumping units, oil and gas production facilities and equipment, support facilities, storage areas, and an office complex. The office is headquarters to approximately 50 staff members who provide field and administrative support to the site. Existing well locations are concentrated in a 5,463-ac (2,211-ha) area located in the center of the site, with substantially less development taking place in the northern and southern portions of the site

(Figure 4-1). Most wells are located within the central basin area and at a considerable distance from the surrounding bluffs, although there are several wells in the extreme southern portion of the site near the steeper slopes. Since NPR-3's inception, 1,376 wells have been drilled onsite. Most (769) of these wells are inactive and have been plugged and abandoned. Of the remaining 607 wells, 227 are currently shut-in and 380 are producing oil. Site personnel routinely cycle well operations so that approximately 200 actively pump on any given day.

Support facilities at the site include a vehicle wash rack, four petroleum-contaminated soil (PCS) composting facilities, a welding shop/scrap yard, a chemical storage area, an oil tank storage yard, several double-walled above ground storage tanks (ASTs).

In addition, DOE currently holds 5 active land access permits and 15 Right of Way easements for pipelines, power lines, roads and grazing.

4.1.2 Land Ownership

The U.S. Government currently holds the surface ownership and mineral rights of NPR-3. Natrona County contains an estimated 3,417,824 ac (1,383,144 ha). Of this total, approximately one-half is under federal administration; the remainder consists largely of privately owned ranches or state-owned lands.

NPR-3 is surrounded by BLM, state, and private lands (Figure 4-2). The state-owned land adjacent to the site is located along the southwest and northern boundaries of NPR-3. The BLM lands are adjacent to the northwest boundary of the site. The remaining land bordering the site is owned by private ranchers, one of whom has a lease agreement to graze sheep onsite.

A recent records search as part of a Phase I Environmental Site Assessment indicated that there are no environmental liens or encumbrances attached to NPR-3 as a result of response actions, cleanup, or other remediation of hazardous substances or petroleum products. (HydroSolutions 2014).

4.1.3 Recreation

There are no public recreation facilities in the immediate vicinity of NPR-3, and no areas within NPR-3 are open to the public for recreational purposes. Hunting does occur in contiguous areas; however, it is not allowed on NPR-3. The nearest public recreational facilities are located in and near Midwest, Wyoming, approximately 7 mi (11 km) northwest of NPR-3. These facilities include ball fields, the Salt Creek Museum, developed parks, a recreation center, rodeo grounds, and a golf course. Other recreational facilities maintained within Natrona County include county parks, reservoirs, and recreation areas. These offer a variety of activities such as picnicking, camping, fishing, boating, swimming, and hiking.

The Bozeman Trail, a nationally noted historic trail that was first used by gold miners seeking a short cut to the Montana gold fields is located north and east of NPR-3. The trail subsequently became a military and freight route through the area. Portions of the trail are on the National Register of Historic Trails (Stubbs 2013a) and a segment of the trail is believed to cross a small portion of NPR-3.

There are no Wild or Scenic rivers within NPR-3. The Teapot and Little Teapot Creeks do not meet minimum qualifications for Wild or Scenic status based on their low flow and seasonally dry creek beds. No areas within NPR-3 have been designated for protection status (e.g., wilderness study areas or areas of critical environmental concern).

As described above, no recreational facilities, nationally designated recreational resources, or dispersed recreational activities are found within the NPR-3; therefore, this resource is not considered further in this SWEA.

4.1.4 Visual Resources

The following discussion provides an overview of the existing visual resources related to NPR-3.

4.1.4.1 Natural Character

The natural setting of the NPR-3 site is typical of much of the central portion of Wyoming. It consists of rolling terrain covered with grasses and sagebrush and fragmented by numerous small gullies and deeply incised drainages. In the winter, vegetation (predominantly grass and scrub communities) is sparse. The region is generally covered in deep snow in winter. Grassy terrain predominates in the summer. Along the east, south, and west fringes of the NPR-3 property are rocky cliffs and sandstone bluffs covered with Ponderosa pine and juniper. Figure 4-1 provides a general view of the natural terrain that characterizes the site setting.

Small portions of the NPR-3 site are briefly visible from Wyoming Route 259 from the northwest, but bluffs to the south, east, and west of the site otherwise generally isolate it visually from the public. The sandstone rims along the southernmost end of the property provide observers with a panoramic view of the entire NPR-3 site, but this viewpoint is limited to NPR-3 employees and adjacent landowners.

4.1.4.2 Man-made Features

The natural setting of the NPR-3 landscape has been dramatically affected and interrupted by the installation of facilities, structures, and roads associated with oil and gas development (pump jacks, pipeline Rights of Way, compressor stations), ranching activities (fences, homesteads, and unimproved roads), transportation facilities, and electrical power transmission lines (Figure 4-1). The linear forms created by access roads, drill rigs, and power poles contrast sharply with the non-linear aspects of the natural rolling terrain, interrupting natural views. Likewise, manmade structures such as office buildings, sheds, warehouses, and pump jacks throughout the site contrast sharply in texture, color, and form with the natural landscape. The altered landscape on NPR-3, however, is aesthetically consistent with the surrounding privately owned and BLM-managed lands, which contain the same types of features and structures. No scenic routes or corridors occur in the project area.

4.1.4.3 Visual Resource Management

The BLM has inventoried visual resources for all BLM, state, and private land in the NPR-3 area to establish their Scenic Quality Class (SQC) and Visual Resource Management (VRM) Class. NPR-3 and its surrounding area are listed as an SQC C and VRM Class IV property. This classification allows activities that would result in major modifications to the existing character of the landscape, such as oil and gas development.

4.2 Air Quality and Meteorology

The Wyoming Ambient Air Quality Standards and National Ambient Air Quality Standards (NAAQS) are health-based standards which define the maximum concentration of air pollutions allowed at all locations to which the public has access. The U.S. Environmental Protection Agency (EPA) criteria air pollutants for which standards exist are carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) less than 10 microns in effective diameter (PM10), particulate matter less than 2.5 microns in effective diameter (PM2.5), and sulfur dioxide (SO_2).

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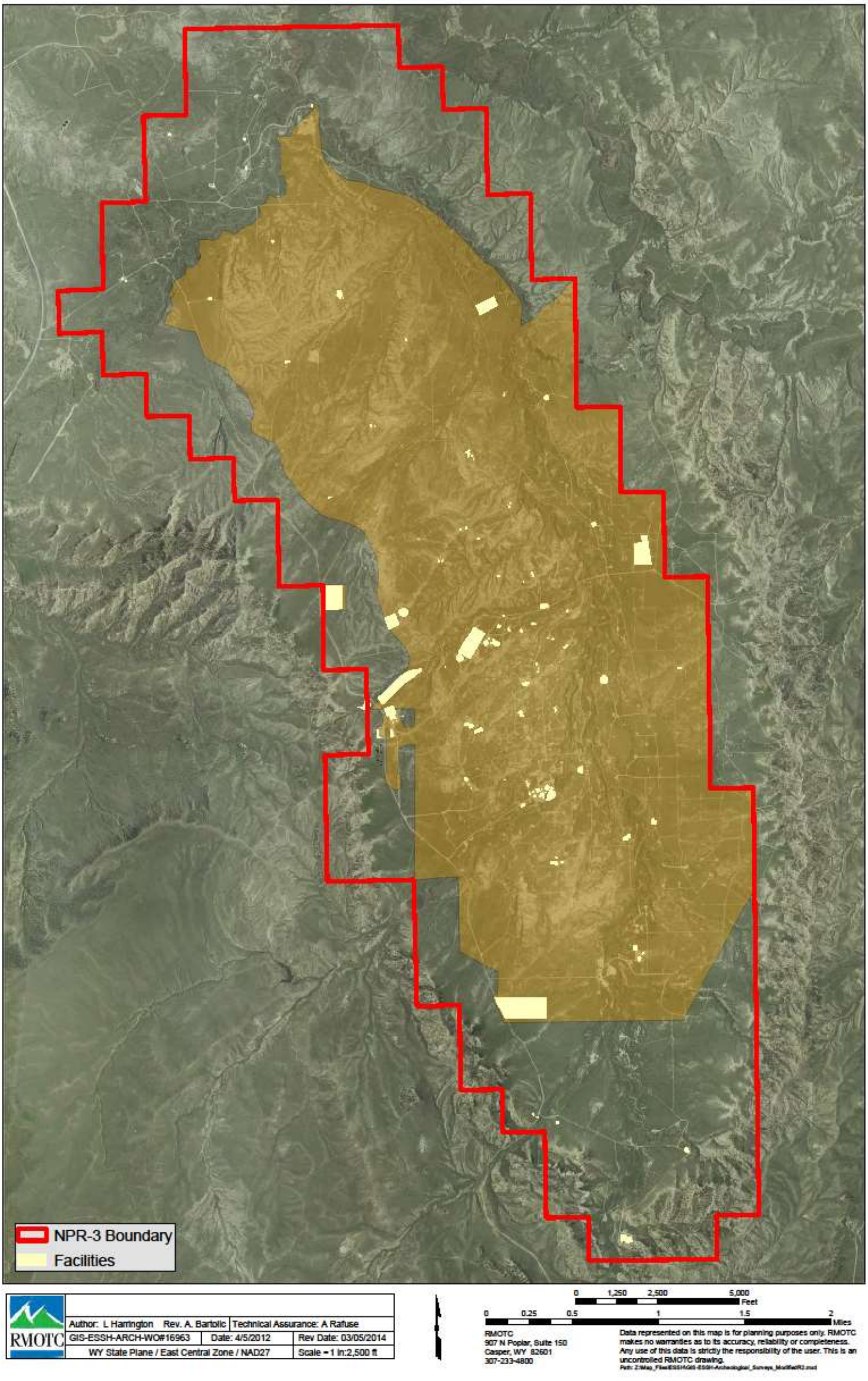

Figure 4-1: NPR-3 Terrain and Disturbed Areas

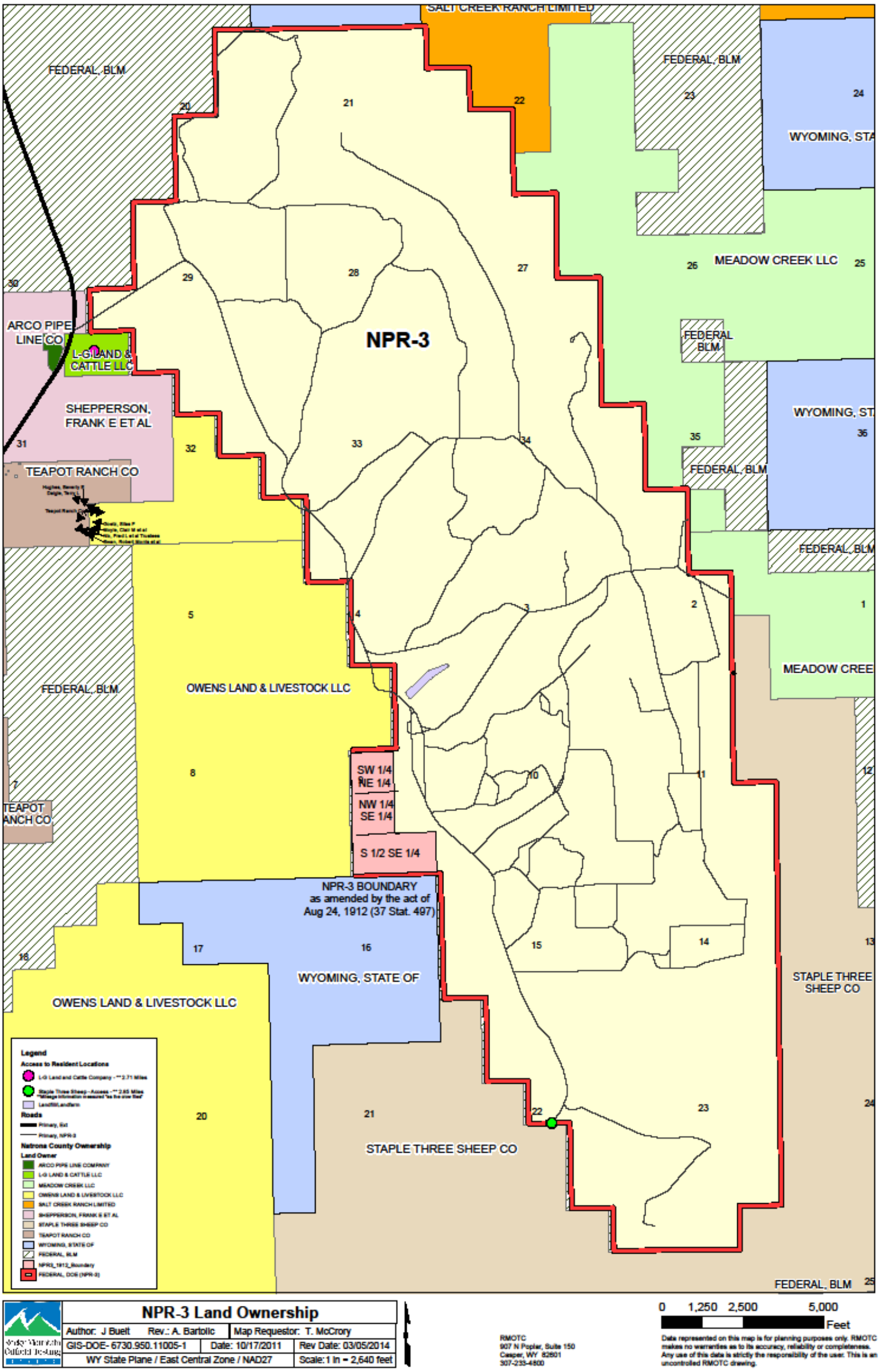

Figure 4-2: NPR-3 Surrounding Land Ownership

4.2.1 Meteorology and Climate

NPR-3 is located in central Wyoming, Natrona County. The climate of the project area and central Wyoming is typically cool, dry, and windy. The site is generally characterized by rolling plains interspersed with ridges and bluffs, with elevations averaging over 7,000 ft (2,100 m).

The Midwest meteorological monitoring station is located approximately 7 mi (11 km) north of the project site. Several other monitoring stations operated by the private petroleum companies, the U.S. EPA, and the state also provide background information necessary to assess the meteorology and air quality in the project area

4.2.2 Temperature and Precipitation

Annual precipitation at NPR-3 ranges from 9 to 12 in. (23 to 30 cm) (DOE 2013c). The Midwest monitoring station recorded annual averages of approximately 12.5 in. (32 cm) of total precipitation (water equivalent) (WRCC 2014). The maximum period for precipitation occurs in the spring and early summer. Mountain ranges influence local precipitation; the western portions are wettest as air currents from the Pacific Ocean drop moisture during orographic uplift. Snow falls frequently from November through May, with an average annual snowfall in Midwest of 54.5 in. (138 cm) (WRCC 2014).

Large variations in diurnal and seasonal temperatures occur, with average monthly temperature for the Midwest monitoring station ranging from 89 °F (32 °C) for summer highs to winter lows of 12 °F (-11 °C) (WRCC 2014). Rapid and frequent temperature changes occur during the winter. The annual average maximum temperature is approximately 46.1 °F (7.8 °C), and the annual average minimum temperature is approximately 31.8 °F (-0.1 °C) (WRCC 2014). The record high temperature at Midwest was 106 °F (41 °C) in July 1973, while the record low was -40 °F (-40 °C) in December 1990 (WRCC 2014). Chinook winds, warm downslope winds, are common along the central Wyoming slopes. Numerous valleys provide pockets for cold air to collect and drain into at night. The higher terrain of the ridges and bluffs prevents wind from stirring the air and the heavier cold air settles in the valleys. It is common for temperatures in the valleys to be lower than temperatures on nearby mountainsides.

Data recorded at the Midwest Wyoming monitoring station show the predominant wind direction to be from the southwest. The wind is locally influenced by the general north-to-south-running mountain ranges. Wind speed is also a function of the area's topography. Mean wind speeds vary from approximately 10 to 15 mph (16 to 24 kph). Strong winds with speeds averaging 30 to 40 mph (48 to 64 kph) and gusts up to 65 mph (104 kph) are common in central Wyoming.

4.2.3 Air Pollutants

Natrona County is designated to be in attainment of all state and federal ambient air quality standards, in large part due to strong winds and the low density of emission sources and population centers. The EPA and WYDEQ have established air quality standards at the federal and state levels, respectively. The EPA implemented National Ambient Air Quality Standards (NAAQS, Table 4-1) to specify acceptable pollutant concentrations which may be equaled, but are not to be exceeded, more than once per year. The Proposed Action is not expected to cause any NAAQS to be exceeded.

Table 4-1: National Ambient Air Quality Standards

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide		primary	8-hour	9 parts per million (ppm)	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead		primary and secondary	Rolling 3 month average	0.15 μg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide		primary	1-hour	100 parts per billion (ppb)	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb (2)	Annual Mean
Ozone		primary and secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution	$PM_{2.5}$	primary	Annual	12 μg/m^3	annual mean, averaged over 3 years
		secondary	Annual	15 μg/m^3	annual mean, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	35 μg/m^3	98th percentile, averaged over 3 years
		primary and secondary	24-hour	150 μg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide		primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

NPR-3 currently has several air emissions sources that have received air quality permit waivers from WYDEQ. As shown in Table 4-2, NPR-3 has fairly low annual emissions rates for volatile organic compounds (VOCs), hazardous air pollutants (HAPs), nitric oxides (NOx), carbon monoxide (CO, and hydrogen sulfide (H2S).

Table 4-2: Air Emissions Subject to WYDEQ Waivers at NPR-3

		Emissions[1] (TPY)				
Source Facility[2]	**Throughput (barrels/day)**	**VOC**	**HAP[3]**	**NO_x**	**CO**	**H_2S[4]**
B-1-33 Battery	225	24.5	2.4	0.6	0.1	1.5
B-2-10 Battery	40	4.3	0.4	1.8	0.3	0.2
B-1-14 Battery	40	4.3	0.4	1.8	0.3	0.2
B-1-23 Battery	6	0.7	Insig[5]	Insig[5]	Insig[5]	Insig[5]
B-1-20 (aka T-1-20) Battery	40	4.3	0.4	-	-	0.2
B-1-3 Battery	60	6.5	0.6	2.4	0.4	0.3
South Terminal	730	0.3	Insig[5]	Insig[5]	Insig[5]	Insig[5]
T-1-3 Remote Test Station	150	16.3	1.6	0.6	0.1	0.8
T-1-2 Remote Test Station	100	10.8	1.1	0.6	0.1	0.6
T-5-3 Remote Test Station	30	3.3	0.3	0.6	0.1	0.2
T-5-10 Remote Test Station	40	4.3	0.4	0.6	0.1	0.2
TLS Gas Plant	2.5 MMSCFD	8.5	0.5	0.9	0.2	Insig[5]
Dehydration Unit[6]	1.5 MMSCFD	Insig[5]	Insig[5]	Insig[5]	Insig[5]	-

[1]Rounded to the nearest 0.1 ton
[2]Source: WYDEQ 2001, unless otherwise noted
[3]HAPs conservatively assumed to be 10% of VOCs
[4]Tank gas H_2S content = 0.0015 mol%. For conservative estimates, the weight percent of tank gas H_2S is assumed to be 5.0. Emissions are overstated to ensure H_2S levels are insignificant.
[5]Fugitive emissions are considered insignificant due to low-gravity production.
[6]Source: WYDEQ 2012

Chapter 3 Section 39(b) of the WYOGCC Rules and Regulations allows up to 60 Mcf (1,699 m^3) of natural gas to be vented to the atmosphere per day per well. Current operations at NPR-3 vent between 0.2 and 0.6 Mcf (5.7 m^3 and 17.0 m^3) per well in order to reduce pressure in well casings and allow the oil to flow more freely. Therefore, actual current rates are more than 10 times less than the regulated limit per well. Combined, the 380 operating wells at NPR-3 emit approximately 100 and 200 Mcf (2,832 to 5,663 m^3) of natural gas per day.

4.3 Water Resources

This section provides an overview of the local and regional surface water and groundwater resources.

4.3.1 Local Surface Water Hydrology

The NPR-3 area is tributary to two major drainage areas. The majority of NPR-3 is tributary to Little Teapot Creek, while the far northwestern portion is tributary to Teapot Creek.

Little Teapot Creek enters the site on the southern boundary as a dry ephemeral wash. It transitions to an intermittent stream in places before becoming perennial below a WYPDES discharge point for produced water. From that point, it flows northwest into Teapot Creek near the northern boundary of the site.

Teapot Creek originates approximately 15 mi (24 km) southwest of NPR-3. It enters the northwestern portion of site in the southwest quadrant of Section 29, T39N, R78W as a perennial stream due to an off-

site, malfunctioning well that continuously discharges untreated produced water into the drainage. Teapot Creek flows about 2 mi (3.2 km) northeasterly across NPR-3 , converges with Little Teapot Creek with a combined flow of approximately 5 ft^3/s (142 L/s), and leaves the site via the northern boundary. Approximately 1 mi (1.6 km) downstream from the site, Teapot Creek flows into Salt Creek (designated by BLM as sensitive), then into the Powder River approximately 25 mi (40 km) north. NPR-3 contains a large number of dry ephemeral washes and intermittent streams, all of which drain into Teapot Creek or Little Teapot Creek. Over 25 impoundments constructed in the 1920's exist on the site, and at least 18 of these meet wetland criteria.

The WYDEQ identifies four classes of streams, from Class 1 (highest level of protection) to Class 4 (lowest level of protection). Streams and washes on NPR-3 are classified by WYDEQ as Class 3B streams (WYDEQ 2001a). Class 3B waters are intermittent and ephemeral streams that do not, or do not have the potential to, support fish populations or drinking water supplies. However, the presence of frequent linear wetlands indicates that they provide habitat for invertebrates, amphibians, or other flora and fauna that inhabit waters of the state at some stage in their life cycles (WYDEQ 2007). Class 4 designations are based upon knowledge that a water body is an artificial, man-made conveyance (i.e., canals), or has been determined not to support aquatic life uses through an approved Use Attainability Analysis. Based on this designation, no waters on NPR-3 are currently Class 4.

4.3.2 Surface Water Quality Permits

Wyoming is an NPDES authorized state (referred to in Wyoming as WYPDES). Wastewater discharges are regulated under the Clean Water Act (33 USC 1251–1387) and associated EPA regulations (40 CFR Parts 122, 136, 403, and 405–471). Wyoming regulations are codified under the Wyoming Water Quality Rules and Regulations, Chapter 7. Table 4-3 shows the surface water permits currently in place for NPR-3.

NPR-3 currently holds one active WYPDES permit (WY-0028274-001) for discharge of produced water from wells in the Tensleep Battery. This discharge point is located in the central portion of the site. Water is cooled in a series of treatment ponds and discharged into an unnamed tributary of Little Teapot Creek. The treatment ponds were constructed in 1996. In the ponds, oil is skimmed from the surface, and the water is cooled from approximately 180°F to between 55°F and 80°F depending on the weather. The oil skimming pond is netted to prevent waterfowl from landing; other ponds are flagged. The facility is also fenced to prevent access by grazing animals.

The WYPDES Permit No. WY-0028274-001 contains discharge limits and sampling requirements for oil and grease, conductivity, total dissolved solids (TDS), pH, chlorides, chemical oxygen demand (COD), and radium-226. The Tensleep Battery currently discharges approximately 957,000 (3.6 million L) of water per day and has the capacity to handle up to1.68 million gal./day (6.36 million L/day). WYPDES sampling is conducted every two months. Discharge monitoring reports are filed with WYDEQ in January and June each year (Table 4-4).

Surface water is also sampled as it enters the site from adjacent properties, as it can contain elevated chlorides and sulfates. Surface water is sampled quarterly. In late 2006, off-site well operations began to inject produced water in some areas rather than discharging, and in these areas, surface water sampling was discontinued.

Table 4-3: Surface Water Permits

Type of Permit	Permit Number	Facility	Agency
Point Discharge	WY-0028274-001	B-TP-10 Discharge	WYDEQ
Storm Water Discharge	WYR-101963	B-TP-10 Large Construction General Permit	WYDEQ
Water Haul Permit	35050	Site wide	Wyoming SEO

Table 4-4: Recent Analytical Results for Water Discharged Under WYPDES Permit WY-0028274-001

Date	Chloride (mg/L)	Oxygen Demand, Chemical (COD) (mg/L)	pH (Standard Units [S.U].)	Solids, Total Dissolved (TDS) at 180ºC (mg/L)	Radium 226 (pCi/L)	Oil & Grease (mg/L)
WYDEQ Standard or Limit	*2,000 mg/L*	*N/A*	*6.5-9.0 S.U.*	*5,000 mg/L*	*60 pCi/L*	*10 mg/L*
12/13/2012	1040	56	8.13	3420	19	ND
2/7/2013	1080	11	8.04	3430	26	ND
4/4/2013	1120	27	8.08	3590	15	ND
6/3/2013	1080	48	8.09	3540	9.8	ND
8/6/2013	1100	26	8.14	3440	20	ND
10/1/2013	1590	104	7.97	4230	16	ND
12/11/2013	1000	39	8.11	3430	14	ND
2/3/2014	1040	43	7.97	3320	15	ND
2/3/2014	1040	43	7.97	3320	15	ND
4/17/2014	1200	61	8.07	3510	20	ND
6/23/2014	993	48	8.06	3300	15	ND
7/22/2014	483	175	8.09	3520	2.4	ND

4.3.3 Wetlands

Wetlands at the site are associated with two streams, Teapot Creek and Little Teapot Creek, and over 25 impoundments located across the site (Figure 4-3). Most of the impoundments were constructed in unnamed tributary drainages that lead to the creeks, and approximately 18 impoundments support wetlands. Wetland areas at NPR-3 are sustained by a combination of natural seeps and springs, runoff, and produced water from oil well operations. Some of the produced water enters from adjacent properties as surface and subsurface flow. Onsite, produced water is cooled and discharged into an unnamed tributary of Little Teapot Creek. In 2004, BKS Environmental Associates, Inc. conducted formal wetland delineations at NPR-3 (BKS 2005). Approximately 61 ac (25 ha) of wetlands exist at the site. The majority of these wetlands (51 ac [21 ha]) were classified as Palustrine Emergent and support hydrophytic vegetation. An additional 10 ac (4.0 ha) of Palustrine Aquatic Bed wetlands are unvegetated. BKS also identified 12 ac (5 ha) of "other waters of the U.S." and 56 mi (89 km) of dry ephemeral drainages at NPR-3. The wetland and non-wetland boundaries are gradual to abrupt based on changes in topography.

4.3.4 Floodplains

Floodplain maps do not exist for NPR-3 because there are no large population centers in the vicinity. The topography of the NPR-3 property is characterized by rolling hills divided by severely cut ravines and an encircling rim of sandstone bluffs. This suggests that floodplains are limited to lands within the embankments of the draws. Flood-prone areas are generally low-lying areas adjacent to wetlands and drainages.

4.3.5 Groundwater

Groundwater characteristics in the region and at NPR-3 are described below. Groundwater monitoring is currently performed in association with Industrial Landfill No. 2 (IND-2), as described below.

4.3.5.1 Regional Groundwater Resources

Groundwater resources near NPR-3 occur in geologic formations (ranging from Precambrian to Holocene in age) exposed at points; most are known to yield some water to wells and springs. The major regional aquifer of the area is the High Plains. The High Plains aquifer is mostly alluvial, relatively shallow and thick, permeable, and generally productive for wells. Discharges to small streams or springs at outcrops occur in some areas (U.S. Geological Survey [USGS] 1996).

Groundwater recharge occurs primarily from direct infiltration of precipitation into the shallower aquifers, infiltration into the rock outcrop areas of the deeper aquifers, and leakage between aquifers. Groundwater quality depends primarily on the source geologic formation or aquifer.

Groundwater is used to meet the demand of current uses on public land, such as livestock, wildlife, mineral development, and recreation; groundwater sources are adequate to meet demand for these purposes. Baseline water quality data can be found in the USGS Groundwater Resources of Natrona County, Wyoming.

4.3.5.2 Local Groundwater Conditions

No underground sources of potable water have been encountered in more than 790 wells drilled since 1976 (DOE 2008). Based on this finding, there do not appear to be any potable water aquifers in any of the formations underlying NPR-3. Those strata that contain water have either excessive levels of TDS or a mixture of hydrocarbons and water. Water quality standards for TDS in Wyoming are 500 milligrams per liter (mg/L) for human consumption and 2,000 mg/L for livestock use.

Throughout the majority of NPR-3, the Steele Shale formation occupies the interval from the surface to an approximate depth of 2,000 ft (600 m). Two permeable sandstone units occur within the upper reaches of the Steele Shale. The upper unit, the Sussex sandstone, outcrops in a ring near the center of the Teapot Dome anticline structure and does not appear to contain an aquifer (DOE 1998). The lower unit, the Shannon sandstone, is an oil reservoir in much of the NPR-3 field. A fault separates the oil reservoir from the Shannon sandstone outcrop at Salt Creek to the north. Groundwater is encountered in the Shannon sandstone in some areas north of the fault, but the concentration of TDS at that location exceeds 10,000 mg/L.

Along the southern, eastern, and western boundary of NPR-3, the Parkman Sandstone member of the Mesa Verde formation outcrops as high ridges dipping away from the center of the dome. This geologic unit overlies the Steele Shale. No water wells have been completed within this geologic unit on NPR-3, as it does not exist underground at NPR-3 except on the very fringes of the property boundary. One water well is completed at a depth of 740 ft (225 m) in this unit approximately 0.5 mile (0.8 km) east of NPR-3 in Section 24, Township 38 North, Range 78 West. In 1972, the water level within the well was 400 ft (122 m) below ground surface (Crist and Lowry 1972). The current quality and quantity of the groundwater are unknown.

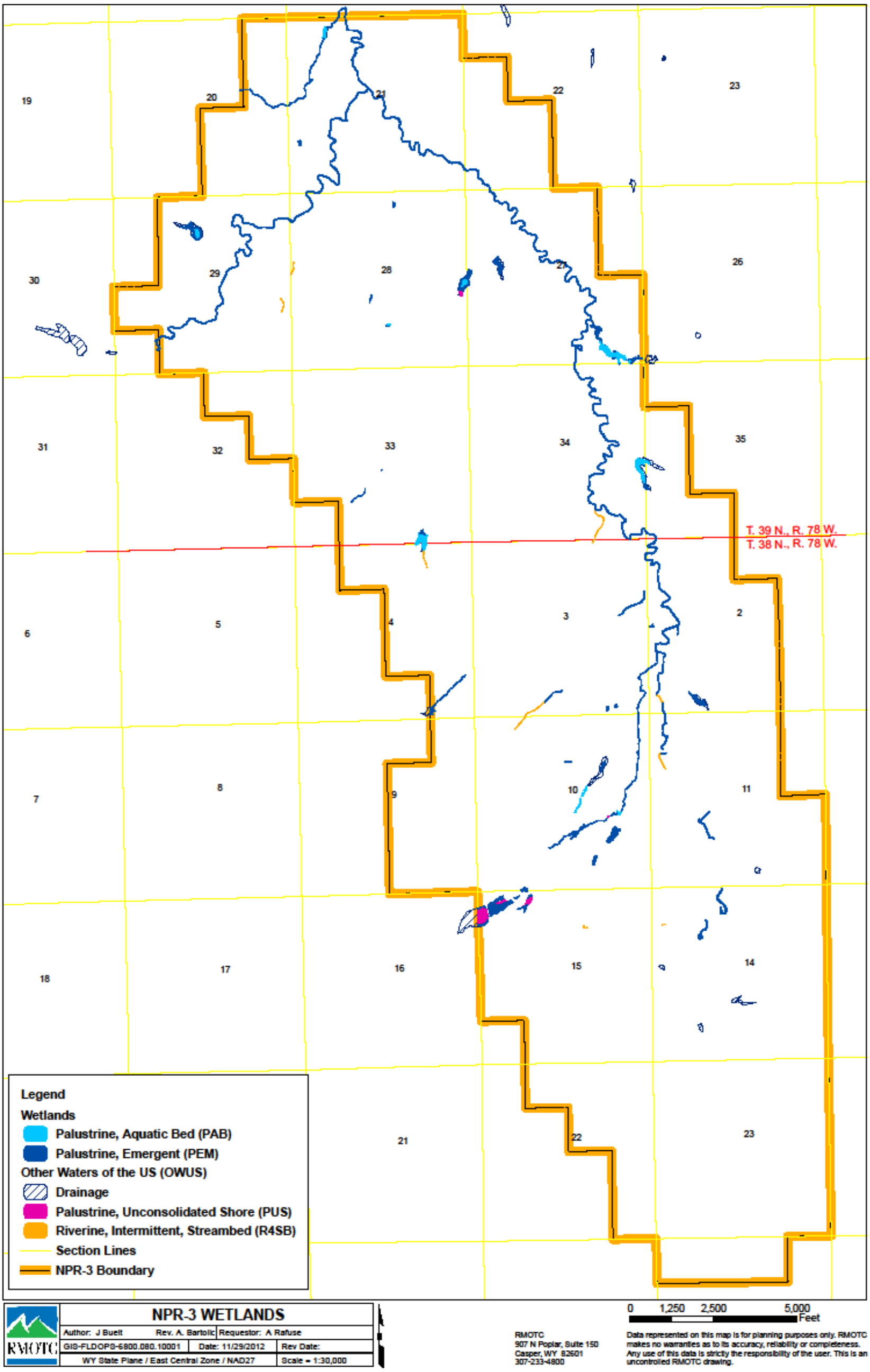

Figure 4-3: NPR-3 Wetland Areas

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4.3.5.3 Groundwater Monitoring

Historically, there were six groundwater monitoring wells at IND-2, which is an industrial waste landfill that has not received any waste since 2001 and is currently undergoing closure. The wells were intended to detect potential contamination migrating from IND-2 and its associated petroleum-contaminated soil (PCS) treatment land farm into shallow groundwater in the water table aquifer. These wells were screened at depths up to 60 ft (18 m) below land surface. At IND-2, the former PCS land farm is located in the western portion and the former landfill (with 13 cells) is located on the eastern end (see Figure 4-4). WYDEQ raised concerns that the three wells adjacent to the landfill (98-1-X-3, 98-2-X-3, and 98-2-X-4) were not dependably providing sufficient groundwater during periodic sampling events. For this reason, in June 2014, DOE properly abandoned those three wells by filling them to the surface with cement grout. Four new groundwater monitoring wells were drilled and installed (MW-1, MW-2A, MW-3, and MW-4) as replacements. Figure 4-4 shows the location of these wells, as well as the landfill dimensions.

Although WYDEQ regulations require groundwater monitoring wells to be advanced to 200 feet below land surface unless water was reached earlier, the new wells at IND-2 were advanced to approximately 100 feet below land surface per agreement with WYDEQ due to the fact that crude oil was encountered at 131 feet while drilling MW-2. (MW-2 was subsequently grouted, abandoned, and replaced with MW-2A approximately 40 feet away.) The new wells are screened at depths of up to 100 feet below land surface except for MW-4, which is screened to 75 feet due to encountering possible crude oil at a depth of 96 feet. All four wells are currently providing sufficient groundwater for analytical purposes.

The new groundwater monitoring wells were sampled monthly from July to October 2014. Analytical results indicate that benzene was detected in downstream wells in concentrations that were significantly higher than background wells. As such, WYDEQ and DOE concluded that contamination from IND-2 was impacting groundwater at NPR-3. Quarterly assessment monitoring will begin in January of 2015. DOE and WYDEQ are currently negotiating the scope and methodology of additional sampling to determine the full nature and extent of the contamination. Any corrective actions necessary to stop and/or mitigate the release of contamination from IND-2 are expected to be negotiated with WYDEQ in the future.

4.3.5.4 Deep Wastewater Injection for Disposal

Three permitted water disposal wells can be used to dispose of produced water and wastewater that do not meet surface discharge requirements. These wells are screened in the Crow Mountain Unit of the Triassic age Chugwater formation, which is approximately 4,500 ft (1.8 km) below land surface. Casing and annular space cementation is employed to prevent migration of fluids between zones. Injection wells are tested every five years to ensure the integrity of the casing and to detect migration of fluids.

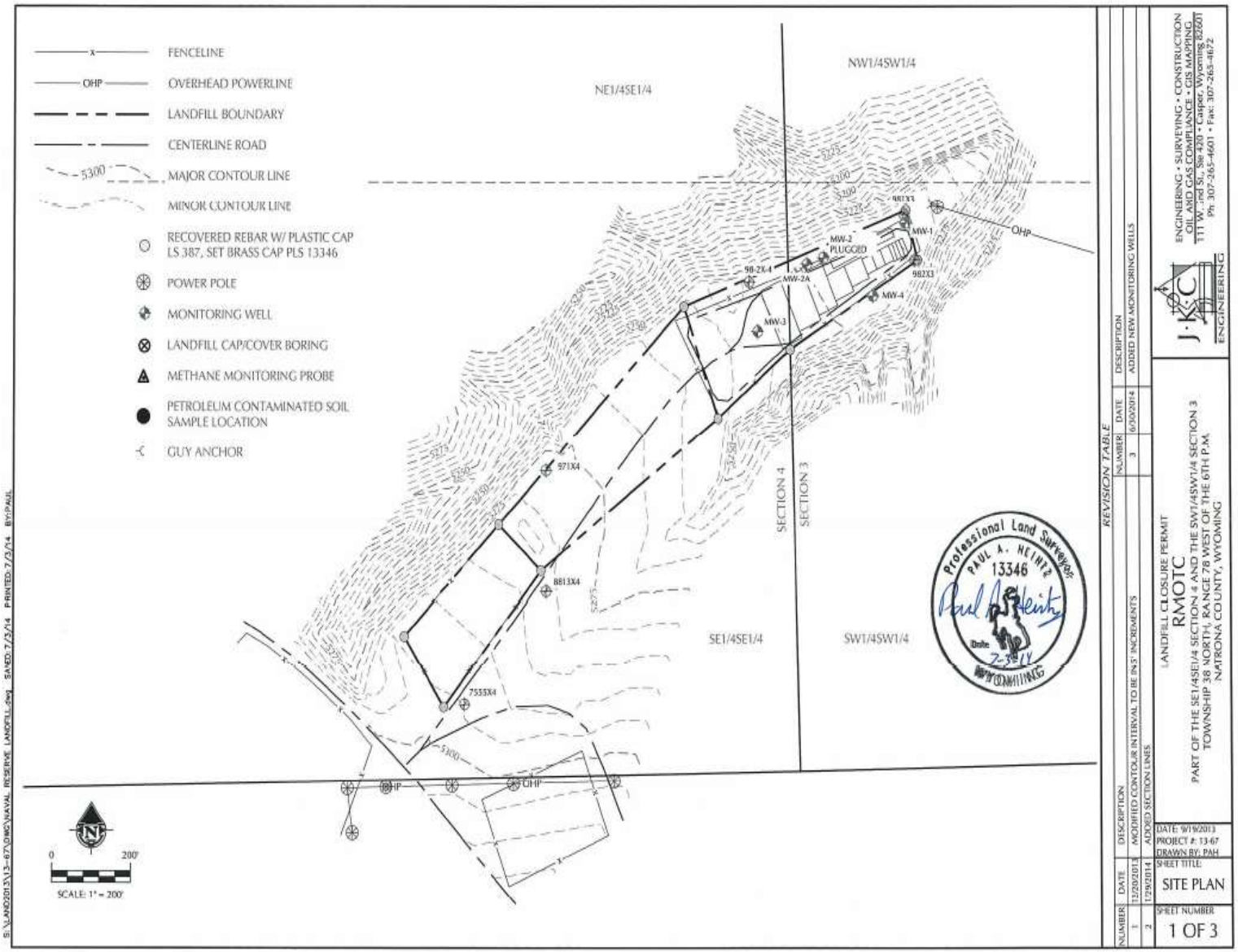

Figure 4-4: Groundwater Monitoring Wells at IND-2

4.3.5.5 Deep Industrial Water Supply Wells

The Madison formation, which in some areas of Wyoming is a high-yielding potable water aquifer, lies below the deepest petroleum producing geologic unit at NPR-3. It is at a depth of more than 6,000 ft (1.8 km) below the surface. This formation yields water of only fair quality, having a TDS concentration of approximately 3,000 mg/L (DOE 1998). As this is a higher concentration than the standards referenced previously, water from the Madison formation at NPR-3 is prohibited from being used for human, livestock, or other agricultural uses. This water is occasionally used for other site industrial activities.

A high-yielding aquifer also exists in the Tensleep formation (approximately 5,400 ft [1.6 km] below the surface), which is the deepest petroleum producing formation at NPR-3. The quality of its water is similar to that from the Madison formation with the additional disadvantage of contact with petroleum. At current production rates approximately 957,000 gallons (3.6 million L) of co-produced water is pumped per day from the Tensleep formation to the surface. This produced water is separated from the crude oil and pumped into the Tensleep treatment pits. The water flows through a series of four pits where residual oil is progressively separated from the water. The treated water effluent is then discharged into Little Teapot Creek. Groundwater appropriation and injection permits are summarized in Table 4-5.

Table 4-5: Groundwater Permits at NPR-3

Type of Permit	Permit Number	Facility
Groundwater Appropriation	UW-60713	B-1-3 Tank Battery
	UW-60714	B-1-10 Tank Battery
	UW-60716	B-TP-10 Tank Battery
	UW-60718	B-1-20 Tank Battery
	UW-43810	17-WX-21 Madison Water Well
	UW-85156	57-WX-3 Madison Water Well
Underground Injection Control	049-025-10929	34-CMX-10-WD for Brine Disposal
	049-025-11123	51-CMX-10-WD for Brine Disposal
	049-025-06338	74-CMX-10-WD for Brine Disposal
	049-025-10212	302-A-3 Gas Injector
	049-025-10880	401-A-10 Gas Injector
	049-025-10431	44-MX-10 Gas Injector
	049-025-10025	27-AX-34 Gas Injector
	049-025-10218	103-A-33 Gas Injector
	049-025-10799	85-AX-33 Gas Injector
	049-025-10871	65-AX-15 Gas Injector
	049-025-10903	13-AZ-10 Gas Injector

4.3.6 Potable Water

Drinking water is regulated under the SDWA (42 USC 300f through 300j-11). Regulations promulgated pursuant to the SDWA are codified in 40 CFR Parts 141 through 143.

Potable water for NPR-3 is transported from an EPA-approved water source (the town of Midwest, WY), which acquires its water from the Casper Municipal Water System via a pipeline. One 8,000-gal. (30,283 L) buried tank is used to store potable water at NPR-3. This tank is located at the Lower Office Complex. Proper amounts of Sodium Hypochlorite are added to maintain water quality. The Potable Water System at NPR-3 was activated as a Wyoming Public Water System on March 31, 2004. A Site Sampling Plan was developed and submitted to EPA on April 28, 2004 and updated in 2012. DOE maintains two certified Water Treatment Operators and potable water samples are collected and analyzed monthly.

4.4 Geology, Soils and Prime and Unique Farmlands

The following discussion provides an overview of the local and regional geological, soil, and farmland resources.

4.4.1 Geology

The topography of the region surrounding NPR-3 is characterized by rolling plains interspersed with ridges and isolated bluffs. The central part of NPR-3 consists of a large plain, dissected by ravines (draws), that is encircled to the east, west, and south by a rim of sandstone (DOE 1998). The area surrounding NPR-3 is not known to be seismically active (Davies et al., 2013). The oilfield is bordered by sandstone bluffs and rolling hills that exhibit erosion typical of the region (HydroSolutions 2014).

The geologic column for the Teapot Dome is shown on Figure 4-5. The current oil-productive horizons are the Shannon, Steele Shale, Niobrara Shale, Second Wall Creek, Third Wall Creek, Muddy, Dakota, Lakota, and Tensleep formations.

NPR-3 is centered over the crest of an asymmetrical doubly-plunging anticline called the Teapot Dome, which is the southern extension of the much larger Salt Creek anticline. The Salt Creek anticline underlies the prolific Salt Creek Oilfield, located to the north of NPR-3 (DOE 1998). Since 1915, 1,376 wells have been drilled into the structure (HydroSolutions 2014), which consists of a doubly plunging anticline cored by a basement high-angle reverse fault. Peak production (during the early 1980's) of the structure yielded an average of 4,460 bpd and average production during the period was 3,790 bpd. Today at NPR-3, there are 607 active wells, of which 227 are shut-in and 380 are actively producing oil from several different geologic formations ranging in depth from 500 to 5,000 ft (150 to 1,500 m) bgs.

4.4.2 Soils

Soils and residual material and alluvium within NPR-3 have developed in a climatic regime characterized by cold winters, warm summers, and low to moderate precipitation. The upland soils are derived from both the residual material (derived from flat-lying, interbedded sandstone, siltstone, and shale) and stream alluvium. Valley soils have developed in unconsolidated stream sediments, including silt, sand and gravel. Soils are generally low in organic matter and are highly alkaline and saline. Textures range from clay loams to sandy loams with varying amounts of gravel or coarser materials. Slopes range from nearly level to very steep, with deeper soils found in the less steeply sloping areas. These soils support little vegetation except in artificially perennial streams. The predominant land use on-site is dedicated to oil and gas collection as well as small amounts of rangeland. Vegetation is predominantly grass-shrub that is used for grazing and wildlife habitat.

In 1997, the U.S. Department of Agriculture (USDA) NRCS (formerly known as the Soil Conservation Service) completed a soil survey of the NPR-3 site and surrounding lands (NRCS 1997).

4.4.2.1 Soil Descriptions

Soils in the major draws on NPR-3 (Little Teapot Creek, Teapot Creek) are mapped as the Haverdad-Clarkelen complex (saline), which includes a mosaic of soils in the Haverdad loam series and the Clarkelen sandy loam series. Properties and characteristics of these soils are listed in Table 4-6. The majority of the upland areas throughout NPR-3, other than the peripheral bluffs and ridges, are mapped as the Arvada-Absted-Slickspots complex, the Cadoma-Renohill-Samday clay loams, and the Keyner sandy clay loam. Soils on and immediately at the base of the bluffs are mapped in the Rock Outcrop-Ustic Torriorthents, shallow-Rubble Land complex (Table 4-6).

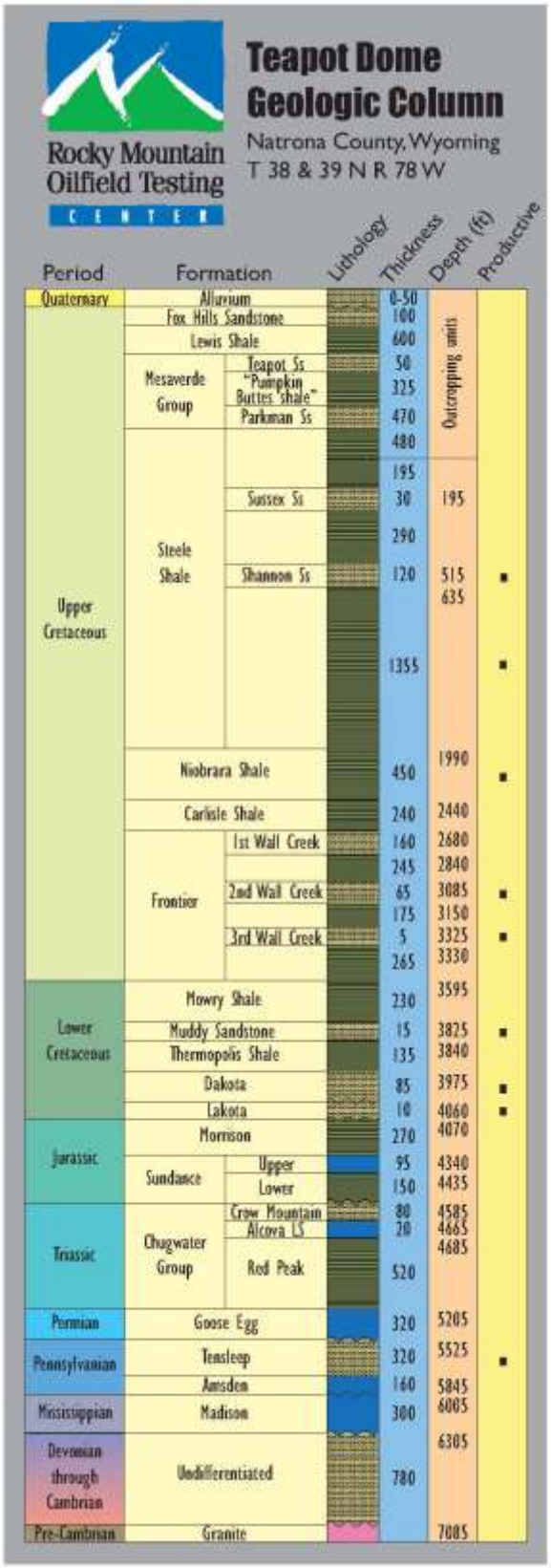

Figure 4-5: Teapot Dome Geologic Column

Table 4-6: Properties and Characteristics of Soils on NPR-3 (DOE 2008)

Soil series	Slope (%)	Landform	Parent material	Primary soil texture	Soil depth	Drainage	Water erosion hazard	Wind erosion hazard
Absted	0-6	Alluvial fans and low terraces	Alluvium from sodic shale	Clay loam	Very deep	Well	Slight	Moderate
Amodac	2-12	Hill slopes	Slopewash alluvium and residuum derived from sodic shale	Fine sandy loam	Very deep	Well	Moderate	Severe
Arvada	0-6%	Alluvial fans and low terraces	Alluvium derived from sodic shale	Clay loam	Deep	Well	Slight	Moderate
Blackdraw	3-15%	Hillsides	Slopewash alluvium and residuum derived from sodic shale	Clay loam	Very deep	Well	Severe	Moderate
Bowbac	6-10%	Foot slopes	Slopewash alluvium and residuum derived from sandstone	Sandy loam	Moderately deep	Well	Moderate	Severe
Cadoma	3-12$	Hillside	Slopewash alluvium and residuum derived from sodic shale	Clay loam	Moderately deep	Well	Moderate	Moderate
Clarkelen	0-3%	Floodplains	Alluvium derived from various sources	Sandy Loam	Very deep	Somewhat excessive	Slight	Severe
Gullied Land	Areas on hills where severe erosion has cut a dense network of many, small, steep-sided gullies; the gullies are 2-3 ft deep and 1-2 ft wide							
Haverdad	0-3%	Floodplains	Alluvium derived from various sources	Loam	Very deep	Well	Slight	Moderate
Keyner	3-10%	Alluvial fans and terraces	Alluvium derived from sodic sandstone and shale	Sandy clay loam	Very deep	Well	Moderate	Moderate
Kishona	6-20%	Hills dissected by gullies	Slopewash alluvium derived from siltstone, sandstone, and shale	Clay loam	Very deep	Well	Severe	Moderate
Lolite	6-20%	Hill crests	Residuum derived from sodic shale	Clay loam	Very deep	Well	Severe	Moderate

Soil series	Slope (%)	Landform	Parent material	Primary soil texture	Soil depth	Drainage	Water erosion hazard	Wind erosion hazard
Renohill	3-6%	Swales	Slopewash alluvium and residuum derived from shale	Clay loam	Moderately deep	Well	Slight	Moderate
Rock Outcrop	Consists of exposures of sandstone, siltstone, and shale							
Rubble Land	Consists of areas where colluvial boulders and stones have accumulated below sandstone ledges and escarpments; the voids between the boulders and stones are virtually free of soil material; these areas support no vegetation							
Samday	3-12%	Hill crests	Residuum derived for shale	Clay loam	Very shallow to shallow	Well	Moderate	Moderate
Shingle	10-40%	Escarpments and hills	Residuum and slopewash alluvium derived from siltstone and shale	Loam	Shallow	Well	Severe	Moderate
Slickspots	Areas of clayey soils that are very strongly alkaline and support little or no vegetation							
Taluse	6-20%	Hill crests	Residuum derived for sandstone	Sandy loam	Very shallow to shallow	Well	Severe	Severe
Terro	6-15%	Hill crests	Slopewash alluvium derived from sandstone	Fine sandy loam	Moderately deep	Well	Moderate	Severe
Theedle	10-30%	Hills dissected by gullies	Slopewash alluvium and residuum derived from siltstone, sandstone and shale	Clay loam	Moderately deep	Well	Severe	Moderate
Ustic Torriorthents	30-100%	Steep slopes	Residuum or colluvium derived from sedimentary rock	Varies	Very shallow or shallow	Well or excessively well	Severe	Varies
Note: To convert ft to m, multiply by 0.3								

4.4.3 Prime and Unique Farmlands

Prime and unique farmlands are regulated under the jurisdiction of the USDA Farmlands Protection Policy Act of 1981 and administered by the NRCS. Prime farmland is defined in the FPPA as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion, as determined by the Secretary of the USDA (USDA 1981).

Unique farmland is land not recognized as prime farmland that is used for the production of specific high value food and fiber crops, as determined by the Secretary of the USDA. It has a combination of soil quality, location, growing season, and moisture availability necessary to produce economically sustainable high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods (USDA 1981).

Farmland of statewide or local importance is land not considered prime or unique farmland that is believed to be of statewide or local importance for the production of food, feed, fiber, forage, or oilseed crops, as determined by the State of Wyoming.

There are no prime or unique farmlands of local or statewide importance present within or in proximity to the NPR-3 (USDA 2013).

4.5 Biological Resources

The following discussion provides an overview of the local and regional biological resources and environments.

4.5.1 Aquatic Biology

Aquatic habitats at NPR-3 are limited to intermittent streams within the draws, shallow perennial streams fed primarily by produced water discharged under WYPDES permits or off-site malfunctioning wells, and man-made ponds. The intermittent and perennial streams on the site do not support any species of fish, but warm water game fish and non-game fish are found downstream in Salt Creek. Water in one of the impoundments consists of runoff from snowmelt and rain, and water in the other consists of produced water originating from the Madison formation on an adjoining, privately owned oilfield.

NPR-3 lies within the geographic range of approximately 17 fish species. Creek chub, flathead chub, fathead minnow, longnose dace and plains minnow have been identified downstream in Salt Creek (WYGISC 2013), and the remaining species may be present in the Powder River, which receives water from Salt Creek (Page and Burr 1991; BCA 2013).

The presence of wetland vegetation along portions of intermittent and artificially perennial streams (Teapot and Little Teapot Creeks) at NPR-3 indicates that populations of aquatic macro invertebrates and other aquatic flora and fauna potentially inhabit these areas. However, because the main water supply is produced water, species diversity is expected to be relatively low, as it is in stretches of Salt Creek below its confluence with Teapot Creek (RETEC 2004). Most of the habitat for aquatic species exists because of on-site and off-site discharges of produced water to these streams. It is estimated that more than 75 percent of the wetlands along Salt Creek would not exist without the discharge of produced water (RETEC 2004).

Aquatic macro invertebrates would be expected to occur in impoundments with seasonal or perennial water supply. Over 25 such impoundments exist on the site, and at least 18 of these impoundments contain wetland vegetation. The remainders of the impoundments are normally dry and would not support aquatic organisms. Other than Teapot and Little Teapot Creeks (which are artificially perennial due to produced water discharges from on-site and off-site sources), the majorities of drainages on NPR-3 are ephemeral and do not support aquatic life.

Salt Creek is a BLM-designated sensitive stream containing macro invertebrates, warm water game fish, and non-game fish. Other aquatic or semi-aquatic organisms such as amphibians are expected to occur in Salt Creek as well. Dry and intermittent tributaries to Salt Creek, Teapot Creek, and Castle Creek would not be expected to support aquatic organisms.

4.5.2 Terrestrial Vegetation

NPR-3 supports the following vegetation types (WYGISC 2013):

- Desert Shrublands;
- Prairie Grasslands;
- Riparian Areas;
- Sagebrush Shrublands; and
- Wetlands.

The desert shrubland areas are composed of drought-tolerant shrubs with an understory of grasses similar to those in the mixed grass prairie. Shrubs and subshrubs in these portions of NPR-3 include silver sagebrush (Atremisia cana), greasewood (Sarcobatus vermiculatus), rabbitbrush (Ericameria nauseosa), saltbrush (Atriplex spp.), and broom snakeweed (Gutierrezia sarothrae).

The prairie grasslands at NPR-3 contain a substantial proportion of weedy annual grasses and forbs, including cheatgrass (Bromus tectorum), Japanese brome (Bromus japonicas), tansy mustard (Descurainia pinnata), and kochia (Bassia scorparia), However, many species of desirable perennial grasses also occur, including western wheatgrass (Pascopyrum smithii), needle and thread (Hesperostipa comate), bluebunch wheatgrass (Pseudoroegneria spicata), wildrye (Elymus spp.), crested wheatgrass (Argopyron cristatum), and Indian rice grass (Achnatherum hymenoides).

Patches of two other vegetation types-ponderosa pine and Wyoming big sagebrush-also occur at NPR-3 (WYGISC 2013). Ponderosa pine (Pinus ponderosa) stands are found on the peripheral ridge at the southeastern portion of the site and include wider diversity of understory species such as silver sagebrush, bluebunch wheatgrass, Sandberg bluegrass (Poa secunda), threadleaf sedge (Carex filifolia), and a diversity of wildflowers.

The Wyoming big sagebrush vegetation type, dominated by several species of sagebrush (Artemisia spp.) with a grass understory, occurs in some locations along the southern and western periphery of the site.

Riparian areas exist along draws, impoundments, and artificially perennial and intermittent streams at NPR-3. With the exception of salt cedar (Tamarix spp.) and scattered cottonwood (Populus sp.) and willow (Salix sp.) individuals, most riparian areas at the site are dominated by grasses. Wetland areas are described in Section 4.5.5.

The vegetation at NPR-3 has been strongly influenced by human activities over time. Livestock grazing has occurred for many decades across the site, and DOE continues to lease rangeland within portions of NPR-3 for periodic grazing. Prior to 1986, the area was reported to have been overgrazed (DOE 1998); this resulted in lower species diversity and increased weedy species. Historic disturbances associated with oil field operations have changed the vegetation at NPR-3; historically, work areas, wells, roads, pipelines, houses, ponds, and other structures have been constructed, abandoned, and / or removed. Recent reclamation efforts using native species have successfully re-established desirable shrubs, grasses, and forbs in many portions of NPR-3; consequently, the species diversity has also increased. Oilfield activities have generally not disturbed vegetation on the peripheral ridges and in riparian or wetland areas of the site and the 520-acre conservation easement in these areas will ensure that development will not disturb vegetation in the peripheral areas of the field in the future. However, grazing has affected all areas, and some wetlands have also been affected by discharges of produced water.

Noxious weed species can be expected to occur in riparian and wetland areas, in historically overgrazed areas, along roads, and in disturbed soils. With the exception of cheatgrass, noxious weed infestations at NPR-3 are not large, and they are currently mapped and controlled by onsite staff. At present, the most common noxious weed at the site is Canada thistle (Cirsium arvense), but other weeds have been observed, including common burdock (Arctium minus) and salt cedar (Tamarix spp.).

NPR-3 falls within the Natrona County Weed and Pest Control District and that organization's efforts to work with landowners to manage infestations will continue after the Proposed Action is implemented. The Natrona County Weed and Pest Control District has the ability to fine a landowner $50/day (to a maximum of $2,500/year) for failing or refusing to perform remedial requirements for the control of noxious weeds. Further, BLM actively controls noxious weeds in the Salt Creek field adjacent to NPR-3 and indicated in its weed management plan for the Salt Creek field that the agency would work with nearby landowners to educate them about noxious weeds and improve cooperation in reducing the impact these weeds have on the environment (BLM 2004).

As stated in Section 3.1.1, approximately 769 wells have been plugged and abandoned at NPR-3. Each of these sites has been re-graded to natural contours and re-vegetated with native plant species. Reclamation efforts following construction projects (such as well installation or plug and abandonment) also involve re-seeding with native plant species.

4.5.3 Terrestrial Wildlife

The WGFD maintains a database (Wildlife Observation System) of wildlife sightings throughout the state by township, range, and section. This list includes some species that have been observed historically on the NPR-3 site by staff and contractors. The following information is both general and site-specific, but may not reflect the complexity of wildlife actually present on the site.

Several surveys, including raptor surveys that were conducted for energy development in the area, included portions of NPR-3. The most recent raptor survey was conducted in May 2007 in the general area. Other wildlife surveys were conducted in 1999, 2001, and 2005 (DOE 2008). Site personnel and Wyoming state biologists identified three inactive Red Tailed hawk nests on power poles in NPR-3 in 2014. Red Tailed hawks were observed near one of the nests, so the species is active onsite.

According to a bird and mammal distributive study for Wyoming (DOE 2008), approximately 222 avian species and 49 mammals species have been observed in the region containing the NPR-3 site, which also lies within the geographic range with at least 6 amphibian species and 9 reptile species.

Approximately 70 percent of the world's pronghorn antelope are found in the state of Wyoming. Pronghorn and mule deer are the principle big-game mammals seen on the site. No hunting is allowed by DOE within NPR-3. Critical winter range for either antelope or mule deer is not found within NPR-3. However, range within the NPR-3 is classified by the WGFD as Winter Year-Long Range for both species. The range is utilized by both species throughout the year but is not depended upon during the winter by transient deer or antelope populations (DOE 2001).

Other characteristic mammal populations include raccoons, striped skunk, porcupine, badger, fox, bobcat, prairie dog (two known colonies), cottontail rabbit, and deer mouse (DOE 2001).

Avian species include raptors such as the American kestrel, red-tailed hawk, golden eagles, and northern harrier. Other species include horned lark, western meadowlark, Brewer's blackbird, mountain plover, vesper sparrow, Brewer's sparrow, lark bunting, and sage thrasher. These species would be considered common to any open prairie area. In addition, dabbling ducks such as teals, wigeons, mallards, snipe, gadwalls, etc., may be present in ponded and slow water areas. Past surveys indicate the presence of burrowing owls in association with prairie dog towns (DOE 2001).

Other species potentially found on the site include various toad species, sagebrush lizard, short-horned lizard, garter snake, gopher snake, and western rattlesnake.

Several surveys have been conducted for raptor presence on NPR-3. The bluffs near the site perimeter provide excellent nesting habitat for raptors. The following compilation includes the results of surveys conducted in 1996, 1999, 2005, and 2007 (DOE 2008). The results of the 1996 and 1999 surveys indentified golden eagles (Aquila chrysaetos), short-eared owls (Asio flammeus), red-tail hawks (Buteo jamaicensis), northern harrier hawks (Circus cyaneus), bald eagle (Haliaeetus leucocephalus), burrowing owls (Athene cunidularia), mountain plover (Charadrius montanus), and loggerhead shrike (Lanius ludovicianus). Two occupied nests were found, a golden eagle nest containing one eaglet and a red-tail hawk nest containing three fledglings. Although a bald eagle was sighted during these surveys, the sighting was outside of the site boundaries.

Ten burrowing owls were observed during a survey of one of the prairie dog towns in August 2000. The most recent raptor survey, which was conducted in May 2007, evaluated portions of the NPR-3 site as well as adjacent areas for a larger project (DOE 2008). The aerial survey confirmed occupied nests for prairie falcons (three nests), golden eagle (one nest), red-tailed hawk (one nest), and great-horned owl (one nest). Additional nests were located during the survey, but they were dilapidated and the associated species could not be identified. These were located primarily in Township 38 North, Range 78 West, Section 22, which includes the bluffs along the southwestern site area. In May 2012, several nesting red-tailed hawks were observed on active power poles within NPR-3. The U.S. Fish and Wildlife Service (USFWS) currently lists six raptor nests within one mile of the NPR-3 boundary, including three golden eagle nests, one great horned owl nest, and two prairie falcon nests (WYGISC 2013). No sage grouse leks have been identified within two miles of the NPR-3 boundary in the past 15 years (WYGISC 2013). Sage grouse depend on the presence of sagebrush communities.

The results of a 2005 ground survey that included the northern portion of the NPR-3 site resulted in the identification of an active northern harrier hawk nest northwest of Teapot Creek but within the NPR-3 boundary. Little potential raptor nesting habitat was present in this area (Veritas DGC Land, Inc 2005).

The Veritas survey (2005) also included a field inventory for prairie dog colonies within NPR-3. All prairie dog colonies on NPR-3 within the project area were mapped. Low density was identified as less than five burrows per ac (or 12 burrows per ha). One black-tailed prairie dog (Cynomys ludovicianus) colony was documented and located on the western border of the site. The colony covered 3.4 ac (1.4 ha) and was considered low-density. No white-tailed prairie dogs (Cynomys leucurus) were documented on the site during this survey (Veritas DGC Land, Inc. 2005).

The presence of prairie dog colonies was also evaluated in a May 2007 survey. Less than 6 ac (2.4 ha) of active mounds were identified. None of the areas appeared to provide suitable mountain plover habitat. As mentioned earlier, site staff observed a lot of die off from tularemia, which may be affecting burrow active use (Wildlife Consulting Services 2007). In a 2008 site survey, a Range Manager observed no actively inhabited prairie dog colonies. In 2012, prairie dog populations were thriving. Employees have observed two large colonies on the NPR-3 site; one on the north eastern side of the field, and the other on the north western side of the field near the Gas Plant facility.

Mountain plover habitat suitable for nesting on NPR-3 lands within the survey area were mapped. Habitat indicators include level terrain, prairie dogs, bare ground (minimum 30 percent), prickly pear cactus pads (Opuntia sp.), heavily grazed pastures, widely spaced plants, and grass height typically less than 4 in. (10 cm). No suitable mountain plover habitat was located on the area surveyed within NPR-3. Potential habitat on a bench west of Little Teapot Creek is being encroached by dense stands of cheatgrass, which makes the area unsuitable. Although the mountain plover was originally proposed for listing as a threatened species in 1999, the USFWS withdrew listing in 2003.

4.5.4 Threatened, Endangered and Rare Species

The Endangered Species Act (16 USC 1531-1543) protects listed threatened and endangered plant and animal species and their critical habitats. No endangered raptors have been reported within NPR-3 since 1989 (WYGISC 2013), though a pair of Golden Eagles (Aquila chrysaetos) and their nest was found just outside of the site boundary in 1998 (DOE 1998).

Two colonies of black-tailed prairie dogs (Cynomys ludovicianus) currently exist on NPR-3 property. These colonies are located on the western border of NPR-3 in unfrequented areas of the field. Each colony exhibits a low population density and covers approximately 3 ac (1.2 ha). No documented white-tailed prairie dog colonies currently exist on NPR-3 property.

Vertebrate species diversity is known to be low across the NPR-3 site (WYGISC 2013), and low vertebrate diversity is highly correlated with low plant diversity (Hong Quian 2006). Moderate vertebrate species diversity occurs along Teapot and Little Teapot Creeks and along Salt Creek to the north. High vertebrate species diversity exists in downstream sections of Salt Creek, north of the town of Midwest.

No federally listed endangered or threatened plant species are known to occur at NPR-3. In 1997, surveys were performed at NPR-3 for Ute Ladies' Tresses (Spiranthes diluvialis), a threatened species. No plants were found; additionally, no plants of this species have yet been found in Natrona County (Fertig et al. 2005). Because it is an early successional plant, it is possible, though highly unlikely, that this species may occur on the site along the edges of wetlands at NPR-3. The riparian areas and peripheral ridges on NPR-3 have been less affected by well-related activities than the basin area. Therefore, rare plant species could potentially be found in these areas, particularly in portions of the ridges with topography that would discourage grazing animals.

4.5.5 Floodplains and Wetlands

The predominant plant species in NPR-3 wetlands include inland salt grass (Distichlis spicata), alkali bulrush (Schoenoplectus maritimus), American bulrush (Schoenoplectus americanus), and foxtail barley (Hordeum jubatum). Less common species include summer cypress (Bassia scoparia), seepweed (Suaeda calceoliformis), Baltic rush (Juncus arcticus), alkali cordgrass (Spartina gracilis), Canada thistle (Cirsium arvense), salt cedar (Tamarix spp.), cattail (Typha latifolia), creeping bentgrass (Agrostis stolonifera), Sandberg bluegrass (Poa secunda), creeping spike rush (Eleocharis palustris), and seaside arrowgrass (Triglochin maritima).

Two Executive Orders (E.O. 11988 Floodplain Management and E.O. 11990 Protection of Wetlands) require Federal agencies to consider the effects of proposed actions on floodplains and wetlands. During 2004, a wetlands delineation study was conducted by an independent contractor. It was determined that the entire NPR-3 area was affected by an extended drought, which created a wetland delineation situation for seasonal wetland hydrology and associated vegetation parameters in some areas. Designated problem areas were deemed to have met the wetland criteria for all parameters for an appropriate time period, although some criteria may not have been met at the time of the wetland survey. Wetland and non-wetland area boundaries ranged from distinct and abrupt to very gradual based on changes in topography. All identified wetlands were recommended as jurisdictional. No closed basin watersheds were identified within the project area. During 2010, a consultant performed the field work involved in a wetlands delineation study. The results of the 2010 fieldwork became available in 2011 (DOE 2013c). The independent contractor confirmed the wetland areas defined in the 2004 study and re-inventoried many locations. Most of the classified wetlands remain dry for all but spring runoff events. The most common types of wetland found were:

- Palustrine, Aquatic Bed wetlands,
- Palustrine, Emergent wetlands,
- Palustrine, Unconsolidated Shore Other Waters of the United States, and
- Riverine, Intermittent, Streambed.

Wetland areas at NPR-3 are sustained by a combination of natural seeps and springs, runoff, and produced water from oil well operations. Some of the produced water enters from adjacent properties as surface and subsurface flow. Onsite, produced water is cooled and discharged into an unnamed tributary of Little Teapot Creek. This WYPDES-permitted discharge results in higher temperatures and increased flow into the downstream wetlands.

Floodplain maps do not exist for NPR-3 because there are no large population centers in the vicinity. Flood-prone areas are generally low-lying areas adjacent to wetlands and drainages. The majority of Little Teapot Creek is bounded by high cutbanks. Vegetation in the floodplains/riparian zones include desirable, perennial grasses (inland salt grass, many species of wheatgrass [Elymus sp.], prairie junegrass [Koeleria macrantha], alkali grass [Puccinellia nuttalliana], and green needlegrass [Nassella viridula]), and annual weeds. Scattered woody plants, including salt cedar, cottonwood (Populus sp.), willow (Salix sp.), Douglas rabbitbrush (Chrysothamnus viscidiflorus), and sagebrush (Artemisia sp.) also occur. Structures at NPR-3 are located away from flood-prone areas.

4.6 Cultural Resources

Cultural resources include archaeological, historical, and ethnographic sites, and numerous sites have been identified onsite at NPR-3. These include, but are not limited to, sites related to the Teapot Dome Scandal and Native American encampment. These resources are protected by a variety of state and federal laws and regulations; the most significant regulations pertain to the NEPA, the National Historic Preservation Act, the Archaeological Resources Protection Act, and the American Indian Religious Freedom Act. Compliance with these regulations requires (1) the assessment and comparison of the impacts of the Proposed Action; (2) a cultural resource inventory (including fieldwork and archival research) of the field; (3) the evaluation of the significance of the sites that could be impacted; (4) the determination of Proposed Action effects on significant sites; and (5) the implementation of prudent and feasible measures to avoid or mitigate adverse effects to significant sites.

In 2013, DOE initiated the National Historic Preservation Act Section 106 process described in 36 CFR 800 and initiated consultation with the Wyoming State Historic Preservation Office (WYSHPO), Advisory Council on Historic Preservation (ACHP), National Park Service (NPS), appropriate Native American tribes, certified local governments (CLGs), and other members of the public (see Appendix XX, Section 106 Consulting Parties). As part of its Section 106 process to identify historic properties, in 2013 DOE completed a site-wide Cultural Resource Survey and Ethnographic Overview of NPR-3, and a Class II and III Cultural Resource Survey to identify and evaluate sites potentially eligible for listing on the NRHP.

Representatives from federal, state and local government; local historic societies, and 22 Native American tribes were contacted and invited to attend site visits and provide comments or concerns related to the Proposed Action. A total of 15 Native American tribes (Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, Cheyenne River Sioux Tribe of the Cheyenne River Reservation, Comanche Nation, Crow Creek Sioux Tribe of the Crow Creek Reservation, Crow Tribe of Montana, Kiowa Indian Tribe of Oklahoma, Northern Arapaho Tribe, Northern Cheyenne Tribe of the Northern Indian Reservation, Omaha Tribe of Nebraska, Oglala Sioux Tribe of the Pine Ridge Reservation, Rosebud Sioux Tribe of the Rosebud Indian Reservation, Santee Sioux Nation of Nebraska, Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho, Sisseton-Wahpeton Oyate Tribe, and the Standing Rock Sioux Tribe of North and South Dakota) agreed to participate as Section 106 Consulting Parties. DOE hosted visits to NPR-3 to provide the Tribes an opportunity to view the property, visit the historic sites and areas of Tribal interest located at NPR-3, conduct surveys, and assist DOE in assessing sites of significance to a Tribe, including traditional cultural properties. Representatives of various Sioux and Crow tribes, the Northern Arapahoe Tribe, and the NPS participated in a series of site visits. Based on the consultations and site visits, DOE has identified 18 historic properties at NPR-3 that are eligible for listing or are listed on the National Register of Historic Places (NRHP): 48NA182, 48NA199, 48NA831, 48NA4424, 48NA3024,

48NA4428, 48NA4429, 48NA4430, 48NA4431, 48NA4434, 48NA4438, 48NA4441, 48NA4442, 48NA4444, 48NA4445, 48NA4449, 48NA4450, and 48NA4452. However, as described in Section 3.1 Proposed Action, DOE will establish and convey a legally enforceable conservation easement that ensures the long-term preservation of areas of Tribal concern and the following 16 historic properties: 48NA182, 48NA199, 48NA4424, 48NA4428, 48NA4429, 48NA4430, 48NA4431, 48NA4434, 48NA4438, 48NA4441, 48NA4442, 48NA4444, 48NA4445, 48NA4449, 48NA4450, and 48NA4452. In addition, no traditional cultural properties were identified at NPR-3, and no intact segments of historic property 48NA3024 (the Bozeman Trail) are within NPR-3. Site 48NA831, the historic Teapot Dome Oilfield associated with the Teapot Dome scandal, and two of its contributing components (the Mammoth Camp Sewer Facility and Tank Ring Number 5) are located at NPR-3 and are not located within the conservation easement.

4.6.1 Cultural Resource Sensitivity

The cultural history of the NPR-3 site dates back to 12,000 Before Present (B.P.), when Native American people lived and hunted in this area. During cultural resource inventories of the NPR-3 site, artifacts and features dating to the Paleo-Indian period (12,000+ to 7,500 B.P.) through the Historic period have been discovered (Goss et al. 2002; Hatcher and Goss 1995; Slensker and Goss 2005; Goss and Knesel 2007; Stubbs 2013). Cultural resource surveys conducted throughout the central Wyoming area indicate that most archaeological resources are dated to the Late Archaic and Late Prehistoric periods (about the last 5,000 years) (BLM 2007). Typical cultural resource discoveries in central Wyoming include open and sheltered camps, hearths, lithic scatters and workshops, stone circles, rock cairns, and petroglyphs.

Numerous cultural artifacts have been recovered from the NPR-3 site (Slensker and Goss 2005; Goss and Knesel 2007) and are curated at the University of Wyoming in Laramie.

Published and unpublished sources of ethnographic literature also indicate that Native American tribes have lived and hunted on and near the NPR-3 site since prehistoric times (Fritz 2007; Stubbs 2013). The colonization of the West by Euro-Americans in the late 1700's and 1800's created a dynamic situation, in which numerous tribes were displaced back and forth across the central Wyoming area. Figure 4-6 shows the specific Native American tribes that were believed to have occupied the NPR-3 area and the time periods during which they were believed to be present.

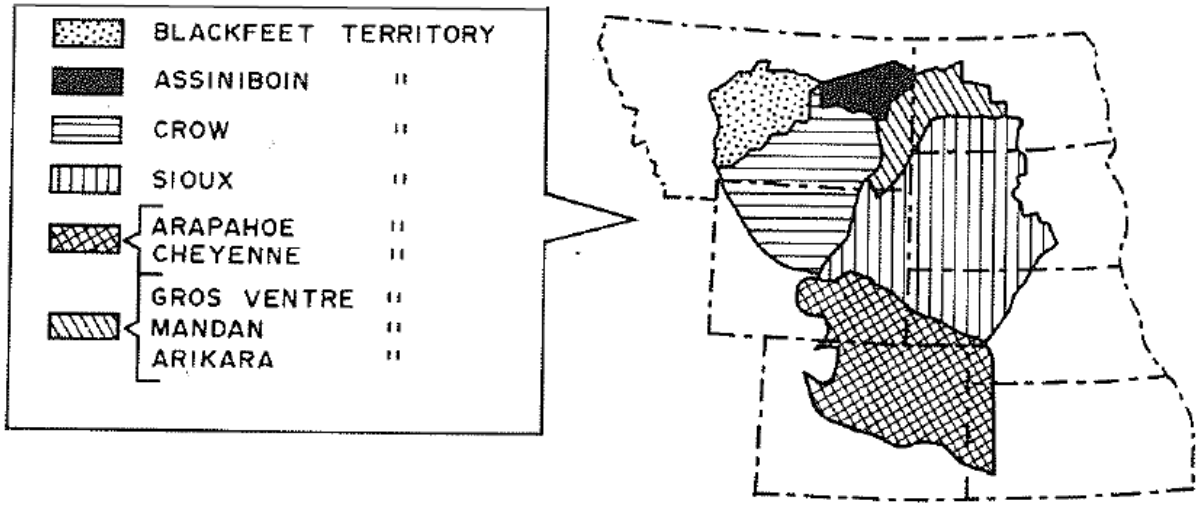

Figure 4-6: Tribal Territories, circa 1851. "Redrawn from the map presented to D.D. Mitchell by P.T. DeSmet in 1851" (Fowler 1982)

4.7 Socioeconomics

The following discussion provides an overview of the local and regional human environments.

4.7.1 Population and Housing

NPR-3 lies in an unincorporated area of Natrona County. The nearest major population center is the Midwest/Edgerton area, approximately 7 mi (11 km) north of the site's northern boundary. The latest census shows that Natrona County has a population of approximately 78,621 (US Census Bureau 2014). Casper is the county seat of Natrona County and the second largest city in Wyoming. The most recent census data from 2012 recorded a Casper population of approximately 57,813.

Casper has been important to area commerce since the mid-nineteenth century. It began as a ferry crossing in 1847; soon afterward, a military fort was constructed to protect the Platte River Bridge. After the Salt Creek Oil Field (north of NPR-3) was discovered in the 1880's and the Teapot Dome Oil Field several decades later, oil and gas drilling began to dominate Natrona County's economy. The energy sector remains the predominant employer and driver of economic growth in the county. Energy-related employment provides higher wages than other blue-collar employment opportunities in the area. Casper serves as a service center for the oil and gas industry, as well as a center for coal mining, uranium, and medical and financial services (BLM 2007).

The town of Midwest has a population of approximately 404; the town of Edgerton has a population of 195. The towns of Midwest and Edgerton, immediately adjacent to each other, have approximately 238 households. The population has decreased since 1980 when it had more inhabitants, and during the oil and gas development boom in 1983- 84.

4.7.2 Employment

The towns of Midwest and Edgerton are primarily a bedroom community for the mineral industry. The economy is based primarily on oil and gas operations and is inhabited mostly by operating crews for facilities in the area. It is likely that construction personnel reside in the towns. A small retail trade occurs in both towns to support the oil and gas industry in the project area.

4.7.3 Transportation

Interstate 25 (I-25) is a four-lane interstate highway that enters Wyoming near Cheyenne, north of the Colorado state line, and continues north to Douglas. It continues west to Casper, then north to Montana. It provides the primary north-south highway access in Natrona County. An estimated 21 mi (34 km) north of Casper, State Route 259 (SR-259) splits off from I-25, providing direct highway access to the western edge of the site for NPR-3 workers, and continues north to Midwest and Edgerton for oil field workers in surrounding areas. Actual site access off of SR-259, however, is by a restricted internal road within NPR-3.

Current use of I-25 and SR-259 has historically been and continues to be light; both routes operate below capacity at a Level of Service A, which indicates a lack of congestion. In 2011, recorded highway counts on I-25 between Casper and Midwest, Wyoming, showed an average daily vehicle count of 2,270 vehicles. SR-259 is a two-lane paved state road that similarly receives light use and is carrying traffic below highway design levels. In 2011, an average daily traffic count of 1,822 vehicles was recorded on this road (WYDOT 2014).

Injury and fatal accident data were reported for the period of 2010-2013 on I-25 between Casper and the Natrona-Johnson County lines. On I-25, there were 174 total crashes; of these 36 were injury crashes and 2 were fatal crashes. For SR-259 during the same reporting period, there were 43 total crashes; of these, 5 were injury crashes and none were fatal crashes. In comparison, there were a total of 10 fatal crashes and 432 injury crashes on all roads in Natrona County in 2012. Approximately 65 to 75 percent of all

crashes in Natrona County occur in Casper. A crash is reported if there is over $1,000 damage, injury, or death (WYDOT 2014).

There are no scenic byways along the above-described highways. Air transportation services in Natrona are provided by the Natrona County International Airport in Casper. The airport offers both freight and passenger services.

4.7.4 Community Services

The Wyoming Medical Center hospital in Casper has a 191-bed capacity. Ambulance service is also available. Additionally Mountain View Region Hospital opened in 2008 as a surgical hospital with a 23-bed capacity. Mountain View currently has an Emergency room; however, the hospital was trying to close it as of 2012.

Electricity for NPR-3 is supplied by Rocky Mountain Power. Natural gas is supplied by the field for use in heating, air conditioning, and running equipment. Potable water is available from an on-site storage and distribution system that stores water transported from Midwest to the site. Sewage disposal facilities are available from on-site septic tanks with a large excess capacity. All utilities are currently operating with peak load demands well below the maximum supply capacity. Solid waste disposal is available at a City of Casper-owned landfill.

Natrona County fire departments would be the first to respond to a fire or emergency at the site. The county provides volunteer fire protection stations in the vicinity of NPR-3, as does the town of Midwest. Onsite personnel have also been trained to respond to incipient fires. NPR-3 has mutual aid agreements with the adjacent towns to provide firefighting services to the site. Additional back-up units could be provided, as needed, from the Casper region located south of the project.

4.8 Environmental Concerns

In 2014, DOE commissioned a Phase I Environmental Site Assessment (ESA) to evaluate and document NPR-3 for indications of the presence or likely presence of hazardous substances, petroleum products, or Recognized Environmental Concerns (RECs) that could pose a potential or existing environmental concern to public health or the environment (HydroSolutions 2014). The ESA was conducted in accordance with ASTM 1527-13.

The assessment team noted numerous areas of moderate and minor crude oil staining associated with field operations were noted as de minimis in nature (and therefore not considered RECs); however, two production facilities and 16 wells were observed to have significant (greater than 100 ft^2) oil staining and each is considered an REC until properly remediated (HydroSolutions 2014). No major or active petroleum leaking was observed at any well or other facilities visited during site reconnaissance of the site (HydroSolutions 2014).

As a result of its investigation, the assessment team noted the following RECs:

- Flow lines that are unsupported and straddle drainages;
- Existing boxes and pits used to contain drilling fluids, produced water, and other crude oil production fluids and chemicals until the boxes/pits are properly closed and reclaimed;
- Industrial landfills IND-1A, IND-1B, and IND-2 until officially closed by WYDEQ (Note that IND-1A and IND-1B pre-date WYDEQ landfill regulations and therefore limit WYDEQ's jurisdiction over closure);
- Composting facilities, until closed per WOGCC requirements;
- Petroleum stained soils at facilities and wells with greater than 100 ft^2 of stained soil; and

- Treated wooden fence posts stockpiled at the Oil Storage Yard (until properly disposed or used for their intended purpose).

Between 2006 and 2012, DOE commissioned two other Phase I ESAs (Ecosphere Environmental Services 2006, HydroSolutions 2012) and one Phase II ESA (Integrated Environmental Services 2006). These ESAs fulfilled DOE's commitment to quantify the environmental liabilities of the site (DOE 2008) and the two reports from 2006 informed DOE's environmental liabilities report to Congress (DOE 2007). Findings from these reports were reviewed during the 2014 ESA and included in the HydroSolutions report as appropriate.

4.9 Waste Management

The following discussion addresses current operations associated with managing operational wastes from the various activities currently taking place on-site.

4.9.1 Hazardous Waste

The NPR-3 site has a waste management policy that provides direction for the appropriate disposition of hazardous waste materials generated during site operations. Hazardous and non-hazardous waste treatment, storage, and disposal of solid matter is regulated under the Resource Conservation and Recovery Act (RCRA) (42 USC 9601-9675 et seq.). Much of the waste generated at the site is exempt under 40 CFR 261.4 (b) (5), which defines the following solid wastes as exempt from the designation of hazardous: "drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy." Crude oil, natural gas, and associated liquid petroleum gases are produced at NPR-3 (DOE 2001).

DOE operations at NPR-3 currently meet the criteria as a small-quantity generator under RCRA. As such, operations at the site could generate no more than 2,204 lbs (1000 kg) of hazardous waste, 220 lbs (100 kg) of acute hazardous waste spill cleanup residue, 2.2 lbs (1 kg) of other acute hazardous waste per month. The existing drilling and production wastes at NPR-3 include oil, water, drilling mud, cuttings, well cement, produced waters, tank bottoms, sediments, pigging wastes, petroleum-contaminated soil, spent filters and sludge from produced water pits DOE 2001). Oil from wells is routed to test satellites and tank batteries, and water from the tank batteries is discharged into pits or injected into permitted wells.

In accordance with the Superfund Amendment Reauthorization Act Title III, chemicals are evaluated to determine if any are listed as extremely hazardous substances. If any of these are utilized at NPR-3 in reportable threshold planning quantities, NPR-3 submits annual tier II reports for items such as treating chemicals, hydrochloric acid, gasoline, diesel fuel, ethylene glycol, propane, and butane-gasoline mixture. The minimum quantity of all chemicals stored at NPR-3 at any given time is 25,000 gal. (95,000 L) (DOE 2008). Tier II Emergency and Hazardous Chemical Inventory forms for the facility were submitted in February 2013 for the 2012 calendar year. An inventory of RMOTC's Emergency Planning Community Right-to-Know (EPCRA) Section 313 chemical and chemical categories was conducted and the results were compared to the thresholds for the individual chemicals and chemical categories. The results of the analyses dictated that there were no reportable chemicals in exceedance of threshold reporting quantities and therefore no Toxic Release Inventory (TRI) report was filed (DOE 2013c).

4.9.2 Pesticides, Rodenticides and Herbicides

For parking lots, fence lines, and areas around production equipment and buildings, NPR-3 staff have historically used herbicides such as Roundup, Banvil, and Karmex. In 2012, RMOTC staff removed all unused herbicides from the site and sent them offsite as hazardous waste for proper treatment and disposal. Since 1012, a third-party contractor has provided weed control services to the site. No herbicide is stored onsite and the contractor removes all waste material for proper treatment and disposal.

4.9.3 Radioactive Wastes

Low-level radioactive waste is generated as a by-product of oil and gas production as "naturally occurring radioactive material (NORM)." There are two sources of NORM at RMOTC/NPR-3: 1) groundwater drawn from wells in the Madison formation; and 2) the build-up and storage of scale on equipment and pipelines. Wells drilled in the Madison formation produce water at high temperatures and contain radium-226. Oilfield equipment can contain radiological scale and scale-bearing sludge.

The presence of containerized NORM waste in the Hazardous Waste accumulation area and the Welding Shop yard area was noted as an REC in 2006 (Ecosphere Environmental Services 2006; Integrated Environmental Solutions 2006) and 2012 (HydroSolutions 2012). These waste containers were shipped off-site for disposal by Clean Harbors prior to the most recent Phase I ESA (HydroSolutions 2014).

No federal regulations specifically address the handling and disposal of oil-field NORM wastes. The maximum discharge amount is 60 picocuries per liter (pCi/L). As shown in Table 4-4 above, produced water discharges since 2012 have been below this discharge limit. In accordance with state regulations for solid waste disposal, radioactive materials below 5 pCi/L can be disposed of in a solid waste disposal facility without special action. However, if the waste exceeds the criteria limit, then it must then be covered with 4 ft (1.2 m) of soil after placement within a permitted solid waste facility.

4.9.4 Waste Disposal

NPR-3 has two inactive industrial waste landfills (IND-1 and IND-2), an inactive petroleum waste land farm (associated with IND-2) and four active petroleum waste composting facilities regulated by the WOGCC (see Table 4-7). IND-1 was a trench- and fill-type landfill composed of cells dug into the native soil using a bulldozer and/or backhoe. Waste is presumed to have been placed in the bottom of a given cell at one end, compacted and covered with soil previously excavated from the cell during the landfill construction. IND-1 pre-dates WYDEQ landfill permitting regulations and has been closed since 1991. IND-1 operated in two distinct phases, herein referred to as IND-1A and IND-1B. IND-1A operated in the 1960's and 1970's and was believed to be closed in 1981. IND-1B operated in the 1980's and was closed in 1991. Neither phase of IND-1 was permitted nor do records of the waste disposed in the associated pits exist.

Table 4-7: Waste Disposal and Composting Permits

Type of Permit	Permit Number	Facility	Agency
Composting	049-025-10871	South Composting Facility	WOGCC
Composting	049-025-10871	South Composting Facility #2	WOGCC
Composting	049-025-22645	East Composting Facility	WOGCC
Composting	049-025-22790	North Composting Facility	WOGCC
Concrete Storage	049-025-10805	Concrete Storage Facility	WOGCC
NORM Disposal	049-025-22802	NORM Disposal Facility	WOGCC
Pit and Box	049-025-10823	New B-1-3 Pit and Box	WOGCC
Industrial Waste Disposal	Closure Permit Pending	IND-2	WYDEQ

The IND-2 landfill is a trench and fill type of landfill comprised of pyramid and trapezoidal shaped disposal cells dug into the native soil using a bulldozer and/or backhoe. Waste was placed in the bottom of a given cell at one end, compacted, and covered with soil excavated from the cell during the landfill construction. The depth of each trench varies depending on the soil conditions, size of the cell, and the depth to groundwater at the specific location.

IND-2 was intended for disposal of waste items/materials generated during oil exploration, drilling, research, and production activities at NPR-3. This includes office trash, warehousing shipping boxes, oil absorbent pads and used oil booms, iron sponge, water filters, rubber hoses, pipe insulation, plastic, spent charcoal, sheet rock, wood, and other non-hazardous and RCRA exempt oil field wastes. It may also include special waste items such as Low Temperature Separation gas plant glycol filters or an occasional bag of unused non-hazardous chemical (i.e., Potassium Chloride or Polyacrylamide). The IND-2 landfill also includes a land farm intended for the treatment of PCS. The IND-2 landfill and land farm ceased operations in 2001 and are no longer in use. IND-2 is capped per current WYDEQ regulations and a closure permit application (including a Post Closure Environmental Monitoring Plan) was submitted to WYDEQ on November 17, 2014. The WYDEQ permitting process includes two 30-day public comment periods, the first of which is expected to begin in January 2015.

Upon issuance of the IND-2 closure permit, DOE will initiate final closure of the landfarm, including collapsing berms around the edge and down the center of the site. The landfarm will then be re-graded to natural contours and seeded with native vegetation. Post closure monitoring of the site will include inspection and maintenance of the landfill cover integrity and groundwater monitoring for up to 30 years,

DOE currently contracts for solid waste collection and disposal. Wyoming is a WYPDES authorized state, and wastewater discharges are regulated under the Clean Water Act and its associated EPA regulations. Wyoming regulations are codified under the Wyoming Water Quality Rules and Regulations. Petroleum discharges are regulated under the Clean Water Act. Petroleum management at NPR-3 consists of management of oil and associated waste (e.g., produced water, sludge) to prevent oil from being discharged into surface water. Oil spill prevention measures are outlined in the NPR-3 Spill Prevention Control and Countermeasure (SPCC) Plan, which was revised in 2010 and is reviewed for accuracy annually as part of RMOTC's Environmental Management System annual review process.

4.10 Environmental Justice

Environmental justice is related to the fair treatment and meaningful involvement of minority and low-income populations in proposed projects on federal land or using federal funding. When the impacts of a proposed federal action may involve such populations, an analysis of the potential for disproportionately high and adverse impacts to these populations, combined with meaningful community outreach and public involvement, is required.NPR-3 is on land that was withdrawn from other purposes for the production of oil and that is remote from urban centers and surrounded by large ranches and public land. The closest population centers to the site are Edgerton and Midwest, which are each about seven miles from NPR-3. As shown in Table 4-8, Natrona County generally has lower minority population percentages than the U.S. as a whole and the State of Wyoming in particular. With the exception of American Indian/Alaska Native population, Midwest and Edgerton show lower population percentages of minorities than the rest of Natrona County. Thus, the only minority population that could be affected by the Proposed Action is the American Indian/Alaska Native population.

The operations anticipated by the Proposed Action would be conducted on NPR-3 and there are no environmental pathways by which emissions, pollutants or hazardous products from NPR-3 could affect the American Indian/Alaska Native population in Midwest or Edgerton in a disproportionately high or adverse fashion. Additionally, DOE expects that future owners of the site will comply with all federal, state and local hiring and contracting requirements, including those protecting minority workers. Therefore, the only potential adverse effect that could disproportionately impact the American Indian/Alaska Native population is related to cultural resources. DOE's engagement with American Indian Tribes through the NHPA Section 106 process has provided meaningful outreach and involvement for this population with respect to the Proposed Action. As a result of the NHPA Section 106 process, DOE modified its Proposed Action to include the conveyance of a conservation easement to that avoids adverse impacts to Native American cultural resources. With the inclusion of the conservation easement, no minority and low income populations could suffer disproportionately high and adverse impacts from

any of the anticipated activities described in this SWEA and this resource is not considered further in this SWEA.

Table 4-8: Ethnic Percentages of Populations Near NPR-3

Ethnicity	% in USA	% in Wyoming	% in Natrona County	% in Midwest	% in Edgerton
White	74.2	84.1	86.8	95.5	94.4
Black/African American	13.6	1.7	1.9	0.7	1.0
American Indian and Alaska Native	1.6	2.6	1.4	3.0	4.6
Asian	5.6	0.9	0.8	0.2	0.5
Native Hawaiian and Other Pacific Islander	0.4	0.1	0.1	0.0	0.0
Hispanic	16.4	9.7	8.0	3.2	5.6

Source: U.S. Census Bureau, 2014

5.0 ENVIRONMENTAL CONSEQUENCES

This section describes and assesses the environmental effects associated with the Proposed Action, the Lease Alternative and the No Action Alternative.

5.1 Impacts of the Proposed Action

As stated previously, the Proposed Action is to sell NPR-3 to a private entity for continued oil production. It is understood that the new owner would continue routine production and maintenance activities while also implementing cost effective EOR projects to substantially increase oil production above its current rate of approximately 225 bpd. This Section addresses the environmental consequences of both continuing current routine operations and implementing potential EOR activities. However, EOR is addressed in a general fashion because it cannot be predicted with certainty which technique(s) will be implemented by the new owners.

5.1.1 Land Resources

The criteria used to assess land use impacts are based on potential conflicts between the Proposed Action and existing land uses, conformance with land use regulations of governing agencies with jurisdiction on the site, and duration of potential impacts.

5.1.1.1 Land Use

Selling NPR-3 to a private entity for continued oil production at the site is consistent and compatible with the current and past oil and gas industrial uses at the NPR-3 site. The facility is remote from human activities and the land has been withdrawn for use as a dedicated oil production facility. Routine operations performed by the new owner are expected to be essentially the same as those performed currently, with modest refinements. Selective or site-wide implementation of EOR represents a substantial change in how the field has been operated in the past, but is still consistent with historical use as an oil production facility. As such, no land use conflicts are expected for the Proposed Action. Further, Natrona County would consider the Proposed Action to be consistent with governing land use policies located in a known oil and gas resource area. Therefore, the sale of the property would comply with county land use requirements, which specify locating heavy resource-related land-based activities near the resource to be extracted.

Domestic grazing could be precluded on the property after the sale depending on which organization purchases the land. If grazing is prohibited by the new owner, the ban would be site-wide and essentially permanent for the duration of petroleum production. This would adversely affect the current grazing lease-holder, but is not expected to impact regional grazing operations.

5.1.1.2 Land Ownership

As described in Section 3, the sale of NPR-3 would affect the entirety of NPR-3. Because future owners are expected to engage in activities that are consistent in nature to those that have occurred onsite for the past 50 years, potential conflicts with adjacent property or land activities operated by private landowners or state and federal land managers are not expected.

In addition, the 5 active permits and 15 active easements mentioned in Section 4.1.1 would be transferred, revoked or re-negotiated as shown in Table 5-1.

Table 5-1: NPR-3 Land Ownership Permits and Easements

Permits			
From	**To**	**Purpose**	**Expected Action**
DOE	Private Entity	Electric Line Distribution Permit	Transfer
DOE	Private Entity	3-in. Pipeline Permit	Transfer
DOE	Private Entity	1.75-in. Pipeline Permit	Transfer
DOE	Private Entity	Underground Telephone Line Permit	Transfer
DOE	Private Entity	4-in. Pipeline Permit	Transfer
Easements			
From	**To**	**Purpose**	**Expected Action**
Private Entity	U.S. Government	Pipeline Right of Way Easement	Transfer
Private Entity	U.S. Government	Pipeline Right of Way Easement	Transfer
U.S. Government	Private Entity	Underground Communications Cable Right of Way Easement	Renegotiate
Private Entity	U.S. Government	Road Access Right of Way Easement	Transfer
DOE	Private Entity	Road Access Right of Way Easement	Transfer
DOE	Private Entity	Communications Line Right of Way Easement	Renegotiate
DOE	Private Entity	Road Access Right of Way Easement	Renegotiate
DOE	Private Entity	Road Access Right of Way Easement	Renegotiate
DOE	Private Entity	Road Access Right of Way Easement	Renegotiate
DOE	Private Entity	Road Access Right of Way Easement	Renegotiate
DOE	Private Entity	Road Access Right of Way Easement	Renegotiate
DOE	Private Entity	Grazing Easement	Renegotiate or Terminate

5.1.1.3 Recreation

As described in Section 4.1.3, no recreational facilities or resources currently exist at the NPR-3 site. DOE expects that the full-time work force at NPR-3 would increase by about 100 people under new ownership, which may nominally increase demand for regional recreational facilities. Because there are no recreational facilities, nationally designated recreational facilities, or dispersed recreational activities found within NPR-3, adverse effects are not expected under the Proposed Action.

Hunting is currently prohibited at NPR-3 and, while the new owner(s) would not be required to maintain this prohibition, DOE believes that the safety and liability risks associated with allowing hunting in an active oil field are such that the new owner(s) is(are) likely to continue to prohibit hunting. Therefore, DOE believes that there will be no effect on this activity under the Proposed Action.

5.1.1.4 Aesthetics

The NPR-3 site is located in an area characterized as having a low level of visual sensitivity based on prior modifications of the natural setting in the area. Under the Proposed Action, new well construction would be consistent with previous development. According to BLM Visual Sensitivity maps (BLM 2003a), the NPR-3 is a Scenic Quality Class C and Visual Resource Management Class III property. As such, the level of change to the characteristic landscape should be moderate, management activities may attract attention but should not dominate the view of the casual observer, and changes should repeat the basic elements found in the predominant natural features of the characteristic landscape (BLM 2003a). The proposed sale of NPR-3 would not affect adjacent areas managed by a federal agency.

Under the Proposed Action, new ownership is expected to continue routine operations (installation of new production wells, infrastructure maintenance and plug/abandonment activities), while also implementing EOR projects (which also include installation of injection wells, purchase and deployment of chemicals, management of additional waste and substantially increased oil production). Construction-related visual impacts would be limited to earthwork and grading scars, heavy equipment tracks, support machinery storage, temporary tool storage and related waste materials and cuttings. Any visual impacts from constructing new well pads would be reduced by: 1) implementing standard re-vegetation efforts required by WYPDES construction stormwater management permits, and 2) minimizing the construction duration at the site. Residual impact would be short-term and landscape changes following re-vegetation would not be obvious or attract attention. Such landscape changes are not expected to be adverse and would not represent a change in the visual character of the area.

5.1.2 Air Quality

Air quality regulations stipulate that projects conducted by future owners of the site would be considered to have an adverse impact on air quality if they violate any ambient air quality standard, contribute measurably to an existing air quality violation, or expose sensitive receptors to substantial levels of pollutants. Discussions of the air quality impact of routine operations and EOR projects are provided below.

5.1.2.1 Air Quality Impacts of Routine Operations

After NPR-3 is sold, continued primary production and routine operations would generate air emissions from the following activities:

- Existing crude oil production,
- Ground disturbance for new well installation,
- Ground disturbance from general infrastructure maintenance, and
- Plug and abandonment operations.

As stated in Section 4.2.3 above, NPR-3 has several facilities that are currently subject to air quality permit waivers and that emit low levels of VOCs, HAPs, CO, NO_x, and H_2S. Continuing routine operations under the Proposed Action will not alter the current throughput of these facilities as shown in Table 4-2. In addition, existing oil production currently vents between 0.2 and 0.6 Mcf (5.7 m^3 and 17.0 m^3) of natural gas per well in order to allow the oil to flow more freely. Collectively, the 380 operating wells at NPR-3 emit approximately 100 and 200 Mcf (2,832 to 5,663 m^3) of natural gas per day and routine operations under the Proposed Action will not alter these levels. Moreover, routine well installation, maintenance, and plugging and abandonment under the Proposed Action are expected to remain at approximately the same intensity as is current practice. Therefore, DOE believes that there will be no adverse air quality effects from the routine operations of the Proposed Action.

5.1.2.2 Air Quality Impacts of EOR Projects

As discussed in Section 3, the new owners are expected to implement some type of EOR project. Air quality impacts from EOR activities would generally entail the following:

- Fugitive dust from groundwork related to injection well installation and pipeline infrastructure construction;
- Heavy equipment emissions related to injection well installation and pipeline infrastructure installation;
- Off-gassing from chemical containers or wells;
- Emissions from transport vehicles bringing in chemicals and materials or removing wastes;

- Release of in situ gases from increased production;
- CO_2 release or sequestration if CO_2 flooding is implemented; and
- Emissions from boilers if steam flooding is implemented.

Dust and heavy equipment emissions from construction of pipeline infrastructure or injection well installation would be short-term, but could result in adverse impacts. Fugitive dust emissions would come from land clearing, ground excavation, and grading operations. Dust emissions would vary on a daily basis, depending on the level of activity, the specific operations and the prevailing weather. A large portion of the dust emissions would result from equipment traffic over dirt roads, followed by pipeline trench excavation and well pad clearing. The quantity of fugitive dust generated would be directly proportional to the land area being worked and the silt content of the soil (i.e., particles smaller than 75 microns in diameter). Conversely, the amount of fugitive dust generated would be inversely proportional to the square of the soil moisture. Because the construction activities are anticipated and will be planned by future owners, DOE does not know the timeframe, schedule, amount, or exact nature of the grading required for completing the anticipated EOR projects.

A general estimate of dust generation can be illustrated by applying the EPA dust generation factor of 1.2 tons of fugitive dust per ac (2.7 metric tons/ha) of disturbance per month of grading activity to an estimate of grading activity anticipated to be implemented by the new owners. As outlined in Section 3, DOE anticipates that the new owners will install approximately 100 new injection wells at NPR-3, which comes to 150 ac (61 ha) that could be subject to development grading. In addition, DOE anticipates that another 300 ac (122 ha) would be disturbed for the EOR chemical pipeline. Assuming an estimated 5-year development phase, an average of approximately 7.5 ac (3 ha) would be graded per month (450 ac [182 ha] divided by 60 months). Based on the EPA dust-generation factor of 1.2 tons/acre/month (2.7 metric tons/hectare/month), grading activities could generate approximately 9 tons (8.2 metric tons) of dust per month. This estimate is worst-case and does not account for dust control measures (e.g., watering, soil fixative).

While construction activities would be a significant source of fugitive dust emissions that could have a substantial temporary impact on local air quality, the duration of this impact would be short. Dust control measures, if correctly implemented, have been shown to control up to 95 percent of construction-related dust at a construction site. DOE expects that the new owners would implement dust control measures when implementing their EOR projects.

As stated in Section 4.2.3 above, existing oil production vents between 0.2 and 0.6 Mcf (5.7 m^3 and 17.0 m^3) of natural gas per well in order to allow the oil to flow more freely. Collectively, the 380 operating wells at NPR-3 emit between 100 and 200 Mcf (2,832 to 5,663 m^3) of natural gas per day. Under an EOR scenario, CO_2 or other flooding techniques would override backside pressure concerns and the gas currently being vented would likely be captured for beneficial use. As such, EOR would constitute a positive environmental impact.

Regarding other long-term stationary air emissions, as discussed in Section 4.2.3 above, NPR-3 has several facilities that are currently subject to air quality permit waivers and that emit low levels of VOCs, HAPs, CO, NO_x, and H_2S. With respect to existing equipment, implementation of EOR at NPR-3 would likely increase throughput at the South Terminal beyond its current limits, but not at the other facilities because it is more likely that new facilities would be constructed. Increasing throughput at the South Terminal beyond its 730 bbls/day limit would require the new owners to re-submit documentation to WYDEQ for evaluation and possible issuance of a Title V Air Quality permit. Any new equipment or facilities to be installed as part of EOR implementation that could emit air pollutants would need to be submitted to WYDEQ for new source reviews and a determination as to whether a Title V permit is necessary. Reactivation of boilers (for steam flooding) would need to be re-evaluated by WYDEQ and

likely would involve the issuance of a Title V permit to control emissions. As with other regulated processes, DOE expects that the new owner will comply with existing air quality regulations.

With respect to absolute emissions, VOC, HAP, CO, NOx, and H2S emissions will increase in relation to increased oil production. However, these emissions will be consistent with levels observed during peak oil production in the 1980's and will not in and of themselves cause the area to be in non-attainment.

5.1.3 Noise

There are no noise-sensitive land uses at NPR-3 and no Wyoming state regulations governing noise levels during well pad construction, drilling or operation of the oilfield. Guidelines often used in assessing and abating noise impacts are contained in the *Federal Highway Administration (FHWA) Federal-Aid Highway Program Manual*, the FHWA *Construction Noise Handbook*, and EPA's *Protective Noise Levels* document. However, there are no FHWA noise abatement criteria for undeveloped lands.

Potential noise impacts associated with the Proposed Action can be divided into those deriving from routine operations and those coming from EOR projects. Routine impacts would occur from noise generated by stationary or mobile construction equipment involved in drilling new wells, maintaining infrastructure or plugging and abandoning wells. EOR impacts would occur from new equipment and operations related to EOR activities implemented by the new owners.

5.1.3.1 Noise Impacts of Routine Operations

The noise impact from routine well installation, maintenance and plug and abandonment activities is associated with earth movers, material handlers, portable generators and drill rigs. Average noise levels from these activities at 50 ft (15 m), measured in A-weighted decibels (dBA) range from 70 to 100 dBA (U.S. Department of Transportation [DOT] 2006). Noise at these levels constitute an occupational hazard and require employers to provide appropriate hearing protection for their employees. However, because such noise would be of a duration and intensity approximately equal to current levels, there should be no adverse impact from the Proposed Action.

5.1.3.2 Noise Impacts of EOR Projects

Noise impacts from EOR projects will generally entail the following:

- Noise associated with heavy equipment related to well installation or conversions and infrastructure installation;
- Transport of additional equipment, chemicals and waste associated with the EOR project; and
- Operation of boilers or other equipment related to the EOR project.

Noise from EOR well installations/conversions, infrastructure installation and drilling will require occupational hearing protection, but is not likely to affect the public due to the remote location of the site. Additionally, construction activities are expected to be complete within five years of selling the property, after which noise levels will drop to those associated with routine operations. Because there are no noise-sensitive land uses within or near NPR-3, the temporary noise created by construction is not expected to be an adverse impact.

Vehicular traffic (and road noise associated with it) is expected to increase during the EOR construction phase and remain higher than current levels after EOR becomes fully operational. While it is not clear exactly how much additional traffic will occur, it is reasonable to estimate that the scale of construction would be similar to other proposed actions. In the 2008 SWEA for RMOTC and NPR-3, DOE estimated that an additional 50 workers would be needed during construction (DOE 2008). Along with the Gustavson report's estimate of 100 new workers after the sale (Frahme and Moritz 2012), this would bring a traffic increase of approximately 150 vehicles per day as a worst-case scenario. Some personnel

would likely carpool to the site, as is the case currently. Even so, noise from these additional vehicles is not expected to be a significant adverse effect.

5.1.4 Water Resources

Potential water impacts associated with the Proposed Action can be divided into those deriving from routine operations and those coming from EOR projects. Routine impacts involve process water production, treatment and discharge from existing wells, as well as erosion from drilling new wells, maintaining infrastructure or plugging and abandoning wells. Water impacts from EOR projects would result from construction of new wells, fracking new vertical wells, and increased process water production. Impacts could be to surface water, groundwater and potable water.

5.1.4.1 Water Resource Impacts of Routine Operations

Routine operations under the Proposed Action would incrementally increase process water generation at NPR-3 due to slightly increased oil production from rehabilitation and down-hole stimulation activities. Surface erosion would continue to be a concern at new well installation sites, as well as at road or other infrastructure maintenance sites. However, routine erosion impacts would continue to be mitigated by Best Management Practices (BMPs) and the re-vegetation of sites after plug and abandonment activities are completed. Fracking of new vertical production wells would utilize process water from existing wells, as is the case currently. Staffing levels are not expected to change because of routine operations, so these activities are not expected to increase potable water demand. Therefore, no adverse impacts would result from routine operations under the Proposed Action.

5.1.4.2 Water Resource Impacts of EOR Projects

EOR activities are much more water intensive than conventional production techniques. These impacts are addressed below.

5.1.4.2.1 Surface Water

As stated elsewhere, DOE anticipates that the new owners of NPR-3 will initiate construction to install injection wells, convert some existing production wells into injection wells, and install appropriate pipelines to deliver flood materials to the newly installed or retrofitted wells. Any new pipeline to retrofitted wells is expected to be within existing utility and pipeline corridors. Infrastructure for new wells will require some excavation and soil disturbance outside of existing corridors, though this is likely to be minimal.

Runoff from these construction activities could cause erosion and impact surface water onsite and downstream. Further, the construction could alter drainage patterns, stormwater flow rates and water volume coming from the affected project site. All of which is likely to impact surface water discharges during storms and lead to sediment deposition downstream. Erosion controls and other BMPs associated with the new owner's construction stormwater WYPDES permit and Construction Stormwater Pollution Prevention Plan are likely to mitigate downstream events by slowing water flow and reducing erosion from the impacted site. Once construction is complete, it is standard industry practice and a requirement of all construction WYPDES permits that the site be stabilized and runoff rates and volumes returned to pre-construction levels. Therefore, the surface water impacts from the likely construction projects are expected to be short-term (approximately 6 months for each individual construction site).

As stated previously, DOE expects that the new owners will implement EOR projects that may increase oil production to approximately 4,000 bbls/day, which is an 18-fold increase over current production. This level is comparable to production seen at the field's peak in 1981. Any increase in oil production will result in an increase in produced water. The amount of this increase in water production is highly dependent on the formation in which the new EOR wells are installed. For example, five current wells in the Tensleep formation account for more than 99 percent of water production at NPR-3, with each

Tensleep well producing approximately 182,368 gal./day (690,339 L/day). In 2008, DOE proposed to drill six new wells in the Tensleep as part of a CO2 flooding regimen (DOE 2008). At the time, NPR-3 was producing up to 1.47 million gal./day (5.56 million L/day) of water (Section 4.3.1 in DOE 2008). The six wells proposed in 2008 would have increased water flow by approximately 1.1 million gal./day (4.1 million L/day) and would have resulted in a daily flow of nearly 2.6 million gal./day (9.7 million L/day). Given that the daily flow rate in 2014 is approximately 957,000 gal./day (3.6 million L/day), the new owner(s) could add approximately 9 wells to the Tensleep before exceeding the water discharge rate that was previously determined to present no significant impact.

The most economic method for handling the increased water flow would be for the new owner(s) to continue to treat the water and release it into Little Teapot Creek under the existing WYPDES permit. This permit does not currently have a volume limitation, but does require that erosion control measures be "implemented to prevent significant damage to or erosion of the receiving water channel at the point of discharge" (WYDEQ

The released water would continue to flow to the Salt Creek basin and contribute to the basic flow conditions in the lower reaches of Salt Creek, resulting in an artificially perennial stream. Based on this contribution, continued beneficial impacts are expected for wetland habitats and wildlife.

If the new owners choose to implement horizontal drilling in the Niobrara or Steele shale formations, then DOE estimates that each well would require approximately 160,000 gal. (0.6 million L) of water for fracking. The water for fracking these types of wells would be taken from the Madison formation using existing wells, as has been the case historically at NPR-3 However, partly due to the complex structural geology and multiple offsets in the formation, DOE believes that horizontal drilling at NPR-3 is unlikely.

5.1.4.3 Groundwater

Potential impacts to groundwater resources associated with EOR construction include disruption of shallow or perched aquifers during excavation, cross-contamination between water-bearing formations and localized dewatering. Those impacts would be confined to a small area, would be of short duration and therefore would not be significant.

The potential impact of groundwater contamination due to accidental spills of petroleum from construction equipment or of other chemicals used during construction would likely be limited to areas in the vicinity of the construction. Because the water table at NPR-3 ranges from 50 to 100 ft (15 to 30 m) bgs and groundwater resources occur in localized areas, this impact is not considered adverse unless very large quantities were to be released. The new owners would fall under the same construction and spill prevention requirements that currently apply to DOE. It is expected that the new owners would use existing or comparable spill control equipment to contain any spill and minimize the economic impact of a release. Therefore, DOE believes that there is a low potential for a construction-related fuel or chemical spill to occur that is large enough to impact groundwater.

Based on the relatively shallow depth (approximately 5 ft [1.5 m] below land surface) of pipeline installation in relation to the expected groundwater at NPR-3, potential effects of EOR projects to local or regional groundwater resources are not likely. All water generated by EOR projects would be from oil-producing formations, not drinking-water quality aquifers. Water for fracking new wells (including horizontal wells if installed) would come from produced water out of oil-bearing formations rather than site groundwater.

With respect to groundwater quantity and drawdown, groundwater withdrawn from the underlying formations is high in TDS, salinity and hydrocarbons, which make it unsuitable for drinking. Therefore, no adverse competition with regional demands for potable water is possible. Moreover, the Madison Formation is deep and overlain by rigid strata not susceptible to compression. As such, there is no potential for land subsidence due to groundwater withdrawals resulting from future EOR projects. In

addition, the Madison is used as the formation that receives injected waste water when the situation calls for it. Water is also likely to be injected into other formations as part of a surfactant flood operation. Therefore, it is unlikely that there will be significant drawdown of groundwater resources at the site.

5.1.4.4 Potable Water

Sale of NPR-3 would increase demand for potable water at the site over current levels because there would be an increase in personnel at the site. However, this increase would not be significantly more than what demand has been historically. From 1977 through 2010, the site routinely supported an operating staff of 100 to 200 personnel. Therefore, no adverse impacts to potable water resources are expected as a result of the Proposed Action. Current import of potable water from the town of Midwest is likely to continue.

5.1.4.5 Floodplains

DOE does not anticipate that the Proposed Action will result in substantially more building construction or paving. New well pads and road grading are likely to be balanced by well pad restoration when unproductive wells are plugged and abandoned. Disturbance related to new EOR infrastructure is likely to be temporary due to regulator mandated site stabilization. As such, it is unlikely that future activities at NPR-3 will permanently or substantially increase water runoff volume such that floodplains would be significantly affected.

5.1.5 Geology, Soils and Prime and Unique Farmlands

5.1.5.1 Geology

Intensive oil development has occurred on NPR-3 since 1977. Additional drilling and development by new owners is expected to avoid steep or unstable slopes, thereby avoiding impacts associated with reduced slope stability. Some minor changes (such as leveling and vegetative clearing) in topography from well pad construction would be anticipated, but impacts would be minimal.

Implementing EOR practices at NPR-3 is not expected to impact geology at the site. While horizontal drilling and subsequent fracking and water reinjection have been associated with induced, low-grade seismic activity (NRC 2013, The Royal Society 2012, Goldman et al. 2013), DOE believes that at most ten such wells could be drilled at NPR-3 and that it is quite likely that no horizontal wells will ever be drilled at the site. This very small number of horizontal wells is not expected to induce seismic activity.

5.1.5.2 Soils

Well pad construction and pipeline installation would require clearing and grading a site. These areas would be more susceptible to erosion until stabilization is completed. Erosion impacts for cleared or stockpiled soil would be considered adverse. WYPDES requirements include the use of erosion controls and other BMPs to mitigate erosion effects. WYPDES permit compliance activities include reclamation, reseeding with native vegetation, and restoration of runoff potential to preconstruction conditions. Soil stabilization and re-vegetation are standard industry practices for mitigating erosion from surface disturbances. Therefore, erosion from anticipated EOR project implementation is not expected to be significant.

5.1.5.3 Unique Farmlands

There are no prime or unique farmlands, or other farmland of statewide or local importance, as defined at 7 CFR 658.2(a), "Farmland Protection Policy Act: Definitions," within or in proximity to NPR-3. Therefore, the proposed action will not impact designated prime or unique farmland.

5.1.6 Biological Resources

The potential impacts of the Proposed Action on vegetation and wildlife are addressed below.

5.1.6.1 Aquatic Biology

NPR-3 is bisected and drained by Teapot and Little Teapot Creeks. These drainages are naturally intermittent and are not considered to provide well-established aquatic habitat at the NPR-site. Because no natural perennial water bodies occur on or in close proximity to the site, well established aquatic habitats do not exist under natural conditions. Thus, adverse impacts to indigenous species associated with aquatic habitat or impacts to area fisheries would be unlikely.

However, produced water is currently treated onsite in an oil/water separator and released under a WYPDES permit. This continuous discharge has created a synthetic wetlands environment downstream from the treatment plant. If the new owners continue to discharge treated process water, then there would continue to be a beneficial impact to the aquatic habitat that occurs in the Salt Creek watershed. However, if the water discharge is stopped, the wetlands that are currently dependent on produced water discharges will revert back to their natural condition. This is not considered to be a significant adverse environmental impact, as it does not result in a condition inferior to that which existed before the start of oilfield operations.

5.1.6.2 Terrestrial Vegetation

Terrestrial vegetation would be locally affected by both routine and anticipated EOR activities. If the new owner maintains practices similar to DOE's current operations, then routine new well installation would disturb approximately 40 ac (16.2 ha) of vegetated land per year, which represents 0.4 percent of the total acreage of NPR-3. Similarly, DOE believes it is reasonable to expect the new owner to plug and abandon wells at a rate approximately consistent with historical operations. If this holds true, plugging and abandonment activities would restore native terrestrial vegetation to approximately the same acreage as is disturbed by routine well installation and would therefore balance the net magnitude of vegetation impacts.

Anticipated EOR project construction would also affect terrestrial vegetation. Clearing, excavation, and soil stockpiling related to new injection wells and new EOR pipeline infrastructure would disturb vegetation. EOR pipeline infrastructure would most likely be laid down in existing pipeline corridors within NPR-3 property boundaries, with the possible exception of running a CO_2 pipeline to the site (which was previously analyzed [DOE 2008]). The associated excavations would then be filled, contoured and re-seeded with native vegetation for stabilization.

Because the vegetation potentially affected by the anticipated EOR projects is not unique in the area and is generally poorly developed compared to similar habitats elsewhere in the region, these temporary impacts are not considered to be significant for widespread habitats such as the mixed grass prairie, desert shrub and Wyoming big sagebrush. Moreover, specific re-vegetation efforts using native seeds should mitigate potential construction-related impacts on vegetation. Such efforts include salvaging and replacing topsoil; loosening compacted soils to enhance water absorption; re-contouring disturbed areas to blend with surrounding topography and restore natural drainage patterns; stabilizing soils to minimize erosion; and seeding, fertilizing and mulching disturbed areas with a native seed mixture, rate and method conducive to rapid re-vegetation of disturbed areas. While such activities will not be under DOE jurisdiction once the property is sold, they are routinely recommended as part of the WYPDES construction permitting process. Therefore, it is reasonable to anticipate that they will be followed by the new owners.

As noted by the Wyoming State Chapter of the Wildlife Society (WYTWS) in its comments on the Draft SWEA, sale of the property would complicate the ability of environmental organizations to direct or negotiate actions that control or mitigate the spread of non-native and invasive vegetative species. While

sale of NPR-3 will remove federal regulatory and policy drivers for noxious weed control from the property, it will not impact the Natrona County Weed and Pest Control District's efforts to work with landowners to manage infestations. Further, BLM will continue its efforts to control noxious weeds in the Salt Creek field. In its cooperative and integrated weed management plan for the Salt Creek field, BLM indicated that it would work with nearby landowners to educate them about noxious weeds and improve cooperation in reducing the impact these weeds have on the environment (BLM 2004). DOE believes that these efforts will continue after the property is sold. DOE believes that standard regulatory requirements for re-vegetating disturbed areas after construction is complete and on-going weed control efforts in Natrona County in combination will mitigate the impact that property sale will have on noxious weed control efforts.

5.1.6.3 Terrestrial Wildlife

Red tailed hawks nests have been observed on NPR-3, even after extensive development under DOE operations. Construction of EOR infrastructure may impact these raptors by affecting prey species. However, these effects are expected to be temporary. Pipeline infrastructure will likely be underground per industry standards and once the excavations are stabilized and re-vegetated, prey animals will return to their previous habitat. Thus, no long-term effects are expected for Red Tailed hawks.

There have been no nest sites observed in or immediately around NPR-3 for Golden or Bald Eagles. The 520-acre conservation easement is predominantly in the bluffs and hills forming the southern perimeter of the site and if eagles were to construct nests at NPR-3, they would be in the bluffs and therefore protected from future development. Eagles and their nests are protected by federal law and will continue to be protected after the property is sold. The new owner(s) will be required to obtain a permit from the U.S. FWS prior to damaging or removing eagle nests.

DOE presumes that other raptor species common to Wyoming are present at NPR-3. Habitat in the conservation easement will be protected in perpetuity and prey species will return after the EOR construction is completed. No significant adverse effects are expected on these raptors.

Because there are no major migratory staging areas for waterfowl or other avian species in the immediate area of the site, and no major geographic features that attract birds to the oilfield, adverse effects on migratory species are not anticipated. Additionally, due to the poorly developed habitat in the project area, no avian species of concern are expected to nest within the project area. Therefore, adverse impacts to raptors and migratory species are not expected.

Impacts to big-game species on the NPR-3 site during construction would likely be localized and minimal. Because construction activities would largely be confined to summer and fall, animals would not be affected while occupying winter range. As such, impacts would be limited to relatively small areas of temporary habitat loss. Impacts to sensitive wildlife species (i.e., big game) due to operation and maintenance of the anticipated projects are expected to be minimal. Interaction between wildlife and site workers would be negligible and temporary, and operation of the anticipated projects would likely result in minimal impacts to these species.

Implementation of CO_2 flooding site-wide at NPR-3 may cause the deaths of some animals and birds due to unintentional release of CO2 and/or hydrogen sulfide. As has been experienced at other oil and gas fields, CO2 and/or hydrogen sulfide may be released from improperly sealed wells. These harmful gases may accumulate in low-lying areas and cause asphyxiation due to localized hazardous atmospheres. While this is an environmental and employee safety concern, neighboring oilfields have not experienced significant wildlife kills from this phenomenon. Situations where enough gas is released to make this a wide-spread problem in the future at NPR-3 will also constitute an important loss of revenue for the new owner(s). DOE anticipates that the new owner(s) will monitor the effectiveness of any CO2 program and fix any leaks that cause wildlife kills and threaten overall revenue recovery. Therefore, DOE does not believe this represents a significant adverse effect.

5.1.6.4 Threatened, Endangered and Rare Species

Biological resources that are considered sensitive must be given particular careful attention when analyzing the potential impacts of the Proposed Action. Loss of a population of state-or federally listed threatened, endangered, or rare plant or wildlife species would be considered an adverse impact. Impacts on other sensitive plant or wildlife species would be considered an adverse impact if they resulted in a threat to the continued existence of the resource.

Of the sensitive species possibly occurring on the site, only those with the potential for experiencing impacts as result of project implementation are discussed in this section. Species that are not likely to occur on the NPR-3 site, have a very low possibility of occurrence, or are expected to occur (or have been recorded as occurring) in areas of the NPR-3 site that would not be affected under the Proposed Action are not discussed, because no impacts would be likely to affect these species.

5.1.6.4.1 Vegetation

Federally listed threatened or endangered plant species are not expected to inhabit the NPR-3 site based on the following considerations:

- Prior to 1986, the NPR-3 site had been overgrazed, which likely resulted in the destruction of any potential threatened, endangered, or rare plant species.
- The area has incurred vegetation damage over time, including invasion by cheatgrass.
- Plant species diversity at the site is considered to be low. As discussed in Section 4.5.4, ridges located on the periphery of the site and riparian areas associated with drainages that bisect the project site have been less affected by site operations compared to the basin area. Therefore, although rare plant species may occur in these areas, ridges and riparian areas would likely be avoided during future project development.

Based on these considerations, threatened, endangered, and rare plant species are not expected to be affected by the various projects that are part of the Proposed Action or by existing operational activities.

5.1.6.4.2 Wildlife

Potential impacts to federally-listed threatened or endangered wildlife species are not expected to occur under the Proposed Action based on the following considerations:

- Prior NEPA consultations with the USFWS did not indicate that any currently listed species were likely present on the NPR-3 site (DOE 2008).
- Only two active prairie dog towns are on NPR-3 and there have been no sightings of black-footed ferrets onsite; therefore, construction- and operation-related activities would not impact this protected species.
- The USFWS is concerned with the loss of sagebrush that provides needed habitat for the Greater sage grouse (Centocercus urophasianus). However, the habitat type on the site that is generally associated with the Greater-sage grouse is limited and poorly developed; therefore, it is unlikely that the Greater-sage grouse occupies habitat at NPR-3. Thus, potential adverse impacts to the Greater-sage grouse are not expected.

Based on these considerations, threatened, endangered, and rare wildlife species would not be expected to be affected by the new owner's anticipated EOR projects or by ongoing routine operations.

5.1.7 Cultural Resources

As stated in Section 4.6, there are 18 properties at NPR-3 that are eligible for listing or are listed on the NRHP. As part of its Section 106 process and its consultations with the Consulting Parties, DOE has modified the Proposed Action (undertaking) to include a conservation easement as part of the sale and transfer of NPR-3 to a private entity. The conservation easement will provide adequate and legally enforceable restrictions or conditions to ensure the long-term preservation of areas of Tribal interest, as well as the historic significance for the following 16 properties: 48NA182, 48NA199, 48NA4424, 48NA4428, 48NA4429, 48NA4430, 48NA4431, 48NA4434, 48NA4438, 48NA4441, 48NA4442, 48NA4444, 48NA4445, 48NA4449, 48NA4450, and 48NA4452; therefore, the proposed action would have no adverse effect on the historic properties and areas of Tribal interest. The proposed action would have no adverse effect on the Bozeman Trail (48NA3024) because no intact segments of the trail are located within NPR-3.

Of the 18 historic properties at NPR-3, only site 48NA831, the Historic Teapot Dome Oilfield property and its associated contributing components, would be adversely affected by the proposed action (undertaking), because the land will no longer be managed or controlled by the Federal government. The undertaking would alter, directly or indirectly, the characteristics of the historic property that qualify it for inclusion in the NRHP, because NPR-3 would no longer be managed by the Federal government and afforded the associated Federal stewardship under the NHPA.

Through the Section 106 process, DOE has consulted with the Consulting Parties and has developed and executed a Programmatic Agreement (PA) to avoid, minimize, or mitigate the adverse effects of the Proposed Action on site 48NA831 (see Appendix C). A summary of the stipulations contained in the PA include:

- DOE will update and amend the existing Teapot Rock site (48NA213) NRHP listing with additional documentation about site 48NA831, the Historic Teapot Dome Oilfield property
- DOE will prepare Historic American Engineering Record (HAER) documentation for Tank Ring #5 which is associated with the Teapot Dome Oilfield site 48NA831 for submittal to the NPS.
- DOE will prepare HAER documentation for the Mammoth Camp Sewer Facility (48NA831_13), a contributing component of the historic Teapot Dome Oilfield site (48NA831) for submittal to the NPS.
- DOE will develop an interpretive brochure and audio file, and will provide content for a web site and smart phone application describing the history of the Teapot Dome Oilfield.
- DOE will transfer selected surplus donate selected surplus NPR-3 historic artifacts and other modern effects to local museums and repositories.
- DOE will prepare NPR-3 prehistoric artifacts for permanent curation at the Archaeological Repository of the University of Wyoming in Laramie.

The execution of the PA and future implementation of the stipulations demonstrate DOE's compliance with Section 106.

5.1.8 Socioeconomics

5.1.8.1 Employment

Anticipated construction for EOR projects would require a variety of skills for varying periods of time. DOE estimates that construction would be similar to previously planned activities at the site. As such, it is estimated that the construction would take approximately five years, during which approximately 50 personnel will be needed. While several specialized skills could be required, the large historical and

ongoing presence of the energy industry in this part of Wyoming suggests that skilled workers would be available in the general area. Positive impacts would be related to employment opportunities and revenues paid to federal, state, and local governments.

Based on staffing levels at nearby oilfields of similar size that are implementing EOR techniques, DOE projects that staffing may increase by 100 full-time personnel over the next 5 years. This employee increase would have a positive economic impact in the area, but would not negatively impact housing, schools or the demand for existing infrastructure of local communities.

5.1.8.2 Population and Housing

As stated in the previous Section, DOE expects the Proposed Action to result in the hiring of an additional 100 full-time personnel at NPR-3. No impacts to the housing supply, schools, or other infrastructure are anticipated from this increase in employment because the site is relatively close to Casper, Wyoming, there is a large historical presence of the energy industry in the area that suggests most of the new employees will be local residents, and NPR-3 has supported a staff of 100 or more employees historically. Positive impacts would be related to employment opportunities and revenues paid to federal, state and local governments.

5.1.8.3 Transportation

Transportation is not expected to be affected by continuing routine operations, but likely will be affected by EOR projects. As discussed in Section 5.1.3.3, vehicular traffic is expected to increase during the EOR construction phase and remain higher than current levels after EOR becomes fully operational. The effect of EOR construction would be to increase traffic by as many as 150 vehicles per day during construction, dropping to 100 per day afterward. Tractor-trailer traffic would also increase during construction. As discussed in Section 4.7, DOE believes that the additional workers expected to be needed by the new owners would be available in the general area of Midwest and Edgerton, as well as Casper. As a worst-case analysis, if all workers lived in Casper and each drove alone to NPR-3 on a daily basis, round trips would increase existing traffic on I-25 by approximately 7 percent over 2011 usage rates during construction and 5 percent thereafter. This is a negligible increase.

5.1.8.4 Community Services

Based on the analyses in Sections 5.1.8.1 through 5.1.8.3, community services within the project area are not expected to be affected by the Proposed Action and anticipated future actions of new ownership. Because the projected increase of the permanent workforce would be small relative to the population of the region, community services (such as fire and police protection, communication systems, solid waste disposal services and facilities, hospital services, schools, public utilities and other government services) would likely continue without needing to expand capacity to accommodate additional demand.

5.1.9 Waste Management

As described in Section 4.8, continued routine operations would not affect waste quantities, characterization or regulatory status. Anticipated EOR projects, however, are likely to impact all three.

The volume of spent or off-specification chemical waste is expected to increase due to EOR project implementation, though the amount of the increase is not known at this time. Various surfactants and polymers are likely to be used in flooding operations in the Shannon and Second Wall Creek formations. Most of these materials will be used downhole, but off-specification materials will be returned to the manufacturer or disposed of as waste. Spent chemicals used for cleaning, lubricating or maintaining equipment are expected to be containerized, characterized and managed as hazardous or industrial waste as appropriate. Such wastes are expected to be stored safely onsite before being transported offsite for

treatment and disposal. Spilled chemicals or products likewise are expected to be cleaned up, containerized and sent offsite for treatment and disposal as is currently the case.

CO_2 flooding, acidizing and other downhole activities using acidic chemicals may mobilize more naturally occurring radioactive material and heavy metals than would other types of flooding. It is likely that these wastes would be segregated and shipped offsite for treatment and disposal in an appropriate landfill.

Because the new owners are expected to drill new injection and production wells, there will be a short-term increase in the volume of drilling mud and fluids that need proper management. If horizontal wells are drilled, each one will produce five to ten times the mud and fluids of a typical vertical well at NPR-3.

As stated in Section 4.9.4, NPR-3 has two inactive industrial waste landfills (IND-1 and IND-2), an inactive petroleum waste land farm (associated with IND-2) and four active petroleum waste composting facilities. IND 1 (Phases 1A and 1B) pre-dated WYDEQ landfill permitting regulations. IND 1a was closed in approximately 1981, while IND 1b was closed in approximately 1991. IND 2 and its associated land farm have been inactive since approximately 2001. IND 2 is capped per current WYDEQ regulations and a closure permit application (including a Post Closure Environmental Monitoring Plan) is being developed. DOE will file a Notice on the Deed that will include an accurate legal description of the landfills and landfarm, notification to potential purchasers that waste was disposed of and remains onsite, a description of the wastes in the landfills and a legal prohibition on any excavation or other activity that may disturb the waste disposal area or monitoring system unless prior agreement with WYDEQ.

The three composting facilities currently comply with Wyoming Oil and Gas Conservation Commission (WOGCC) requirements and are used to treat PCS. These facilities will transfer to the new owner in their existing condition.

5.1.10 Accidents and Intentional Destructive Acts

As an operating oil field, NPR-3 may experience the same types of accidents that any commercial oil field might encounter, such as oil spills, pipeline breaks, equipment failures, and fires. Routine operations by future owners could result in similar accidents, while EOR operations may produce slightly different accidents.

Whether an accident was the result of an operational failure or an intentional destructive act, its consequences at the site would be minimized by isolating the site from public access, evacuating nonessential workers and the nearby population as necessary and excluding nonessential workers from hazardous areas. Consequently (and consistent with the principle that impacts be discussed in proportion to their significance (40 CFR 1502.2[b]), a sliding-scale approach has been used to analyze both accidents and intentional acts of destruction. Therefore, the following discussions only qualitatively assess impacts. Additionally, it should be noted that in many decades of operations, there has never been an onsite accident at NPR-3 that has resulted in off-site consequences.

5.1.10.1 Accidents

An accident is an unplanned event or sequence of events that results in undesirable consequences. Accidents may be caused by equipment malfunction, human error, or natural phenomena. The more typical or frequent types of industrial accidents, such as trips and falls, occur no more frequently at the NPR-3 site than at a commercial oilfield and there is no reason to believe that future employees will suffer occupational injuries at a significantly different rate than has been the case historically.

Active drilling or construction would involve heavy equipment, moving parts and excavations. Workers would face significant risk of injury or death while performing these activities, as they would at any site where these activities are taking place. However, offsite consequences would be limited.

All oilfield operations carry the risk of spills (oil, produced water and/or chemical) or fire. NPR-3 currently operates under the EPA SPCC regulations and the current SPCC Plan for the site would be transferred to the new owners. All well sites, pads, storage tanks, and other locations where oil is accumulated or stored are bermed to limit the extent of damage from any spill. SPCC requirements also include provisions for inspecting, protecting and repairing/maintaining tanks and pipelines to prevent leaks or ruptures. However, should a pipeline leak or rupture occur, it would result in surface contamination that would have to be remediated. The extent of damages would be directly proportional to the size, magnitude and duration of the spill. Large spills that occur during off hours could contaminate many acres, especially if any spilled material reaches the drainages receiving discharge waters and is spread offsite. Prevention of these types of spills is addressed in the site SPCC plan, which likely will be adopted by the new owners.

The produced oil and natural gas present an additional concern for explosions and fires. If worker activities provided the ignition source for such an event, the consequences to the involved worker could be serious or even fatal. Due to the large size of the site and its remoteness, uninvolved workers and the off-site public would likely not be affected by a fire or explosion unless such an event ignited site grasslands and spread to off-site rangeland.

Site-wide EOR implementation would affect the types of chemicals that could be spilled. If bulk chemicals used in polymer or AS/ASP flooding spilled while onsite, the resulting contamination would be very similar to an oil spill. Soil, equipment, vegetation and drainages could be affected, with the primary pathway for offsite contamination being contamination of surface water discharge. Chemicals used in polymer or AS/ASP flooding are not acutely hazardous, so contamination is unlikely to be life-threatening or to require evacuation of the nearby population.

With industrial scale injection there is also the possibility of a Pressure-Induced Event (PIE), steam or gas injection projects (including nitrogen, hydrocarbon, miscible or CO_2) could all force natural gas, hydrogen sulfide or the injected gas into the atmosphere and create low-lying pockets of hazardous, flammable or asphyxiating atmospheres. Wildlife that enter one of these pockets would die and a site-wide event could result in significant die off. For flammable atmospheres, there would be the additional hazard that fires could be started that would spread to surrounding grassland and then offsite.

5.1.10.2 Acts of Sabotage or Terrorism

Theoretically, offsite shipments of waste contaminated with NORM could be hijacked and used in a dirty bomb event. However, such wastes do not have enough concentrated radioactive material for this to be even remotely realistic. Explosive charges used to perforate casing during well installation are not sufficiently large enough to be targeted for theft and use in a bomb. Regardless, they are kept under tight control and security for health and safety reasons, and should be the same under new ownership. Therefore it is unlikely that these items would be targeted.

NPR-3 is remote from population and economic centers and is not a major oil production source in the region. Consequently, it is highly unlikely that it would be viewed as a particularly attractive potential target by saboteurs or terrorists. Even so, intentionally initiating a PIE, setting fire to oil wells, inducing spills, or setting off an explosion at the site would have the same effect as would a similar occupational accident. Further, the Proposed Action would not offer any credible targets of opportunity for terrorists or saboteurs to inflict significant adverse impacts to human life, heath, or safety, nor would the Proposed Action render the site as a whole any more susceptible to such acts.

5.1.11 Cumulative Effects

There are three primary cumulative effects from the Proposed Action, including climate change due to increased greenhouse gas emissions, induced seismic activity due to water injection, and vegetation degradation.

5.1.11.1 Emissions of Greenhouse Gas

Commercial use of crude oil emits greenhouse gases, primarily in the form of carbon dioxide (CO_2), from the burning of fuels derived from the produced oil. As stated previously, the most aggressive estimate of oil production under the Proposed Action would be 4000 barrels per day. Based on EPA calculations of CO_2 emissions per barrel of crude oil, the amount of CO_2 emitted per year from this level of oil production will be approximately 630,612 metric tons, compared to approximately 34,053 metric tons of CO_2 emitted currently. As such, DOE estimates that the sale of NPR-3 and subsequent increase in oil production due to EOR activities would increase CO_2 emissions by approximately 526,679 metric tons of CO_2 a year.

Such an increase in CO_2 emissions would add a relatively small increment to emissions of greenhouse gases in the United States and the world. Overall greenhouse gas emissions in the United States during 2012 totaled about 6.526 billion tons (7.282 billion metric tons) of CO_2-equivalents. (EPA 2014). By way of comparison, annual operational emissions of greenhouse gases from the increased production at NPR-3 under an EOR scenario would equal less than 0.01percent of the United States' total emissions in 2012 and less than 0.001 percent of the total emissions worldwide in 2010 (IPCC 2014).

CO_2- equivalent is a measure used to compare greenhouse gases based on their global warming potential (GWP), using the functionally equivalent amount or concentration of CO_2 as the reference. The CO_2-equivalent for a gas is derived by multiplying the amount of the gas by its global warming potential; this potential is a function of the gas's ability to absorb infrared radiation and its persistence in the atmosphere after it is released. The Intergovernmental Panel on Climate Change utilizes the 100 year GWPs to determine carbon dioxide equivalents. GWPs for common GHGs can be found at http://unfccc.int/ghg_data/items/3825.php.

The release of anthropogenic greenhouse gases and their potential contribution to global warming are inherently cumulative phenomena. The anticipated increase in emissions from the commercial use of oil produced at NPR-3 under an EOR scenario in combination with past and future emissions from all other sources would contribute incrementally to the climate change impacts described below. At present there is no methodology which would allow DOE to estimate the specific impacts this increment of climate change would produce in the vicinity of the facility or elsewhere.

5.1.11.1.1 The Impacts of Greenhouse Gases on Climate

There is much uncertainty regarding the extent of global warming caused by anthropogenic greenhouse gases, the climate changes this warming has or will produce, and the appropriate strategies for stabilizing the concentrations of greenhouse gases in the atmosphere. The World Meteorological Organization and United Nations Environment Programme (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) to provide an objective source of information about global warming and climate change, and the IPCC's reports are generally considered to be an authoritative source of information on these issues.

According to the IPCC Fifth Assessment Report, "*Warming of the climate system is unequivocal, and since the 1950's, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have wormed, the amounts of snow and ice have diminished, and sea level has risen.*" (IPCC 2014). The report concludes that *Ít is very likely that human influence has contributed to the observed global scale changes in the frequency and intensity of daily temperature extremes since the mid-20th century."*

5.1.11.1.2 Environmental Impacts of Climate Change

The IPCC report states that, in addition to increases in global surface temperatures, the impacts of climate change on the global environment may include:

- More frequent heat waves, droughts, and fires;

- Rising sea levels and coastal flooding; melting glaciers, ice caps and polar ice sheets;
- More severe hurricane activity and increases in frequency and intensity of severe precipitation;
- Spread of infectious diseases to new regions;
- Loss of wildlife habitats; and
- Heart and respiratory ailments from higher concentrations of ground-level ozone (IPCC 2014).

In addition to increased temperatures, impacts on the environment attributed to climate change that have been observed in North America include:

- Extended periods of high fire risk and large increases in burned area;
- Increased intensity, duration, and frequency of heat waves;
- Decreased snow pack, increased winter and early spring flooding potentials, and reduced summer stream flows in the western mountains; and
- Increased stress on biological communities and habitat in coastal areas (IPCC 2014).

On a regional scale, there is greater natural variability in climate parameters that makes it difficult to attribute particular environmental impacts to climate change (IPCC 2014). The Global Climate Change Impacts in the United States report discusses present and future impacts on regions on the United States. U.S. Global Change Research Program (2009) (Global Change Research Program 2009). The State of Wyoming is expected to experience decreased precipitation and snowpack from climate change.

5.1.11.1.3 Climate Change, Greenhouse Gases, and NPR-3

As discussed above, DOE estimates that annual emissions of greenhouse gases from the Proposed Action would be approximately 526,679 ton per year of CO_2-equivalents. Assuming a 20 year commercial life of the field, total emissions would be approximately 10.5 million tons. These emissions, without mitigation, would add to the approximately 54 billion tons (49 billion metric tons) of CO_2-equivalent anthropogenic greenhouse gases are emitted each year globally. However, it cannot be assumed that, if NPR-3 were not sold and developed with EOR techniques, these additional emissions would be avoided – other oil fields may be developed instead, or existing fields might be expanded thereby increasing their CO_2 emissions. In fact, the current trend in the U.S. is to expand existing oil fields through EOR and long-reach horizontal drilling to increase oil production.

As noted earlier, emissions of greenhouse gases from NPR-3 by themselves would not have a direct impact on the environment in the vicinity; neither would these emissions by themselves cause appreciable global warming that would lead to climate changes. However, these emissions would increase the atmosphere's concentration of greenhouse gases, and, in combination with past and future emissions from all other sources, contribute incrementally to the global warming that produces the adverse effects of climate change described above. At present there is no methodology which would allow DOE to estimate the specific impacts this increment of warming would produce in the vicinity of NPR-3 or elsewhere.

5.1.11.1.4 Addressing Climate Change

Because climate change is a cumulative phenomenon produced by releases of greenhouse gases from industry, agriculture and land use changes around the world, it is generally accepted that any successful strategy to address it must rest on a global approach to controlling these emissions. In other words, imposing controls on one industry or in one country is unlikely to be an effective strategy. And because greenhouse gases remain in the atmosphere for a long time and industrial societies will continue to use fossil fuels for at least 25-50 years, climate change cannot be avoided. As the IPCC report states, "*Societies can respond to climate change by adapting to its impacts and by reducing [greenhouse gas] emissions (mitigation), thereby reducing the rate and magnitude of change*" (IPCC 2014).

According to the IPCC, there is a wide array of adaptation options. While adaptation will be an important aspect of reducing societies' vulnerability to the impacts of climate change over the next two to three

decades, "*adaptation alone is not expected to cope with all the projected effects of climate change, especially not over the long term as most impacts increase in magnitude*" (IPCC 2014). Therefore, "*Responding to climate change involves an iterative risk management process that includes both mitigation and adaptation, taking into account actual and avoided climate change damages, co-benefits, sustainability, equity, and attitudes to risk*" (IPCC 2014).

5.1.11.1.4 Potential Mitigation

The estimates of emissions from the Proposed Action do not account for any greenhouse gas removal that could occur as a result of mitigation measures. Use of CO_2 flooding techniques would reduce the impact on climate change because a percentage of the injected CO_2 would remain sequestered underground. In addition, the emissions estimates do not account for CO2 uptake by site vegetation, especially riparian vegetation that is likely to increase with higher discharge rates for produced water.

5.1.11.2 Induced Seismic Activity

As stated in Larsen and Wittke (2014), earthquake activity can be triggered by a number of sources, including volcanic activity, landslides, and movement along naturally-occurring fault lines. In some cases, human activity causes earthquakes (referred to as induced seismic activity or events). Examples of human activities that have induced seismic events include construction, mining, geothermal energy production, oil and gas field depletions, underground nuclear testing, and deep underground fluid injection for wastewater disposal or enhanced oil recovery (Larsen and Wittke 2014).

Recent events have heightened the public concern over induced seismic events related to hydraulic fracking. In response to these types of concerns, the Wyoming State Geological Survey (WSGS) conducted a review of existing data to quantify the potential relationship between induced seismic activity and fluid injection/disposal in Wyoming Larsen and Wittke 2014). The WSGS report details the types of oilfield activities conducted across Wyoming from 1984 to 2013, as well as the locations and depths of earthquakes that have occurred during that period.

The report indicates that there was a large concentration of injection activity occurring in the immediate vicinity of NPR-3 that included both NPR-3 and the much larger Salt Creek field immediately to the northwest. This corresponds to steam and polymer flooding methodology being used at NPR-3, eight years of underground wastewater injection at NPR-3 totaling approximately 200 million gallons (757 million L), and extensive CO_2 flooding in Salt Creek. Despite these activities, there is no history of significant seismic events in either field (Larsen and Wittke 2014). The nearest seismic event was a magnitude (M) 4.2 earthquake whose epicenter was approximately 20 miles southeast of NPR-3 and WSGS did not conclude that it was related to activities at NPR-3 or Salt Creek.

Current operations at NPR-3 release approximately 957,000 gallons (3.6 million L) of treated produced water to the surface per day and implementation of the Proposed Action could increase this amount to approximately 2.6 million gal. (9.7 million L) per day (see Section 5.1.4.2.1). The new owners would need to divert all of this water from surface discharge to underground injection for the risk of induced seismic activity to appreciably increase. Current infrastructure includes three wastewater disposal wells (34-CMX-10, 51-CMX-10, and 74-CMX-10) that discharge into the Crow Mountain unit, which is the uppermost member of the Triassic Chugwater Group formation (Figure 4-5). If that were injected into deep porous formations there is the remote possibility that seismic activity could result. However, discharge of produced water at the surface is significantly less expensive than underground injection, making it highly unlikely to be implemented by the new owner. For these reasons, DOE believes that the risk of induced seismic activity resulting from the Proposed Action is low.

5.1.11.3 Cumulative Effects on Vegetation

Long-term, terrestrial vegetation and the wildlife that depends on it could be affected in a number of ways. Reduced grazing would tend to increase biodiversity on the site. However, because the site is already impacted by invasive plant species, reduced grazing may allow the invasive species to become better established and ultimately make it easier to invade surrounding areas. If future owners establish a range management program to eliminate or control invasive species, the cumulative effect would be a gradual return to native ecosystems

5.2 Impacts of No Action Alternative

As described in Section 3.3, under the No Action Alternative, routine operations at the site (such as new well installation, plugging and abandoning old wells, routine maintenance and replacement of site infrastructure) would continue under DOE jurisdiction. As such, the types of impacts that would occur annually would be similar to those that have been occurring for many decades. More specific characterization of the impact that would occur under the No Action Alternative is discussed below.

5.2.1 Land Resources

Under the No Action Alternative, DOE would continue to operate NPR-3 as a mature stripper field using conventional techniques. Such operation would continue to be at the MER. No impacts to existing or proposed land uses would occur from continuing existing operations.

Currently, the facility does not have any recreational facilities. Access to the site for recreational purposes would continue to be prohibited under the No Action Alternative. Therefore, no impacts would occur.

As stated in Section 3.3, approximately 60 ac (24 ha) per year of disturbance related to ongoing operations is expected, while approximately 10 ac (4 ha) per year of disturbance related to reclamation and rehabilitation from abandoning and plugging non-productive wells is expected. For these reasons, changes to the current landscape would not occur. Moreover, the site is not considered to be visually sensitive or unique and is without significant visual classification from the BLM.

5.2.2 Air Quality

Under the No Action Alternative, DOE would continue to operate the facilities at the site in accordance with current operations, generating air emissions from existing crude oil and natural gas operations as described in Section 3. Because this alternative proposes that new wells continue to be installed and operated while abandoning and plugging non-productive wells at a similar rate, air emissions from ground disturbance in general maintenance/construction areas would be considered short-term and minimal. By restoring and reclaiming non-productive well areas, fugitive dust generated by wind erosion would be reduced significantly. As determined by WYDEQ, air quality impacts under this alternative would not be expected (WYDEQ 2001b).

5.2.3 Noise

The No Action Alternative does not propose that new equipment be installed and operated or that existing equipment be modified in a manner that could generate new levels of noise that could be considered a health effect or nuisance. Adverse impacts to the existing sound environment are not expected under this alternative.

5.2.4 Water Resources

The No Action Alternative would not adversely impact surface water, groundwater or potable water at the NPR-3 site. If this alternative is implemented, no adverse impacts would result from normal operations at the facility. The continued operations would likely meet existing water quality permit levels and meet the term of the site's existing WYPDES requirements.

5.2.5 Geology, Soils and Prime and Unique Farmlands

Because this alternative only includes small disturbances for new oil production (whose effects would be offset by areas reclaimed through plug and abandonment activities), soil impacts would not be expected. The site is devoid of prime and unique farmlands; therefore impacts would not occur to this resource.

5.2.6 Biological Resources

Neither the Proposed Action nor the No Action Alternative would adversely affect biological resources at the NPR-3 site. Under the No Action Alternative, produced water would continue to contribute to the regional aquatic habitat, thereby benefiting biological resources at the site, as well as downstream. With respect to terrestrial vegetation and wildlife resources, the additional surface disturbances associated with new well development would be approximately 60 ac (24 ha) per year, with approximately 10 ac (4 ha) reclaimed per year under plug and abandonment activities. Finally, this site is devoid of any threatened, endangered or special species. Therefore, such species would not be affected by continued operations associated with the No Action Alternative.

5.2.7 Cultural Resources

The No Action Alternative would not be expected to result in any adverse impacts to cultural resources. While specific areas have not been identified for future oil well development, the general areas likely to see new development are devoid of any cultural resources. Moreover, DOE currently employs procedures in the event that cultural resources are unearthed during construction activities and prescribes protective measures to avoid adverse impacts.

5.2.8 Socioeconomics

The No Action Alternative proposes continued operations at the NPR-3 site. This alternative would not require additional workers and therefore would not have an effect on the area's community services, housing stock, utilities or transportation services. Continued operations would maintain current effect on the economy of the immediate area and region, but would forego the benefits expected under the Proposed Action.

5.2.9 Waste Management

Because there would be no change in operations at NPR-3 under the No Action Alternative, generation of waste or hazardous materials would continue at the same rate as is currently observed. There would be no adverse impacts from maintaining current operations.

5.2.10 Accidents and Intentional Destructive Acts

Under the No Action Alternative, operations would continue on the same scale as those described under the Proposed Action, with the exception that EOR activities would not be employed. Therefore, the No Action Alternative could experience the same accidents associated with routine operations described under the Proposed Action (see Section 5.1.10). Additionally, the likelihood and consequences of an intentional destructive act would be similar to the Proposed Action.

5.2.11 Cumulative Effects

A wide range of cumulative and irreversible effects could occur under the No Action Alternative. With respect to air quality, the removal and subsequent use of oil from NPR-3 would contribute to global climate change. However, while routine maintenance, repair and downhole stimulation would incrementally increase oil production, the site's contribution to climate change would be minimal. Continued grazing at the site would keep biodiversity down, but may also control invasive species and reduce the likelihood of their spreading to surrounding areas.

6.0 AGENCIES AND PERSONS CONSULTED

- Arapaho Tribe of the Wind River Reservation
- Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation
- Blackfeet Nation Tribe
- Bureau of Land Management
- Cheyenne and Arapaho Tribes, Oklahoma
- Cheyenne River Sioux Tribe
- Comanche Nation
- Crow Creek Sioux Tribe
- Crow Tribe of Montana
- Eastern Shoshone Tribe
- Kiowa Indian Tribe of Oklahoma
- Northern Arapaho Tribe
- Omaha Tribe of Nebraska
- Rosebud Sioux Tribe
- Shoshone-Bannock Tribe
- Sisseton-Wahpeton Oyate Tribe
- Standing Rock Sioux Tribe
- U.S. Fish and Wildlife Service
- U.S. National Park Service
- Wyoming Archaeological Society
- Wyoming Department of Environmental Quality
- Wyoming Game and Fish Department
- Wyoming State Historic Preservation Office

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8.0 APPENDICES

Appendix A: Distribution List and SWEA Scoping Letter

Appendix B: Draft SWEA Letter

Appendix C: Programmatic Agreement and Consulting Parties

Appendix D: Public Comment Summary and Original Letters

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Appendix A: Distribution List and SWEA Scoping Letter

Distribution List

Alliance to Save Energy
Amalgamated Exploration Inc.
American Bird Conservancy
American Fuel & Petrochemical Manufacturers
American Heritage Center
American Petroleum Institute
American Recreation Coalition
American Wildlands
Anadarko Petroleum Corporation
Anschultz Corporation
Antelope Resources Inc.
Aquarius II Inc.
Arco Pipe Line (BP)
Arnell Oil Company
Audubon Rockies
Audubon Society
Beartooth Oil & Gas Company
Bill Owens
Biodiversity Conservation Alliance
Blackfeet Nation Tribes
Bradley JC
Brinkerhoff Drilling Company or Brinkerhoff LLC
Buck Allemand
Buckeye Oil & Gas, Inc.
Bureau of Indian Affairs Rocky Mountain Regional Office
Bureau of Land Management - Casper Field Office
Bureau of Land Management - Wyoming State Office
Bureau of Reclamation
Canada Southern Oil under Marathon Oil Canada Corp
Capital Ventures, Inc.
Carl D Underwood Oil & Gas
Carpenter Brice G Realty
Casper Dirt Riders
Cheyenne River Sioux Tribes
Citation Oil & Gas Corporation
Citizens for Clean Energy, Inc.
Clean Water Action
Coal Bed Methane Coordination Coalition
Colin Moody
Conservation of Phoenix

Distribution List

Continental Industries LC
Crow Creek Sioux Tribe
Crow Tribe of Indians
Davis Oil Company
Department of Environmental Quality
Department of Interior
Department of Justice
Department of Transportation
Duane Short
Eastern Shoshone Tribe
Elk Petroleum Inc.
Ellbogen Oil Producers
Environmental Protection Agency, Region 8
Farleigh Oil Properties
Federal Bureau of Land Management
Federal Highway Administration - Right-of-Way
FEMA
Fish & Wildlife Service
Flying J Oil & Gas Inc.
Foundation for North American Wild
Four G Oil Co
Game & Fish Department
Gastech Inc.
George Lyn
GLG Energy LP
Governor's Planning Office
Great Western Drilling Company
Greater Yellowstone Coalition – Jackson
Hess
Independent Petroleum Association of Mountain States (IPAMS)
Izaak Walton League
Jackson Hole Conservation Alliance
Jackson Hole Land & Trust
Keep Yellowstone Nuclear Free
Kemmerer Historic Preservation Commission
Kirkwood Oil & Gas
L-G Land and Cattle LLC
Managing Director-Infrastructure
Mark J. Davis Branch
Meadow Creek Enterprises LLC
Milestone Petroleum Inc.

Distribution List

MKM Oil, Inc.
Mormon Trails Association
Mountaintop Consulting LLC
Mr. Terry Gray
Ms. Marilyn Parsons
Ms. Nancy Borton
Murie Audubon Society
Nance Petroleum Corporation
National Association of Attorneys General
National Association of State Energy Officials
National Governor's Association
National Park Service
National Wildlife Federation
Natrona County Conservation District
Natrona County Historic Preservation Commission
Natrona County Public Library
Natural Resources Policy Advisor
Nature Conservancy Montgomery Building
North American Pronghorn Foundation
North Platte Valley Conservation District
North Star Operating Co
Northern Arapaho Tribe
Northern Cheyenne Tribe
O'Brien Energy Resources Corporation
Occidental Oil & Gas Corporation
Office of Surface Mining
Oglala Sioux Tribe
Oil & Gas Conservation Commission Don Likaarts
Outdoor Women of Wyoming
Owens Brothers Land & Livestock LLC
Pathfinder Back Country Horsemen
Petroleum Association of Wyoming
Phillips Petroleum Company
Plain Pipeline
Platte River Parkway Trust
Platte River Rod and Gun Club
Powder River Basin Resource Council
Preservation Office Cultural Resource Coordinator
Pubco Petroleum
Public Employees for Environmental Responsibility
Public Lands Advocacy

Distribution List

QEP Energy Company
Rawhide Western Inc
Rocky Mountain Elk Foundation
Rosebud Sioux Tribe
Sage Petroleum LLC
Shepperson, Frank E et al
Shiloh Oil Corp.
Shoshone-Bannock Tribe
Sinclair Oil
Sisseton-Wahpeton Oyate Tribe
South Goshen Conversation District
Standing Rock Sioux Tribe
Stanolind Oil and Gas Company
Staple Three Sheep Company
State Engineer's Office
State Office Bureau of Land Management
Stealth Energy USA Inc.
Stovall Oil Company
Strachan Exploration Inc.
Sweetwater County Historical Museum
Synder Oil Corporation
Teapot Ranch Company
Teselle Inc.
Tesoro Petroleum Corporation
The Conservation Fund
The Crow Tribe of Indians
The Honorable Dave Freudenthal, Governor of Wyoming
The Land Trust Alliance
The Nature Conservancy
The Wilderness Society
The Wildlife Society, Wyoming Chapter
Thorofare Resources
Tom Clayson Petroleum Association of Wyoming
Town of Glenrock
Twiford Exploration Inc.
U.S. Geological Survey
United State Energy Association
US Army Corps of Engineering
US Department of Energy
US Department of the Interior Bureau of Land Management
US Department of Interior, Bureau of Land Management

Distribution List

US Environmental Protection Agency
US Fish & Wildlife Service
US Geological Survey
USDA Service Center
USDA-Forest Service
USDI National Park Service
USGS Central Region Energy Resources Team
Warren E & P Inc.
Western Governors Association
Western Land Exchange Project
Western Region Office, Sierra Club
Western Resource Advocates
Wildlife Habitat Council
Wildlife Heritage Foundation
Wold Oil Properties
Wyoming Association of Municipalities
Wyoming Back Country Horsemen of America
Wyoming Chapter of the Sierra Club
Wyoming County Commissioners
Wyoming Department of Agriculture
Wyoming Department of Environmental Quality
Wyoming Department of State Parks and Cultural Resource
Wyoming Department of Transportation - Right-of-Way
Wyoming Game & Fish Department
Wyoming Historical Foundation/Wyoming State Historical Society
Wyoming Independent Producers Association
Wyoming Mining Association
Wyoming Motorcycle Trails Association
Wyoming Natural Diversity Database
Wyoming of Coordinator Trout Unlimited
Wyoming Office of State Lands & Investments

RMOTC

U.S. DEPARTMENT OF ENERGY

Serial No.: MJT04.392

February 15, 2013

Subject: Preparation of the Site-Wide Environmental Assessment for the Rocky Mountain Oilfield Testing Center & Naval Petroleum Reserve No. 3

The purpose of this scoping letter is to notify agencies and interested parties that the U.S. Department of Energy (DOE) is beginning the preparation of the Site-Wide Environmental Assessment (SWEA) for divestment of the Rocky Mountain Oilfield Testing Center (RMOTC) and Naval Petroleum Reserve No. 3 (NPR-3). DOE anticipates ceasing current operations and completing the transfer of the property to a new owner by April 15, 2015. The SWEA will address any environmental issues due to the divestment of the RMOTC and NPR-3 and the potential environmental impacts of the proposed actions and alternatives. Therefore, DOE is seeking input on the proposed actions, issues, concerns and opportunities that may arise as a result of this action.

The proposed action will entail the following:

- Discontinuing current government and private industrial testing and demonstration of new oil field and environmental technology at the RMOTC;
- Closing of existing on-site Industrial waste landfill;
- Plugging and abandoning uneconomic wells; and
- Discontinuing the on-going release of produced water at the Tensleep facility.

As part of the National Environmental Policy Act (NEPA) review, we welcome all comments to be considered in the implementation of the SWEA regarding the divestment of the RMOTC and NPR-3. Additional information regarding the proposed project alternative and where to send your comments are discussed in the following attachment.

We look forward to receiving your comments.

Michael J. Taylor
Director, Technical Assurance

RMOTC | U.S. Department of Energy, Office of Fossil Energy | www.rmotc.doe.gov
907 N. Poplar, Suite 150 | Casper, WY 82601 | (307) 233-4800 - main | (888) 599-2200 - toll-free

Appendix B: Draft SWEA Cover Letter

Serial No.: MJT/04.515

March 9, 2014

Draft Site-Wide Environmental Assessment for the Divestiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No. 3

RESPONSIBLE AGENCY: U.S. Department of Energy (DOE), Rocky Mountain Oilfield Testing Center (RMOTC), Casper, Wyoming

TITLE: *Draft Site-Wide Environmental Assessment for the Divestiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No. 3* (DOE/EA-1956)

ABSTRACT: U.S. Department of Energy (DOE) has prepared the *Draft Site-Wide Environmental Assessment for the Divestiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No. 3* (Draft SWEA) to evaluate the potential environmental consequences due to the discontinuation of the government operations at the Rocky Mountain Oilfield Testing Center (RMOTC) and Naval Petroleum Reserve No. 3 (NPR-3) property. According to Section 7422(c)(2) title 10, United State Code of Armed Forces, Congress extended oil and gas production of the NPR-3 until April 15, 2015. However, DOE has determined that continued governmental production of oil at NPR-3 is no longer in the national interest. Therefore, DOE expects to divest the RMOTC and NPR-3 to one or more entities by December 31, 2014.

According to the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 CFR Parts 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 CFR Part 1021), DOE has prepared the Draft SWEA to:

- Assess the potential environmental impacts of the Proposed Action and the No-Action Alternative;
- Identify any adverse environmental effects that cannot be avoided should a proposed action be implemented;
- Evaluate alternatives to the Proposed Action, including the No Action Alternative;
- Describe the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity; and
- Characterize any irreversible and irretrievable commitments of resources that would be involved should DOE decide to implement its Proposed Action.

In this Draft SWEA, DOE evaluated in detail potential impacts to air quality, cultural resources, Socioeconomics, geology, biological resources, land use, environmental justice, noise, and water resources. If DOE does not identify the estimated impact in this assessment as significant, it could issue a Finding of No Significant Impacts (FONSI) and proceed with the Proposed Action. If DOE identified potentially significant impacts, it would have to prepare an environmental impact statement before it could proceed with the proposed action or implement another alternative.

INTRODUCTION: NPR-3, also known as Teapot Dome, is a 9,481-acre (3,837 hectare) oilfield located in Natrona County, Wyoming, which is approximately 35 miles (56 km) north of the City of Casper. DOE has had jurisdiction for over NPR-3 since 1977, and is required to produce oil from the site at the maximum efficient rate (MER) consistent with sound engineering practice. Production at NPR-3 peaked in 1981, since then, production has declined and the oilfield has become a mature stripper field with average daily production of 225 barrels per day.

RMOTC was established in 1993 as an industry-driven endeavor to utilize NPR-3 resources and facilities to help strengthen the domestic energy industry by testing new petroleum and environmental technologies in operating oil and gas field owned by the U.S. Government. Commercial field testing at RMOTC began in 1995. Most of the technology and processes that have been field tested at RMOTC have primary application in drilling, oil production, enhanced recovery, renewable energy, and production cost reduction.

DOE is proposing to discontinue government operations at RMOTC and NPR-3 and sell the property and mineral rights to a private entity or entities per the conditions listed in Public Law 94-258, the National Defense Authorization Act of 1996, the National Defense Authorization Act of 1999, the November 2011 *Authorization of Continued Production* document and the President's FY 2012 Budget Request. These documents specify that the recommended disposal path maximize the value obtained for NPR-3 by the U.S. Government while minimizing the cost of remediation.

This Draft SWEA was prepared under the regulations of the NEPA established by the CEQ and DOE.

PROPOSED ACTION & ALTERNATIVES: Under the Proposed Action, DOE would discontinue testing at RMOTC and sell NPR-3 to one or more entities for use in commercial oil production. DOE expects that the new owner(s) would continue to use conventional oil exploration and production methods similar to what DOE has employed at the site since 1976. This is likely to include well maintenance and rework, various down-hole stimulation activities, and drilling new wells as needed. Additionally, DOE expects private owners to implement Enhanced Oil Recovery (EOR) techniques such as carbon dioxide (CO_2) and/or steam flooding similar to what DOE has piloted in the past and what private companies in adjacent oil fields are currently implementing.

One alternative to selling the property involves transferring NPR-3 to another federal agency that would then lease the property to private entities for continued oil production. This option would maintain federal ownership of the cultural and historic sites associated with NPR-3, but oil production activities are expected to be exactly the same as if the property was sold.

Given the current energy production environment, another alternative is to sell or lease the property for utility-scale renewable energy production. This would involve placing a wind farm, solar farm or geothermal plant on the property.

Under the No Action alternative, DOE would neither sell nor transfer the property and would continue operating it at current levels. Well maintenance and rework, down-hole stimulation and new well development would be the same as in the Proposed Action, but it is unlikely that DOE would implement site-wide EOR projects in the foreseeable future.

CONTACT: We appreciate any issues or comments that you may have regarding the Draft SWEA. Please provide comments and questions via phone, email or fax. In addition, you are welcome to send your comments by mail to the following address.

Mr. Mike Taylor
Director, Technical Assurance
U.S. Department of Energy
Rocky Mountain Oilfield Testing Center

907 North Poplar, Suite 150
Casper, Wyoming 82601

Fax: (307) 233-4851 Toll Free Voice: 1-888-599-2200
Email: RMOTCSWEA@rmotc.doe.gov

NOTE: Please note that all comments regarding the Draft SWEA are due by April 14, 2014.

PUBLIC AVAILABILITY: Letters regarding the availability of the Draft SWEA have been distributed to agencies and the public that have interest in or are affected by the proposed action. The Draft SWEA is available on DOE's NEPA Website at http://energy.gov/node/813679, as well as DOE's Public Comment Opportunities page (http://energy.gov/nepa/public-comment-opportunities) and RMOTC's Website (http://www.rmotc.doe.gov/SWEA.html).

Printed copies of the SWEA will be made available for public inspection at the following locations:

Natrona County Public Library
Reference Department
307 E 2nd Street
Casper, Wyoming 82601

Salt Creek Museum
531 Peake Street
Midwest, Wyoming 82643

We look forward to receiving your comments.

Michael J. Taylor
Director, Technical Assurance

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Appendix C: Programmatic Agreement and Consulting Parties

PROGRAMMATIC AGREEMENT
AMONG
U.S. DEPARTMENT OF ENERGY, WYOMING STATE HISTORIC PRESERVATION OFFICE, AND ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING
THE DIVESTITURE OF THE NAVAL PETROLEUM RESERVE NUMBER 3, IN NATRONA COUNTY, WYOMING

WHEREAS, the U.S. Department of Energy (DOE), as the lead federal agency, is required to comply with the National Historic Preservation Act of 1966 (16 U.S.C. §470f) (NHPA), and its implementing regulations (36 C.F.R. Part 800); and

WHEREAS, the Secretary of Energy is authorized by Section 646 of the Department of Energy Organization Act (42 U.S.C. §7256) to enter into and perform contracts, leases, cooperative agreements, or other similar transactions with public agencies and private organizations and persons as he may deem necessary or appropriate to carry out functions vested in him, including this Programmatic Agreement (PA); and

WHEREAS, the Naval Petroleum Reserve Number 3 (NPR-3), located in Natrona County, Wyoming, approximately 35 mi (56 km) north of the City of Casper, is a Federal government-owned and operated oilfield comprising 9,481 acres (3,837 hectares) currently under the jurisdiction of DOE pursuant to Section 307 of the Department of Energy Organization Act (42 U.S.C. §7156); and

WHEREAS, pursuant to the authority in Section 3404 of the National Defense Authorization Act for Fiscal Year 1999, DOE determined that continued federal government ownership and operation of NPR-3 are not in the national interest and DOE is authorized to sell NPR-3 in its entirety to a private entity for continued use as an oilfield; and

WHEREAS, pursuant to the authority of the Secretary of Energy under section 646 of the Department of Energy Organization Act (42 U.S.C. §7256) and Section 3406 of the National Defense Authorization Act for Fiscal Year 1999, DOE is authorized to and has agreed to record a legally enforceable Conservation Easement covering historic properties; and

WHEREAS, the Advisory Council on Historic Preservation (ACHP) has elected to participate and has notified DOE pursuant to 36 CFR Part 800.6(a)(1)(iii); and

WHEREAS, DOE, the Wyoming State Historic Preservation Office (WY SHPO), and ACHP acknowledge the contemplated action meets the definition of "undertaking" for compliance with Section 106 of the NHPA, and implementing regulations (36 CFR Part 800); and

WHEREAS, the Area of Potential Effect (APE) for the undertaking for both direct and indirect effects is the NPR-3 property boundary, which includes the entire NPR-3 site (see Attachment 1, Figures); and

WHEREAS, DOE and WY SHPO concur that the following 18 historic properties located at NPR-3 are eligible for listing or are listed on the National Register of Historic Places (NRHP): 48NA182, 48NA199,

48NA831, 48NA4424, 48NA3024, 48NA4428, 48NA4429, 48NA4430, 48NA4431, 48NA4434, 48NA4438, 48NA4441, 48NA4442, 48NA4444, 48NA4445, 48NA4449, 48NA4450, and 48NA4452 (see Attachment 1, Figures); and

WHEREAS, DOE and WY SHPO concur that historic property 48NA3024 will not be adversely affected by the undertaking because no intact segments are within NPR-3; and

WHEREAS, DOE and WY SHPO concur that historic properties 48NA182, 48NA199, 48NA4424, 48NA4428, 48NA4429, 48NA4430, 48NA4431, 48NA4434, 48NA4438, 48NA4441, 48NA4442, 48NA4444, 48NA4445, 48NA4449, 48NA4450, and 48NA4452 will not be adversely affected by the undertaking because the properties will be located within a legally enforceable Conservation Easement that ensures the long-term preservation of the properties (see Attachment 1, Figures); and

WHEREAS, DOE and WY SHPO concur that historic property 48NA831, the historic Teapot Dome Oilfield Site, will be adversely affected by the undertaking; and

WHEREAS, DOE invited the Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, Cheyenne River Sioux Tribe of the Cheyenne River Reservation, Comanche Nation, Crow Creek Sioux Tribe of the Crow Creek Reservation, Crow Tribe of Montana, Kiowa Indian Tribe of Oklahoma, Northern Arapaho Tribe, Northern Cheyenne Tribe of the Northern Indian Reservation, Omaha Tribe of Nebraska, Oglala Sioux Tribe of the Pine Ridge Reservation, Rosebud Sioux Tribe of the Rosebud Indian Reservation, Santee Sioux Nation of Nebraska, Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho, Sisseton-Wahpeton Oyate Tribe, and the Standing Rock Sioux Tribe of North and South Dakota (Tribes) to participate in consultation, and they have agreed to participate, and

WHEREAS, DOE invited the Tribes to sign this PA pursuant to 36 CFR 800.6(c)(3) as a Concurring Party; and

WHEREAS, DOE invited the Salt Creek Museum, Natrona County Historic Preservation Commission, Fort Casper Museum, the Wyoming Archaeological Society, Natrona County Chapter of the Wyoming State Historical Society, National Trust for Historic Preservation, National Park Service (NPS), Casper Historic Preservation Commission, and the Alliance for Historic Wyoming to participate in consultation, and they have agreed to participate;

WHEREAS, DOE is involving the consulting parties in the development of the Conservation Easement to ensure the long-term preservation of historic properties;

NOW, THEREFORE, DOE, WYSHPO, and the ACHP agree that the undertaking will be implemented in accordance with the following stipulations in order to take into account the adverse effect of the undertaking on historic properties.

STIPULATIONS

I. DOE shall ensure that the following stipulations are implemented:

A. Because the sale of NPR-3 will occur before the Conservation Easement is established, the Purchase and Sale Agreement will provide that DOE will maintain ownership of the Conservation Easement parcels that contain areas of Tribal interest and sites 48NA182, 48NA199, 48NA4424, 48NA4428, 48NA4429, 48NA4430, 48NA4431, 48NA4434, 48NA4438, 48NA4441, 48NA4442, 48NA4444, 48NA4445, 48NA4449, 48NA4450, and 48NA4452, as defined in Attachment 2, Legal Description of Conservation Easement. Once the Conservation Easement is established, DOE will convey the Conservation Easement parcels to the buyer. DOE will develop the Conservation Easement in accordance with the following process:

1. Within 90 days of the execution of this PA, DOE and a qualified non-profit trust entity will prepare a draft Conservation Easement and associated documents, as needed.
2. DOE will submit the draft Conservation Easement and associated documents to the consulting parties for a 30-day review period.
3. DOE will review the comments and consult with the qualified non-profit trust entity, the ACHP, and the WY SHPO to address the comments and ensure the Conservation Easement and associated documents provide adequate and legally enforceable restrictions or conditions to ensure the long-term preservation of the historic properties within the Conservation Easement.
4. Within one month of the conveyance of the Conservation Easement parcels to the buyer, DOE will distribute the Conservation Easement and associated documents to the consulting parties.
5. The executed Conservation Easement will be attached to this PA as Attachment 3.

B. Within three years of the executed sale of NPR-3, DOE will document the historic Teapot Dome Oilfield Site (Historic Property 48NA831) on a NRHP form. This NRHP form, as described below, will update and amend with additional documentation, the existing Teapot Rock site (48NA213) NRHP listing. Teapot Rock was formally listed to the NRHP on December 30, 1974.

1. DOE will coordinate with the NPS in preparing and submitting the NRHP documentation for Teapot Dome in accordance with the NPS Guidelines and Standards for completing the NRHP form as defined in Bulletin 16A "How to Complete the National Register Registration Form."
2. The NRHP update will include a narrative description, statement of significance including applicable NRHP criteria, areas of significance, periods of significance, important dates in the history of the oilfield site, and the prehistoric/historic context as it relates to Native American, local, state, and national U.S. history. All known information from previous research and cultural resource survey reports and related documents submitted to DOE will be compiled along with additional research for the prehistory and history of the Teapot Dome Oilfield site.
3. Historic photographs and digital images will be submitted along with the form. Digital photographs will meet the NPS requirements following the National Register Photo Policy. Each image will adhere to two megapixels or greater. The file format will be

Joint Photographic Expert Group (JPEGs) images that are converted to Tag Image File Format (TIFF).

4. Archival quality paper and printer ink will be used for photographic prints.
5. The images will be keyed to a map and listed in a photographic log attached to the form.
6. All contributing and non-contributing locations will be documented in photographs and descriptions keyed to a map.
7. The NRHP documentation will adhere to the following review process:
    a. DOE will provide draft NRHP documentation to interested consulting parties as part of a 30-day review period.
    b. DOE will review and incorporate comments and submit the NRHP documentation to WY SHPO for a 30-day review period.
    c. DOE will review and incorporate comments and submit the NRHP documentation back to the WY SHPO.
    d. WY SHPO will coordinate a review with the Wyoming State Review Board and submit comments back to DOE.
    e. DOE will review and incorporate comments and submit the final NRHP documentation back to the WY SHPO.
    f. Upon final acceptance by the WY SHPO, the final NRHP documentation will be forwarded on to the Keeper at the NPS to update/amend the existing Teapot Rock site (48NA213) NRHP listing.

C. Tank Ring #5 is the best preserved with the highest integrity of all twenty-one tank rings that have been documented at the Teapot Dome Oilfield site 48NA831. The tank ring consists of an outer earthen berm, inner earthen berm, and central platform with no other associated cultural features or artifacts. DOE will prepare the Historic American Engineering Record (HAER) documentation within two years of the executed sale of NPR-3 for submittal to the NPS.
    1. As coordinated with the NPS, HAER photographs and narrative documents will adhere to the appropriate Secretary of Interior's Standards and Guidelines (http://www.nps.gov/hdp/standards/PhotoGuidelines_Nov2011.pdf).
    2. DOE will prepare large format HAER quality black and white photographs of the tank ring that convey the size and scale of the tank ring feature. Large format negatives (4x5, 5x7, or 8x10 inch) will be used to ensure the longevity and clarity of the images.
    3. DOE will prepare landscape images and overviews of the Tank Ring #5 location in relation to the Teapot Dome Oilfield site.
    4. There are no extant engineering features at Tank Ring #5; therefore, measured drawings will not be completed for this documentation. A Site Plan of the tank ring will be generated from GIS information collected by Trimble GPS units with sub-meter accuracy.
    5. The site plan that will be based on the 1:24,000 USGS quadrangle map will be submitted as a page in the narrative description of the tank ring.
    6. The photographs will be augmented by a narrative report that describes the tank ring and overall dimensions of the ring. The historic context of the ring will be presented in relationship to the overall historic Teapot Dome Oilfield site as a contributing component.
    7. The number of photographs, site plan, maps and narrative pages for the HAER will provide detailed documentation of the tank ring site.

8. The HAER documentation will adhere to the following review process:
    a. The draft HAER document will be submitted by DOE to WY SHPO and interested consulting parties for a 30-day review period.
    b. DOE will review and incorporate the comments and submit the HAER documentation to the NPS for review, approval and final acceptance.

D. The Mammoth Camp Sewer Facility (48NA831_13) is a contributing component of the historic Teapot Dome Oilfield site (48NA831). A manhole and set of rectangular settling tanks are the main surface constituents. DOE will prepare the HAER documentation within two years of the executed sale of NPR-3 for submittal to the NPS.
    1. As coordinated with NPS, HAER photographs and narrative documents will adhere to the appropriate Secretary of Interior's Standards and Guidelines (http://www.nps.gov/hdp/standards/PhotoGuidelines_Nov2011.pdf).
    2. DOE will prepare large format HAER quality black and white photographs of the tank ring that will convey the size and scale of the manhole, settling tank, and pipeline features. Large format negatives (4x5, 5x7, or 8x10 inch) will be used to ensure the longevity and clarity of the images.
    3. DOE will prepare landscape images and overviews of the location as it relates to the Teapot Dome Oilfield site.
    4. There are no extant engineering features at the Mammoth Camp Sewer Facility; therefore, measured drawings will not be completed for this documentation. A Site Plan of sewer facility features will be generated from GIS information collected by Trimble GPS units with sub-meter accuracy.
    5. The site plan that is based on the 1:24,000 USGS quadrangle map will be submitted as a page in the narrative description of the sewer facility.
    6. The photographs will be augmented by a narrative report that describes the features and overall dimensions of the site. The historic context of the facility will be presented in relationship to the overall historic Teapot Dome Oilfield site as a contributing component.
    7. The number of photographs, site plan, maps and narrative pages for the HAER will provide detailed documentation of the sewer facility site.
    8. The HAER documentation will adhere to the following review process:
        a. The draft HAER document will be submitted by DOE to WY SHPO and interested consulting parties for a 30-day review period.
        b. DOE will review and incorporate the comments and submit the HAER documentation to the NPS for review, approval and final acceptance.

E. Within three years of the executed sale of NPR-3, DOE will develop an interpretative brochure and audio file, and will provide content for a web site and smart phone application describing the history of the Teapot Dome Oilfield. The information will be for public use, enjoyment, and education. DOE will work with local historical organizations and educational institutions to compile the final product (i.e. historical fly over by GIS Department of Casper College), as appropriate.
    1. The interpretive brochure will be similar in format to the Black Gold Byway (http://wyoshpo.state.wy.us/pdf/BlackGoldByway.pdf), an 11x17 color tri-fold brochure.
    2. The web site will be similar in format to the online exhibits presented on the Wyoming State Museum website (http://wyomuseum.state.wy.us/Exhibits/Online.aspx). DOE will

coordinate with WY SHPO and local museums to identify an appropriate web hosting site.

3. The audio file will be an audio recording of the website material.
4. The smart phone application will be the development of material appropriate for publication on an existing application.
5. The story of Teapot Dome Oilfield will be described in words and pictures (historic and modern photographs) as it relates to prehistory, Native American history, the national oil industry and the history of oil production in Wyoming that are in close proximity (e.g. Shannon and Salt Creek oilfields).
6. Information will be compiled from previous historical research and cultural resource documents that are on file and available through the DOE Casper Office.
7. DOE will provide draft documentation of the interpretive brochure, the website content, and the content for inclusion on a smart phone application to the WY SHPO and certified local governments (CLGs) for a 30-day review period. DOE will coordinate the incorporation of comments with WY SHPO and the CLGs and submit final documentation for approval prior to publication.
8. DOE will assist the Salt Creek Museum at Midwest, Wyoming, in the preservation and dissemination of historical photographs with an internship or similar support from a local educational institution, historical society, or Tribe, for up to one year.
9. The products listed above will adhere to the following review process:
    a. The draft products will be submitted by DOE to WY SHPO and interested consulting parties for a 30-day review period.
    b. DOE will review and incorporate the comments and produce the final products.

F. Within one year of the sale of NPR-3, DOE will transfer selected surplus NPR-3 historic artifacts and other modern effects to the State of Wyoming, local museums and repositories such as the Salt Creek Museum, including the following:
1. Historic cable tool rig.
2. Wooden draw works from wooden oil derrick.
3. Fire extinguishers.
4. Historic hydrogen sulfide (H_2S) monitor.
5. Historic wooden cabinets from the U.S. Bureau of Mines.
6. Assortment of oilfield tools including breakers for cable tool rig, bits and bailers, and pipe wrench.
7. Other items including Rocky Mountain Oilfield Testing Center signs, maps, plaques, trophies, photographs, posters, clocks, cabinets, and other NPR-3 memorabilia.

G. Within one year of the sale of NPR-3, DOE will prepare NPR-3 prehistoric artifacts for permanent curation at the Archaeological Repository of the University of Wyoming in Laramie. The collection will be prepared following standards and guidelines from the NPS (36 CFR 79.5 for the Management and Preservation of Collections).

II. Confidentiality of Cultural Resource Data

To the extent consistent with NHPA, Section 304, and the Archaeological Resources Protection Act, Section 9(a), the signatories will treat cultural resources data as confidential and not to be released to any party not a signatory to this agreement. Duplication or

distribution of cultural resource data from DOE lands by any signatory requires written authorization from DOE.

III. Dispute Resolution

Should any signatory or concurring party to this PA object at any time to any actions proposed or the manner in which the terms of this PA are implemented, DOE shall consult with such party to resolve the objection. If DOE determines that such objection cannot be resolved, DOE will:

A. Forward all documentation relevant to the dispute, including the DOE's proposed resolution, to the ACHP. The ACHP shall provide DOE with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, DOE shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. DOE will then proceed according to its final decision.
B. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, DOE may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, DOE shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the PA, and provide them and the ACHP with a copy of such written response.
C. DOE's responsibility to carry out all other actions subject to the terms of this PA that are not the subject of the dispute remain unchanged.

IV. Reporting

DOE will provide an annual letter report to the signatories of the PA that provides the status and progress of each stipulation. DOE will prepare the letter report at the end of each calendar year and will submit it to signatories by January 31 of each year during the five year term of the agreement, or until all stipulations have been completed.

V. Amendment

Any signatory to this PA may request that the other signatories consider amending it if circumstances change over time and warrant revision of the stipulations. An amendment must be agreed to in writing by all signatories, and the amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

VI. Termination

If any signatory to this PA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation V, above. If within ninety (90) days an amendment cannot be reached, any signatory may terminate the PA upon written notification to the other signatories.

Once the PA is terminated, and prior to work continuing on the undertaking, DOE must either (a) execute a memorandum of agreement pursuant to 36 CFR Part 800.6, (b) execute a PA pursuant to 36 CFR Part 800.14, or (c) request, take into account, and respond to the comments of the ACHP under 36 CFR Part 800.7. DOE shall notify the signatories as to the course of action it will pursue.

VII. Sunset Terms

This PA shall remain in effect for 5 years after the date of execution hereof. In January of each year after the executed sale of NPR-3, DOE and WY SHPO shall re-evaluate the PA each year. DOE shall ensure the PA will be re-evaluated and amended to accommodate any changes to the terms. All signatories will be consulted during the amendment process (See Section IV).

General Provisions

A. **Entirety of Agreement.** This PA, consisting of fourteen (14) pages, represents the entire and integrated agreement between the parties and supersedes all prior negotiations, representations and agreements, whether written or oral, regarding compliance with Section 106 of the National Historic Preservation Act.

B. **Prior Approval.** This PA shall not be binding upon any party unless this PA has been reduced to writing before performance begins as described under the terms of this PA, and unless the PA is approved as to form by the Wyoming Attorney General or his representative.

C. **Severability.** Should any portion of this PA be judicially determined to be illegal or unenforceable, the remainder of the PA shall continue in full force and effect, and any party may renegotiate the terms affected by the severance.

D. **Sovereign Immunity**. The State of Wyoming and the Signatories to this PA do not waive their sovereign or governmental immunity by entering into this PA and each fully retains all immunities and defenses provided by law with respect to any action based on or occurring as a result of the PA.

E. **Indemnification.** Each Signatory to this PA shall assume the risk of any liability arising from its own conduct. Each Signatory agrees they are not obligated to insure, defend, or indemnify the other Signatories to this PA.

Execution of this PA by DOE, WY SHPO, and ACHP, and implementation of its terms evidence that DOE has taken into account the effects of the undertaking on historic properties.

Signatures. In witness whereof, the parties to this PA through their duly authorized representatives have executed this PA on the dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this PA as set forth herein.

The effective date of this PA is the date of the last signatory signature affixed to these pages.

SIGNATORIES:

U.S. Department of Energy

21 Jan 2015

Christopher A. Smith — Date
Assistant Secretary, Office of Fossil Energy

SIGNATORIES:

Wyoming State Historic Preservation Officer

Mary Hopkins 1/26/15

Mary Hopkins, SHPO — Date

Approval as to Form:
Wyoming Attorney General's Office

S. Jane Caton # 12637 1-22-15

S. Jane Caton, — Date
Senior Assistant Attorney General

SIGNATORIES:

Advisory Council on Historic Preservation

John M. Fowler, Executive Director — Date: 1/29/15

CONCURRING PARTIES:

Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation Chairman A. T. Stafne Date	**Cheyenne River Sioux Tribe of the Cheyenne River Reservation** Chairman Kevin Keckler, Sr. Date
Comanche Nation Chairman Wallace Coffee Date	**Crow Creek Sioux Tribe of the Crow Creek Reservation** Chairman Brandon Sazue, Sr. Date
Crow Tribe of Montana Chairman Darrin Old Coyote Date	**Kiowa Indian Tribe of Oklahoma** Chairperson Ron Twohatchet Date
Northern Arapaho Tribe Chairman Darrell O'Neal, Sr. Date	**Northern Cheyenne Tribe of the Northern Indian Reservation** President Llevando Fisher Date
Oglala Sioux Tribe of the Pine Ridge Reservation President Bryan Brewer Date	**Omaha Tribe of Nebraska** Chairman Clifford Wolfe, Jr. Date
Rosebud Sioux Tribe of the Rosebud Indian Reservation President Cyril L. Scott Date	**Santee Sioux Nation of Nebraska** Chairman Roger Trudell Date

Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho Chairman Nathan Small Date	**Sisseton-Wahpeton Oyate Tribe** Chairman Robert Shepherd Date
Standing Rock Sioux Tribe of North and South Dakota Chairman Dave Archambault II Date	
Alliance for Historic Wyoming Ms. Carly-Ann Anderson Date Executive Director	**Casper Historic Preservation Commission** Ms. Peggy Brooker Date
National Park Service, Intermountain Region, Heritage Partnerships Program Shirl E. Kasper Date	**National Trust for Historic Preservation** Ms. Barb Pahl Date
Natrona County Chapter of the Wyoming State Historical Society Mr. Lyle Cox, President Date	**Natrona County Historic Preservation Commission and the Wyoming Archaeological Society** Ms. Carolyn Buff Date
Natrona County Historic Preservation Commission, Fort Casper Museum Mr. Rick Young Date	**Salt Creek Museum** Ms. Sandy Schutte Date

Attachments:

Attachment 1: Figures

Figure 1 – NPR-3, Area of Potential Effect

Figure 2 – Eligible Properties at NPR-3

Figure 3 – Eligible Properties and Conservation Easement Boundary at NPR-3

Attachment 2: Legal Description of Conservation Easement

Attachment 3: Conservation Easement and Associated Documents (to be appended to the PA upon their execution)

Attachment 1: Figures

Figure 1 – NPR-3, Area of Potential Effect

Figure 2 – Eligible Properties at NPR-3 (redacted)

Figure 3 – Eligible Properties and Conservation Easement Boundary at NPR-3

(sensitive information redacted, and new figure provided as Figure 2)

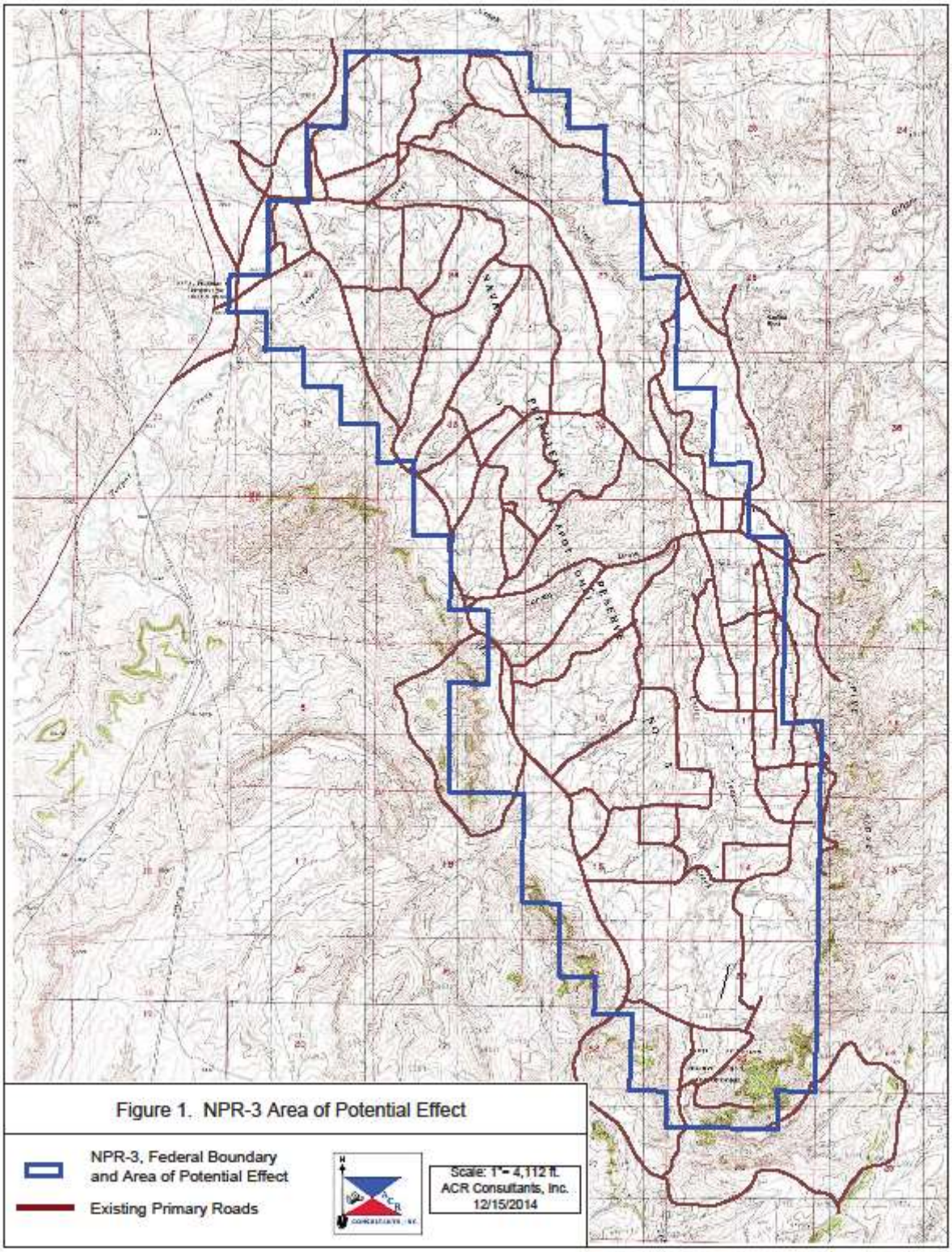

Figure 1. NPR-3 Area of Potential Effect

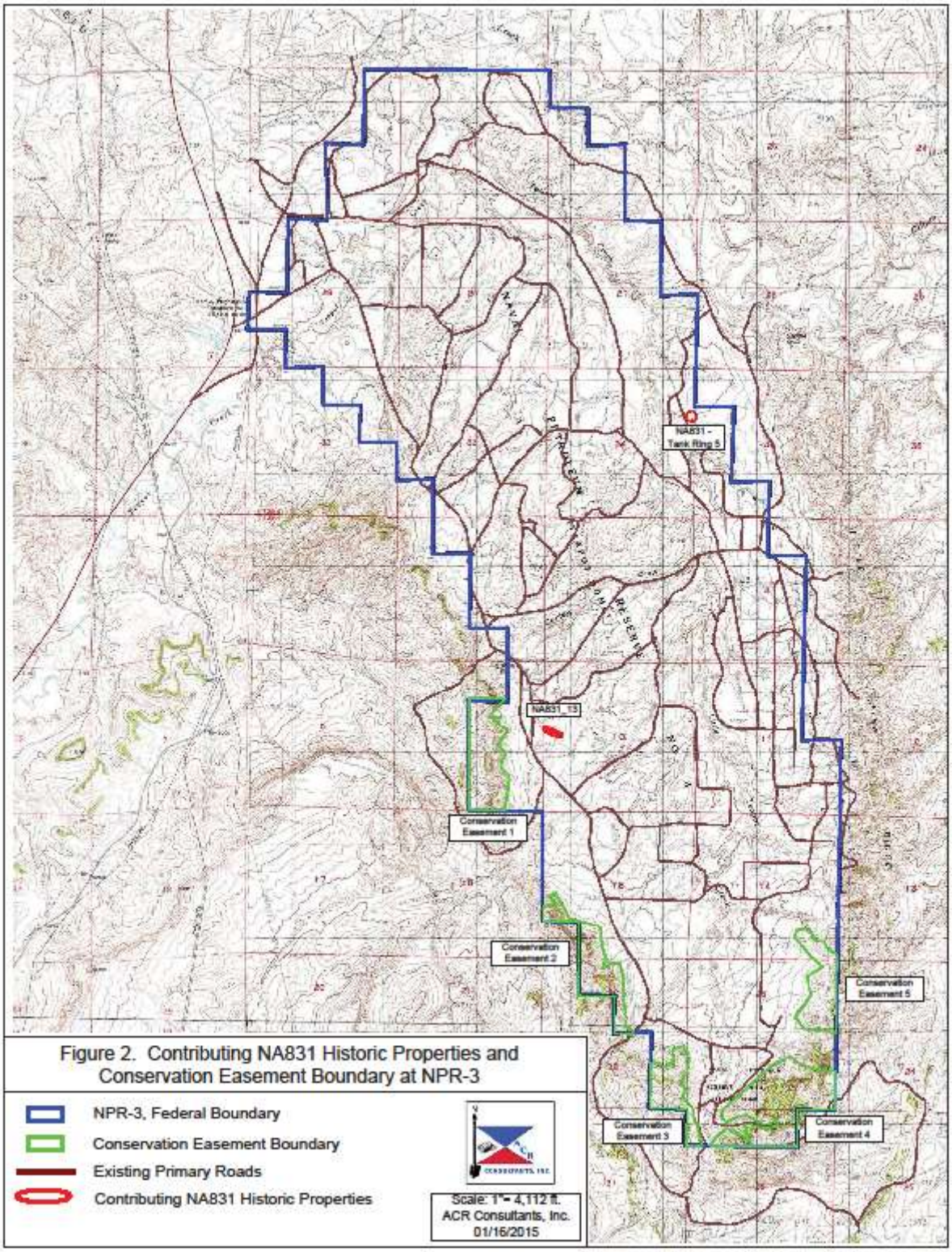

Figure 2. Contributing NA831 Historic Properties and Conservation Easement Boundary at NPR-3

Attachment 2: Legal Description of Conservation Easement

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CONSTRUCTION MANAGEMENT
111 W. 2nd St., Ste 420 • Casper, Wyoming 82601
Ph: 307-265-4601 • Fax: 307-265-4672

November 26, 2014

Rocky Mountain Oilfield Testing Center
907 North Poplar, Ste. 150
Casper, Wyoming 82601

Subject: Conservation Easement #1 – 107.43 acres

A Parcel located in and being a portion of the E1/2 of Section 9, Township 38 North, Range 78 West of the Sixth Principal Meridian, Natrona County, Wyoming, being more particularly described by metes and bounds as follows:

Beginning at a brass cap witnessing the southwest corner of the E1/2 of said Section 9 and being in the south line of said Section 9; thence along the south line of said Section 9, S89°06'51"W, 74.97 feet to the true point of the southwest corner of the E1/2 of said Section 9; thence along the west line of the E1/2 of said Section 9, N1°31'01"W, 3941 feet, more or less, to the northwest corner of the SW1/4NE1/4 of said Section 9; thence along the north line of the SW1/4NE1/4 of said Section 9, N89°10'E, 1243 feet; thence S38°35'24"W, 844.44 feet; thence N86°42'16"E, 390.62 feet; thence S18°04'28"W, 275.41 feet; thence S59°51'54"E, 420.55 feet; thence S32°46'19"W, 608.82 feet; thence S42°32'53"E, 378.61 feet; thence S16°20'58"W, 519.37 feet; thence S42°43'39"E, 481.48 feet; thence S6°51'05"W, 1194.05 feet to a point in the south line of the E1/2 of said Section 9; thence along the south line of the E1/2 of said Section 9, S89°07'27"W, 1169.72 feet to the Point of Beginning and containing 107.43 acres, more or less.

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CONSTRUCTION MANAGEMENT
111 W. 2nd St., Ste 420 • Casper, Wyoming 82601
Ph: 307-265-4601 • Fax: 307-265-4672

December 3, 2014

Rocky Mountain Oilfield Testing Center
907 North Poplar, Ste. 150
Casper, Wyoming 82601

Subject: Revised Conservation Easement #2 – 93.70 acres

A Parcel located in and being a portion of the NW1/4SW1/4, SW1/4NE1/4SW1/4, and SE1/4SW1/4 of Section 15, NE1/4NW1/4 and W1/2NE1/4 of Section 22, Township 38 North, Range 78 West of the Sixth Principal Meridian, Natrona County, Wyoming, being more particularly described by metes and bounds as follows:

Beginning at an iron pipe at the southeast corner of the NW1/4SW1/4 said Section 15; thence along the south line of the NW1/4SW1/4 of said Section 15, S88°38'58"W, 1278.81 feet to the southwest corner of the NW1/4SW1/4 of said Section 15; thence along the west line of the NW1/4SW1/4 of said Section 15, N1°00'51"W, 532.01 feet; thence leaving said line, N78°56'44"E, 453.79 feet; thence N41°00'30"W, 282.25 feet; thence N38°07'45"E, 233.63 feet; thence S39°40'48"E, 257.04 feet; thence S28°17'50"E, 775.14 feet; thence S76°40'08"E, 1080.71 feet; thence S37°08'48"E, 171.03 feet; thence S2°56'52"E, 553.13 feet; thence S20°35'23"E, 556.04 feet; thence S52°52'48"W, 128.22 feet; thence S5°50'21"W, 230.70 feet; thence N51°13'13"E, 363.18 feet; thence S88°19'34"E, 295.49 feet; thence S15°27'03"E, 464.30 feet; thence S2°39'02"E, 835.63 feet; thence S11°52'15"E, 676.36 feet; thence S12°00'27"W, 285.39 feet; thence S52°19'00"E, 133.26 feet; thence S73°03'10"E, 228.16 feet; thence S18°20'11"W, 116.17 feet to a point in the south line of the SW1/4NE1/4 of said Section 22; thence along the south line of the SW1/4NE1/4 of said Section 22, S89°02'31"W, 648.06 feet to the southwest corner of the SW1/4NE1/4 of said Section 22; thence along the west line of the SW1/4NE1/4 of said Section 22, N0°48'40"W, 1317.43 feet to the southeast corner of the NE1/4NW1/4 of said Section 22; thence along the south line of the NE1/4NW1/4 of said Section 22, S89°05'53"W, 1289.60 feet to the southwest corner of the NE1/4NW1/4 of said Section 22; thence along the west line of the NE1/4NW1/4 of said Section 22, N0°47'57"W, 1318.63 feet to the northwest corner of the NE1/4NW1/4 of said Section 22; thence along the west line of the SE1/4SW1/4 of said Section 15, N1°30'09"W, 1318.59 feet to the Point of Beginning and containing 93.70 acres, more or less.

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CONSTRUCTION MANAGEMENT
111 W. 2nd St., Ste 420 • Casper, Wyoming 82601
Ph: 307-265-4601 • Fax: 307-265-4672

December 3, 2014

Rocky Mountain Oilfield Testing Center
907 North Poplar, Ste. 150
Casper, Wyoming 82601

Subject: Revised Conservation Easement #3 – 62.36 acres

A Parcel located in and being a portion of the E1/2SE1/4 of Section 22, W1/2W1/2SW1/4 of Section 23, and W1/2NW1/4NW1/4 of Section 26, Township 38 North, Range 78 West of the Sixth Principal Meridian, Natrona County, Wyoming, being more particularly described by metes and bounds as follows:

Beginning at an aluminum cap at the southeast corner of said Section 22; thence along the south line of said Section 22, N89°05'56"W, 1300.37 feet to the southwest corner of the E1/2SE1/4 of said Section 22; thence along the west line of the E1/2SE1/4 of said Section 22, N0°55'48"W, 1566.19 feet; thence leaving said line, N88°49'35"E, 287.29 feet; thence S47°42'36"E, 244.06 feet; thence N55°45'37"E, 426.49 feet; thence N10°44'26"W, 430.90 feet; thence N71°52'29"E, 422.49 feet; thence S21°24'28"E, 523.20 feet; thence S5°34'25"W, 370.70 feet; thence S24°36'23"W, 534.34 feet; thence S61°10'03"E, 291.57 feet; thence S29°01'39"W, 392.01 feet; thence S48°25'09"E, 509.68 feet; thence S11°54'39"E, 469.30 feet; thence S44°17'09"E, 136.40 feet; thence S9°11'17"E, 248.01 feet; thence S15°07'27"E, 563.62 feet to a point in the south line of the NW1/4NW1/4 of said Section 26; thence along the south line of the NW1/4NW1/4 of said Section 26, S88°26'49"W, 562.50 feet to the southwest corner of the NW1/4NW1/4 of said Section 26; thence along the west line of the NW1/4NW1/4 of said Section 26, N0°29'55"W, 1301.71 feet to the Point of Beginning and containing 62.36 acres, more or less.

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December 3, 2014

Rocky Mountain Oilfield Testing Center
907 North Poplar, Ste. 150
Casper, Wyoming 82601

Subject: Revised Conservation Easement #4 – 176.87 acres

A Parcel located in and being a portion of the SE1/4 and SE1/4SW1/4 of Section 23, E1/2NW1/4NW1/4, NE1/4NW1/4, and NW1/4NE1/4 of Section 26, Township 38 North, Range 78 West of the Sixth Principal Meridian, Natrona County, Wyoming, being more particularly described by metes and bounds as follows:

Beginning at an aluminum cap at the southeast corner of said Section 23; thence along the south line of said Section 23, S89°04'01"W, 1326.36 feet to the northeast corner of the NW1/4NE1/4 of said Section 26; thence along the east line of the NW1/4NE1/4 said Section 26, S1°26'56"E, 1312.56 feet to the southeast corner of the NW1/4NE1/4 of said Section 26; thence along the south line of NW1/4NE1/4 of said Section 26, S88°55'00"W, 1320.79 feet to the southwest corner of the NW1/4NE1/4 of said Section 26; thence along the south line of the N1/2NW1/4 of said Section 26, S88°26'49"W, 1717.66 feet; thence leaving said south line, N22°52'42"E, 306.61 feet; thence N48°37'16"E, 497.90 feet; thence S84°15'56"E, 231.88 feet; thence S60°05'44"E, 722.15 feet; thence N23°34'44"W, 294.89 feet; thence N9°35'16"E, 149.82 feet; thence N53°35'38"W, 161.93 feet; thence N38°50'40"E, 113.96 feet; thence S78°07'21"E, 373.23 feet; thence S69°01'38"E, 430.56 feet; thence N47°54'14"E, 162.75 feet; thence N76°19'46"E, 196.88 feet; thence N10°37'08"E, 210.88 feet; thence N43°01'54"W, 180.67 feet; thence S46°48'53"W, 239.87 feet; thence S66°47'09"W, 190.16 feet; thence N63°52'20"W, 711.16 feet; thence S85°59'05"W, 338.85 feet; thence S61°01'55"W, 429.35 feet; thence N59°07'28"W, 207.60 feet; thence N12°18'59"W, 252.21 feet; thence N46°11'34"E, 2361.01 feet; thence N60°30'55"E, 764.13 feet; thence S52°22'36"E, 466.32 feet; thence S75°25'14"E, 669.44 feet; thence S89°09'49"E, 613.37 feet to a point in the east line of the SE1/4 of said Section 23; thence south along the east line of the SE1/4 of said Section 23, S0°44'03"E, 1375.38 feet to the Point of Beginning and containing 176.87 acres, more or less.

Professional Land Surveyor
PAUL A. HEINTZ
13346
Date 12-3-14
WYOMING

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November 26, 2014

Rocky Mountain Oilfield Testing Center
907 North Poplar, Ste. 150
Casper, Wyoming 82601

Subject: Conservation Easement #5 – 77.84 acres

A Parcel located in and being a portion of the S1/2SE1/4 of Section 14, NE1/4 of Section 23, Township 38 North, Range 78 West of the Sixth Principal Meridian, Natrona County, Wyoming, being more particularly described by metes and bounds as follows:

Beginning at an aluminum cap at the southeast corner of said Section 14; thence along the east line of said Section 23, S1°23'58"E, 2537.79 feet; thence leaving said line, N79°24'38"W, 547.86 feet; thence N88°04'10"W, 623.54 feet; thence N32°27'14"W, 525.10 feet; thence N34°22'44"E, 920.07 feet; thence N14°46'46"W, 666.50 feet; thence N55°12'43"E, 654.15 feet; thence N48°29'40"W, 660.22 feet; thence N39°56'24"W, 778.17 feet; thence N14°59'14"E, 227.13 feet; thence N76°12'29"E, 303.06 feet; thence S65°07'08"E, 208.97 feet; thence S30°25'13"E, 355.96 feet; thence S84°48'36"E, 312.86 feet; thence S23°43'19"E, 251.78 feet; thence S61°45'05"E, 395.96 feet to a point in the east line of said Section 14; thence along the east line of said Section 14, S0°50'13"E, 289.51 feet to the Point of Beginning and containing 77.84 acres, more or less.

Professional Land Surveyor
PAUL A. REINTZ
13546
Date 11-26-14
WYOMING

NPR-3 Section 106 Consulting Parties

Advisory Council on Historic Preservation Mr. Brian Lusher, Federal Property Management Section	**Alliance for Historic Wyoming** Ms. Carly-Ann Anderson, Executive Director
Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation Chairman A. T. Stafne Mr. Darrell (Curly) Youpee, Tribal Historic Preservation Officer	**Casper Historic Preservation Commission** Ms. Peggy Brooker
Cheyenne River Sioux Tribe of the Cheyenne River Reservation Chairman Kevin Keckler, Sr. Mr. Steven Vance, Tribal Historic Preservation Officer	**Comanche Nation** Chairman Wallace Coffee Mr. Jimmy Arterberry, Tribal Historic Preservation Officer
Crow Creek Sioux Tribe of the Crow Creek Reservation Chairman Brandon Sazue, Sr. Mr. Darrell Zephier, Tribal Historic Preservation Officer	**Crow Tribe of Montana** Chairman Darrin Old Coyote Mr. Emerson Bull Chief, Tribal Historic Preservation Officer
Kiowa Indian Tribe of Oklahoma Chairperson Ron Twohatchet Amie Tah-Bone, Museum Director/NAGPRA Representative	**National Park Service, Intermountain Region, Heritage Partnerships Program** Shirl E. Kasper, Historian Christine Whitacre, Program Manager
National Trust for Historic Preservation Ms. Barb Pahl	**Natrona County Chapter of the Wyoming State Historical Society** Mr. Lyle Cox, President
Natrona County Historic Preservation Commission and the Wyoming Archaeological Society Ms. Carolyn Buff	**Natrona County Historic Preservation Commission, Fort Casper Museum** Mr. Rick Young
Northern Arapaho Tribe Chairman Darrell O'Neal, Sr. Ms. Corinne Headley, Tribal Historic Preservation Officer	**Northern Cheyenne Tribe of the Northern Indian Reservation** President Llevando Fisher Mr. Conrad Fisher, Tribal Historic Preservation Office
Oglala Sioux Tribe of the Pine Ridge Reservation President Bryan Brewer Mr. Wilmer Mesteth and Mr. Dennis Yellow Thunder, Tribal Historic Preservation Office	**Omaha Tribe of Nebraska** Chairman Clifford Wolfe, Jr. Mr. Calvin Harlan and Mr. Thomas Parker, Tribal Historic Preservation Office

Rosebud Sioux Tribe of the Rosebud Indian Reservation President Cyril L. Scott Mr. Russell Eagle Bear, Tribal Historic Preservation Officer Mr. Ben Rhodd, Archaeologist	**Salt Creek Museum** Ms. Sandy Schutte
Santee Sioux Nation of Nebraska Chairman Roger Trudell Mr. Richard Thomas, Tribal Historic Preservation Officer	**Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho** Chairman Nathan Small Carolyn Smith, Cultural Resources Coordinator
Sisseton-Wahpeton Oyate Tribe Chairman Robert Shepherd Ms. Dianne Desrosiers and Mr. Jim Whitted, Tribal Historic Preservation Office	**Standing Rock Sioux Tribe of North and South Dakota** Chairman Dave Archambault II Ms. Waste'Win Young, Tribal Historic Preservation Officer Mr. Terence Clouthier, Archaeologist
Wyoming State Historic Preservation Office Ms. Mary Hopkins, State Historic Preservation Officer Mr. Richard Currit, Senior Archaeologist	

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Appendix D: Public Comment Summary and Original Letters

Comments and Responses
On the
Draft Site-Wide Environmental Assessment for the Divestiture of
Rocky Mountain Oilfield Testing Center &
Naval Petroleum Reserve No. 3
DOE/EA-1956

Summary of U.S. Department of Interior Fish & Wildlife Service Comments
The USFWS provided NEPA comment in a letter dated March 15, 2013 (scoping comments). The comments are about threatened, endangered, proposed and candidate species (in accordance with the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Floodplain Management and Section 404 of CWA). USFWS concerns were all addressed in the draft SWEA.

> **DOE Response:** No change necessary to DOE/EA-1956.

If the preferred alternative is selected, USFWS would like bring to DOE's attention regarding a nearby field where carbon dioxide (CO_2) and/or hydrogen sulfide (H_2S) gas has been released in unexpected areas resulting in the death of several birds and other wildlife. The incidences have occurred primarily in low lying areas in and around drainages containing water where wildlife tend to congregate.

USFWS recommends that the future owner be informed of this and that they take the necessary precautions to prevent such releases from occurring in the future. Such measures could include monitoring for releases of gases that can occur in unexpected location, conducting inspections for dead wildlife, plugging abandoned wells, and contacting the USFWS office should birds or other wildlife mortalities be discovered.

USFWS would like to be notified of any decisions made on this project.

> **DOE Response:** DOE has updated Section 5.1.6.3 to include this information. DOE will inform the new owner of this concern and will notify USFWS of the FONSI and determination to move forward with the Proposed Action.

Summary of Standing Rock Sioux Tribe (SRST) Comments
SRST believes that it is a conflict of interest to have Navarro conduct the environmental assessment or any NEPA assessment.

> **DOE Response:** DOE has added Section 1.7 to address this concern.

SRST commented that the SWEA failed to provide sufficient evidence that an EIS is not necessary for this proposed action and that a FONSI should be issued because DOE has repeatedly ignored foreseeable effects, misrepresented other effects, violated the National Historic Places Act, and failed to provide any inherent need for the proposed action that differs from the "No Action Alternative" beyond the fact that they must sell the property per congressional mandate. SRST further stated that the "No Action Alternative" clearly has less potential to affect the environment and cultural resources than the Proposed Action.

> **DOE Response:** DOE disagrees with the commenter that the EA fails to justify a FONSI. The Proposed Action has been modified to include a conservation easement that minimizes adverse effects on cultural resources. Other anticipated environmental impacts from the sale are in line with those seen historically at the site and the findings of other agencies. The EA has been

modified extensively in response to this and other comments and these revisions address this comment.

SRST questioned why the renewable energy alternative was included as a proposed alternative when these alternative energy proposals are erroneously dismissed as viable within Section 3.3 of the SWEA. SRST claimed that dismissing the renewable energy alternative gave the appearance that additional alternatives were evaluated for this EA when in fact only the "Preferred Alternative" (selling the property) and "No Action Alternative" were ever considered.

DOE Response: DOE analyzed the economic potential for utility-scale alternative energy development at NPR-3 and addressed it in the SWEA as a potentially feasible alternative to future oil and gas production. When it became clear economic factors precluded NPR-3 from being a high priority site for alternative energy production, DOE correctly concluded that further environmental analysis of the alternative was not necessary.

SRST questioned how DOE determined that continued government operation of the NPR-3 was not in the national interest and questioned why DOE came to that conclusion when it had previously analyzed expanding the facilities and developing EOR techniques at the site. Additionally, SRST questioned how NPR-3 was operated at MER if EOR techniques were not being applied as recently as six years ago and whether the highest economic use analysis was used to determine that continued operation of NPR-3 was not in the public interest.

DOE Response: Modified Section 1.3 to reference the outcomes of other NPR site property transfers, to discuss the impact of those activities on DOE's administrative costs, and to clarify the issue of profitability and national interest. Further, DOE noted that implementing site-wide EOR would likely require congressional line-item budget approval, which is unlikely in the foreseeable future.

SRST stated that at the time of the comment, the Tribes were being denied opportunities to conduct identification efforts pursuant to Sect. 106 of the NHPA. SRST stated that Section 1.4.2 of the Draft SWEA was misleading and misrepresentative of the good faith effort that is required by the DOE with regard to identification of historic properties per 36 CFR 800.4. Moreover, SRST asserted that DOE failed in its section 106 process because no attempt was being made by the DOE for conservation/preservation of any historic properties even though the Proposed Action would remove historic properties from Federal protection.

DOE Response: The Proposed Action has been changed to include a conservation easement that includes Native American sites that are eligible for listing in the NRHP. This was the result of the on-going Section 106 process, as well as additional site visits that were held in September 2014.

SRST questioned Section 1.4.3 of the Draft SWEA because BLM has multiple lease holders on numerous properties throughout the Great Plains and this project would not be handled any differently. SRST also pointed out that previous Phase 1 Environmental Site Assessments demonstrated potential environmental liabilities that were not mentioned in the Draft SWEA.

DOE Response: DOE has added a new section that specifically addresses environmental concerns (see new Section 4.8). Moreover, Section 3.2 has been modified to clarify that the Lease Alternative does not meet DOE's intent to maximize revenues in the divestment process.

SRST questioned why DOE was not continuing to use and maintain ownership of NPR-3 while employing the various routine and EOR techniques to increase future oil production and whether the implementation of these techniques would maintain MER.

> **DOE Response:** Modified Section 1.3 to reference the outcomes of other NPR site property transfers and to discuss the impact of those activities on DOE's administrative costs. Also, referred to the fact that implementing site-wide EOR would likely require congressional line-item budget approval, which is unlikely in the foreseeable future.

SRST noted that regardless of any legislative action required to transfer the property; the DOE has undertaken such actions in the decades since 1976, including

- Naval Oil Shale Reserves (NOSR)-1 and 3 – Subsequently, the DOE transferred two of the NOSR sites, both in Colorado, to BLM. Like many other federal owned lands, these properties are offered for commercial mineral leasing, primarily for natural gas production and future petroleum exploration.
- NPR-3- Enactment of the Energy Policy Act 2005 effected the transfer of administrative jurisdiction and land management of the NPR-2 to BLM, with the exception of certain lands that were conveyed to the City of Taft, California, and some sites in Ford City, California, that are to be disposed of the Government after environmental assessments are completed.
- NOSR-2 – in 2000-2001, the Department returned the undeveloped NOSR-2 in Utah to the Northern Ute Indian Tribe in the largest transfer of federal property to Native American in the last century.

SRST noted that only NPR-1 has been sold privately with the majority being transferred to other Federal ownership and management, and went on to question why DOE was not considering the transfer of NPR-3 to BLM more strongly. Also, SRST noted that Cheyenne River Sioux Tribe had specifically inquired about transferring the property to the Tribe.

> **DOE Response:** Modified Section 1.3 to reference the outcomes of other NPR site property transfers and to discuss the impact of those activities on DOE's administrative costs. Also, referred to the fact that implementing site-wide EOR would likely require congressional line-item budget approval, which is unlikely in the foreseeable future. Regarding the transfer of the property to Cheyenne River Sioux Tribe, the only NPR property previously returned to tribal ownership had been undeveloped, which is not the case at NPR-3. Transferring the property outright would not meet the DOE's mandate to maximize the value of the property.

SRST stated that areas designated Class 3 are suitable for most utility-scale wind turbine applications, whereas Class 2 are marginal utility-scale application but may be suitable for rural applications. SRST therefore stated that it was inappropriate to dismiss the potential for this area for wind power farms.

> **DOE Response:** DOE has revised Section 3.3.1 to address this comment. Wyoming has one of the highest concentrations of Class 5, 6, and 7 wind power sites in the U.S. As a Class 2 to 4 site, NPR-3 is a very low-priority site for wind development on a utility scale.

SRST noted that a report written by Navarro titled "Geothermal Resources at NPR-3, Wyoming" commented that NPR-3 is an excellent test site for wind and solar generation alternative energy projects and called into question DOE's assertion that this type of development is not feasible at NPR-3.

DOE Response: Based on the 2007 paper, a pilot test of binary geothermal electricity production was conducted at NPR-3 by Ormat Technologies, Inc., using the co-produced water from the Tensleep Formation production wells. Unfortunately, the electricity that was generated was not economically competitive with electricity brought in from off-site, even for use in the oil field. At present there is no economic value resulting from geothermal energy production at NPR-3.

SRST stated that DOE was misrepresenting the potential for utility-scale solar power development at NPR-3 by confusing utility scale solar power with distributed generation. Specifically, SRST noted that utility scale solar power would never need to be located near its primary customers as that is not the intended recipient of the electricity.

DOE Response: DOE has revised Section 3.3.2 to discuss the results of economic analyses that indicate that NPR-3 is unlikely to be a candidate for utility-scale solar power. DOE has also revised Section 3.3.2 to indicate that utility scale development of solar power will likely be within established solar power zones in the southwestern US and/or within 5 miles of high-power transmission line corridors.

SRST questioned DOE's assertion in Section 3.3.3 that the geothermal gradient at NPR-3 was not strong enough for the site to be considered for utility-scale geothermal power generation. SRST noted that the Draft SWEA seemed to contradict a 2007 report about the site's potential for geothermal power generation.

DOE Response: Based on the 2007 paper, a pilot test of binary geothermal electricity production was conducted at NPR-3 by Ormat Technologies, Inc., using the co-produced water from the Tensleep Formation production wells. Unfortunately, the electricity that was generated was not economically competitive with electricity brought in from off-site, even for use in the oil field. At present there is no economic value resulting from geothermal energy production at NPR-3.

In addition:

1) The quoted temperature of 230° F for water in the Madison limestone was projected in the 2007 report, not measured. The actual thermal gradient reported in the 2007 paper is 25° F per thousand feet. Given the vertical distance between the Tensleep and Madison formations given in the 2007 paper (600 feet), and the measured temperature of 190° F from the Tensleep, the inferred temperature of water in the Madison would be 205° F. If the temperature in the Madison were 230° F the geothermal gradient would be 67° F per thousand feet. This is a far higher gradient than has been measured at NPR-3 or anywhere else in the vicinity (see Geothermal Resources of the Southern Powder River Basin, Wyoming, 1986, Buelow et all, Wyoming Geological Survey Report of Investigations No. 36, Figure 7, which includes 4,652 bottom-hole temperature measurements).
2) Regarding the use of artificial fracturing of granitic basement rocks, to date no commercially successful systems of this type have been put into production, despite decades of research and field tests. The most promising near term use of this technique is in enhancing production at the fringes of and/or in low permeability areas of existing geothermal fields.
3) The single 165° F geothermal plant currently in production is in Chena, Alaska, an area which is both remote from alternative power sources and with a very cold average ambient temperature. To date, it is unique in being able to economically derive electrical power from geothermal waters with this low a temperature.

SRST questioned why DOE did not address EOR in the "No Action Alternative."

DOE Response: DOE has added Section 3.4.1 and 3.4.2 to address this comment.

SRST commented that the Draft SWEA was vague on the number of historic properties that would be affected by the Proposed Action.

DOE Response: Section 4.6 has been revised based on the results of the Section 106 process. Specific information has been added regarding the number and nature of the sites potentially affected by the sale. All sites but one were included in the conservation easement in order to protect them from development in perpetuity, regardless of the ultimate use of the property. Moreover, the executed Programmatic Agreement resulting from the Section 106 process has been included as an appendix to the Final SWEA.

SRST stated that the EOR techniques described in the Draft SWEA would increase the gallons taken out of the NPR-3 reservoirs by 168,000 gallons per day (1 barrel equals 42 gallons), which SRST concludes would be a substantial increase.

DOE Response: DOE revised Section 5.1.4 of the SWEA to provide more details regarding the potential increase in water from the Proposed Action.

SRST questioned why Section 5.1.4.2.1 of the Draft SWEA mentioned horizontal fracking when Section 3.1.4 had noted that the practice was not viable at NPR-3.

DOE Response: Because horizontal drilling was discussed in section 3.1.4 and determined not to be viable in the complexly folded and faulted geology at NPR-3, the paragraph discussing it in section 5.1.4.2.1 was removed.

SRST questioned DOE's assertion in Section 5.1.4.3 of the Draft SWEA that water for fracking would come from produced water onsite.

DOE Response: DOE has modified this Section to indicate that water from the Madison formation is used for fracking purposes. This has been the case throughout DOE's operating history at the site.

SRST questioned whether stopping the release of produced water and its subsequent impact on wetlands vegetation was an adverse effect.

DOE Response: Language in Section 5.1.6.1 and throughout the SWEA has been modified to emphasize that Teapot Creek and Little Teapot Creek are artificially perennial streams due to the release of produced water. Releasing larger volumes of water under the Proposed Action would extend the beneficial impact that the water has on the environment. Stopping the release either by shutting down the Tensleep wells or diverting all produced water to underground disposal will adversely impact the riparian vegetation and wildlife that has come to depend on that water, but this will not be a significant impact because the terrestrial vegetation will return to its native condition.

SRST questioned how DOE determined the potential acreage impacted by routine operations in Section 5.1.6.2 of the Draft SWEA.

DOE Response: The 40 acre/year number for routine new well installation came from site personnel and previous SWEA documents. DOE has modified 5.1.6.2 to clarify the assumption that the new owner would continue routine well installation and P/A activities at similar rates as DOE has implemented historically.

SRST stated that Section 5.1.11 did not adequately address the potential effects that this proposed action will have.

> **DOE Response:** DOE has updated the cumulative effects section with information about greenhouse gas emissions and induced seismic activity. The Conservation Easement is expected to minimize impacts to cultural resources and no other substantial cumulative effects are expected.

Summary of WYTWS Comments

The proposed action has the potential to impact wildlife and their habitats on site. Based on the alternatives provided through the assessment, WYTWS believes that alternatives 2 or 3 would be most beneficial for wildlife and their habitats. Under alternative 2, the BLM would largely have greater authority and incentive to implement policy, standards, and guidelines that protect and mitigate negative effects to wildlife and their habitats when compared to operation that occur under private ownership.

> **DOE Response:** DOE agrees that the Lease and No Action alternatives would provide the most benefit for wildlife. Based on this and other comments, DOE is modifying its Proposed Action to include a Conservation Easement that will be set aside and prohibited from development. DOE believes this will address some of the WYTWS concerns because portions of the property would be prohibited from development. On-going oil production would continue in areas that have already been disturbed.

Invasive plants and noxious weeds are a problem on the site, and if sold as deeded land, it would be difficult to direct or negotiate actions that control or mitigate the spread of non-native and invasive species.

> **DOE Response:** DOE acknowledges that the Proposed Action will remove federal regulatory and guidance drivers for controlling noxious weeds on NPR-3. However, the property sale will not impact the Natrona County Weed and Pest Control District's efforts to manage infestations, nor will it impact BLM's efforts to do the same on the Salt Creek field. Moreover, BLM's weed management plan for Salt Creek indicates that the agency will cooperate with nearby landowners to reduce the impact noxious weeds have on the environment. Sections 5.1.6.2 and 4.5.2 have been modified to address WYTWS concerns.

In the long-term, if the BLM leased the property or managed the area under DOE's ownership, WYTWS believes that conservation and management of the area would be much more feasible than if ownership was transferred to a private entity. If the property was managed or overseen by a public agency, future leases would be required to follow standards and guidelines put in place to help protect Wyoming's wildlife and habitat resources.

> **DOE Response:** No change necessary to the SWEA.

The argument could be made that, even though it may not be economically profitable for the DOE to continue administering the area, other interest for the resource make it worth maintaining in the current status quo. WYTWS believes an area's value to the state and country cannot be judged solely by the net economic value of current and future mineral production.

> **DOE Response:** While DOE understands this comment, the agency is mandated to maximize the economic value of the property during the divestment process.

Based on the scientific merits and potential to impact wildlife habitats, it is critical to maintain some kind of oversight from the standpoint of maintaining and promoting natural benefit of landscape and wildlife populations therein. If the DOE continues to operate the area, perhaps there could be efforts set forth to transfer direction to a federal or state agency in the future. Prior to the transition, DOE could close existing permits not required for MER and concentrate activities to the center portions of NPR-3 for future lease use. This would allow remaining production wells and infrastructure to be leased and would potentially open lands to the public and to beneficial management strategies.

> **DOE Response:** DOE does not believe that wildlife or habitats will be significantly impacted by the modified Proposed Action. Raptor habitat generally coincides with the boundaries of the conservation easement and would be prohibited from future development. Pronghorn and other wildlife continue to be observed on-site even after approximately 40 years of intensive oil and gas exploration and production. Moreover, the conservation easement effectively funnels future operations into the center of the field, as recommended in this comment.

WYTWS believes that is most critical to assess the potential negative impacts to wildlife and wildlife habitats. WYTWS believes that potential negative impacts to wildlife would most likely result from increasing oil exploration and drilling activities in the area if the property were sold to a private entity that is not necessarily required to draft and implement a plan with standards and guidelines that promote wildlife and wildlife habitats or mitigate negative impacts therein.

> **DOE Response:** DOE does not believe that wildlife or habitats will be significantly impacted by the modified Proposed Action. Raptor habitat generally coincides with the boundaries of the conservation easement and would be prohibited from future development. Pronghorn and other wildlife continue to be observed on-site even after approximately 40 years of intensive oil and gas exploration and production. Moreover, the conservation easement effectively funnels future operations into the center of the field, as recommended in this comment.

Summary of Environmental Protection Agency, Region 8, Comments

The SWEA indicates that there are two inactive industrial waste landfills onsite (IND-1 & IND-2). Scoping comments with WDEQ, dated March 15, 2013, indicate that DOE is working with WDEQ on closure and long term monitoring for the two landfills. It is EPA's understanding based on discussion with WDEQ that the DOE is investigating groundwater monitoring results that may indicate the presence of benzene. EPA Region 8 recommends that DOE continue to work with WDEQ on any remaining outstanding issues related to the landfills.

> **DOE Response:** DOE has replaced several groundwater monitoring wells and submitted a closure permit application for IND-2. DOE has continued to work with WYDEQ to resolve these issues and expects the final closure permit to require a significant period of environmental monitoring (up to 30 years).

The SWEA indicates that 3 of the composting facilities currently comply with WOGCC requirements and will be transferred to the new owner in their existing condition. The document does not describe the status of future plans for the fourth composting facility. EPA Region 8 recommends that DOE continue to work with WDEQ and WOGCC, as appropriate, regarding requirements for the petroleum contaminated soils treatment areas.

> **DOE Response:** Language in the SWEA has been modified to indicate that all 4 composting facilities currently comply with WOGCC requirements and will be transferred to the new owner.

BLM submitted comments indicating a concern over potential liabilities if the BLM were to assume responsibility for the property. BLM reviewed numerous environmental reports regarding the facility and operation. Based on the information that is available in the SWEA and BLM's comments, it is unclear whether CERCLA hazardous substances have been well investigated. Further investigation may be required for transferring the property to a private company. The transfer of the property will require a CERCLA 120(h) certification in the context of a Finding of Suitability to Transfer document and our concurrence. The point of contact for this effort is Rob Stites at (303) 312-6658. EPA Region 8 recommends that DOE contact Mr. Stites, at EPA, Region 8 for further information.

> **DOE Response:** DOE will comply with CERCLA 120(h) requirements prior to transferring the property.

Summary of Wyoming Dept. of Environmental Quality (WDEQ), Solid & Hazardous Waste Division, Solid Waste Permitting & Corrective Action Program Comments

Section 4.3.2 (Groundwater) states that there are six groundwater monitoring wells at the Industrial Landfill #2 (IND-2). In a letter dated Feb. 24, 2014, the Department advised RMOTC that the integrity of the 3 of the monitoring wells (98-1-X-3, 98-2-X-3 & 98-2-X-4) were of concern and that well inspections would need to be conducted. In the same correspondence, the Department also noted that benzene was detected slightly above USEPA MCL in well 98-1-X-3 at 5.2 ppb during the October 2013 sampling event and would require additional confirmation sampling once well inspections have been completed. At this time, the Department is uncertain if the monitoring network at the IND-2 is adequate to effectively monitor impacts to groundwater.

> **DOE Response:** DOE has upgraded the monitoring well network to ensure that it effectively monitors any potential impacts to groundwater. DOE cooperation with WYDEQ on this matter is on-going.

Section 4.8.4 (Waste Disposal) states that NPR-3 has 2 inactive waste landfills (IND-1 and IND-2), an inactive land farm (associated with IND-2) and four active petroleum composting facilities. The Department is not aware of four "active" petroleum composting facilities and is requesting additional information to evaluate if further regulatory action(s) may be required by the Department.

> **DOE Response:** DOE has modified Section 4.8.4 to identify the four composting facilities, their operating permit numbers, and the responsible regulatory agency. In addition, DOE updated the section to describe on-going interactions with WYDEQ concerning IND-2. The benzene issue will be addressed in the groundwater section (4.3.2).

Section 5.1.9 (Waste Management) states that there are "4 active petroleum composting facilities." However, the last paragraph in the section states that "3" composting facilities currently comply with Wyoming Oil & Gas Conservation Commission (WOGCC) requirements. Please provide additional on the composting facilities so an evaluation by the Department can be made to assess if further regulatory action (s) may be required.

> **DOE Response:** DOE has provided the requested information to WYDEQ. See also the response to Item 33 above.

The NPR-3 site has two inactive industrial waste landfills (IND-1 & IND-2), an inactive PCS waste land farm associated with IND-2. The older industrial landfill (IND-1) pre-dated the Department's landfill permitting regulation and has been closed since 1991. The second industrial landfill (IND-2) and its associated land farm were constructed and permitted in 1990 and have been inactive since 2001. The

post-closure period for the industrial landfill (IND-2) will be required to comply with the groundwater monitoring requirements of Chapter 3, Section 6 (b) (i) of the Solid Waste Rules & Regulations and shall extend for a period of not less than 30 years after the certification of closure activities is approved by the WDEQ Administrator.

> **DOE Response:** DOE and the new owner will be bound by the requirements of the Closure Permit once it is issued. Post closure requirements will be part of that permit.

Summary of BLM Comments

Page 1, Section 1.1, second paragraph: BLM stated that DOE was incorrect in its assumption that oil production would be the same under a lease alternative as compared to the proposed sale of the property. The new federal agency would have no operational ability to continue production and production would only continue under the BLM if the area were leased and those leases were developed to production. Under our present Oil and Gas Leasing program only about 6% of leases are ever developed to production.

> **DOE Response:** DOE has modified Section 1.1 to emphasize that 1) for the purposes of this SWEA, DOE assumes that the property will be leased and developed and 2) that full environmental restoration would be required before transferring the property to BLM. In addition, DOE modified Sections 3.3 accordingly.

Page 4, Section 1.4.2: BLM questioned why DOE did not mention the letter from the Cheyenne River Sioux Tribe requesting that the land be transferred to them.

> **DOE Response:** DOE has modified Section 1.4.2 to include this information.

Page 5, Section 1.4.3: BLM noted that the Rocky Mountain Oilfield Testing Center / Naval Petroleum Reserve No.3 Final Site-Wide Environmental Assessment (EA-1583-FEA-2008) page 40, states "While the future environmental liabilities to the United States Government would be minimized by this approach, a decision on the sale or transfer of NPR-3 would be made only when the remaining liabilities of the site and the residual value of the reserve could be quantified." BLM questioned why the liabilities study was not referenced in the Draft SWEA.

> **DOE Response:** DOE has incorporated the environmental liabilities in the new Section 4.8.

Page 13, Section 3.2, second paragraph: BLM noted that because it will not have operational authority for the field, which implies that it cannot accept the field with the existing infrastructure intact. Therefore, it is inappropriate for DOE to assume that a new lessee would take over responsibility for the existing infrastructure.

> **DOE Response:** DOE has modified Section 1.1 to clarify that it assumes for the purposes of this SWEA that the property would be offered for lease and ultimately produced using EOR techniques. In addition, DOE acknowledges that BLM does not have the authority to operate NPR-3, but only to offer the property for lease. Therefore, DOE has modified the lease option to include full environmental restoration prior to transfer and lease. However, such activity does not meet DOE's requirement to obtain the highest economic use for the property.

Page 13, Section 3.2, second paragraph: BLM would not necessarily be able to guarantee nor enforce that routine and EOR activities would continue under the Lease Alternative.

DOE Response: DOE has modified Section 3.2 to address this concern.

Page 13, Section 3.2: BLM noted that Section 3.2 of the Draft SWEA states that the Lease Alternative will not be further considered yet 5.2 has an analysis of the impacts.

DOE Response: DOE has revised Section 3.2 and removed Section 5.2 from the document.

BLM questioned why there was no "retain and remediate" alternative in the Draft SWEA. One of the concerns with the alternative of divesting the property to the BLM was the level of remediation that would be necessary.

DOE Response: DOE has revised Section 3.2 to include language about full remediation of the property.

BLM noted that under Public Law 94-258 DOE must operate the NPR-3 at its maximum efficient rate and questioned why DOE cannot make NPR-3 profitable again.

DOE Response: DOE has modified Section 1.3 to reference the outcomes of other NPR site property transfers and to discuss the impact of those activities on DOE's administrative costs. Also, referred to the fact that implementing site-wide EOR would likely require congressional line-item budget approval, which is unlikely in the foreseeable future.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

In Reply Refer To:
06E13000/WY13CPA0134a

APR 0 1 2014

Mike Taylor, Director-Technical Assurance
U.S. Department of Energy
Rocky Mountain Oilfield Testing Center
907 North Popular Street, Suite 150
Casper, Wyoming 82601

Dear Mr. Taylor:

This letter is in response to the revised draft Site-Wide Environmental Assessment (SWEA) for the divestment of the Rocky Mountain Oilfield Testing Center (RMOTC) and Naval Petroleum Reserve No.3 (NPR-3) dated March 9, 2013, and received in our office on March 13. The Department of Energy (DOE) has requested the U.S. Fish and Wildlife Service (Service) review this document and provide any concerns with the proposed action.

The RMOTC/NPR-3 is located on 9,481 acres in northeast Natrona County, approximately 35 miles north of Casper, Wyoming. Under the proposed action, DOE anticipates ceasing current operations and transferring the property to a new owner by December 31, 2014. The draft SWEA addresses the property transfer and the environmental consequences of actions that a new owner(s) is (are) reasonably expected to take after obtaining the property. The draft SWEA incorporates both the 1998 and 2008 documents in their entireties and addresses environmental issues that were not fully analyzed in the previous documents.

In this draft SWEA, DOE identifies and evaluates, in detail, potential impacts to various resources from the following four possible alternatives for use of the property:

1. **Sale Option**. The preferred alternative is to sell NPR-3 in its entirety to a private entity for continued use as an oilfield.

2. **Lease Option**. This alternative entails transfer of the property to the Department of the Interior or Bureau of Land Management followed by establishing leases with private entities for the commercial production of oil and gas. DOE would retain leasehold interest in the property.

3. **Renewable Energy Development Option**. This alternative entails selling or leasing the property for utility-scale renewable energy development such as wind, solar, or geothermal energy.

4. **No Action**. Under this alternative DOE would continue operating the RMOTC and NPR-3. There would be no divestment of the facilities.

The Service provided comments in a letter dated March 15, 2013 (referenced WY13CPA0134) as requested by DOE pursuant to the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. § 4321 *et seq*. The comments provided included information on (1) threatened, endangered, proposed and candidate species, in accordance with the Endangered Species Act (ESA) of 1973, as amended, 16 U.S.C. 1531 *et seq*; (2) migratory birds, in accordance with the Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703 and the Bald and Golden Eagle Protection Act (Eagle Act), 16 U.S.C. 668; (3) wetlands and riparian areas, afforded protection under Executive Orders 11990 (wetland protection) and 11988 (floodplain management), as well as section 404 of the Clean Water Act; and, (4) other fish and wildlife resources considered under the Fish and Wildlife Coordination Act. Our review of the current draft SWEA determines that our previous concerns were addressed.

Should the preferred alternative be selected, the Service would like to bring to your attention an issue that has come to light in a nearby field where carbon dioxide (CO_2) is being used for enhanced oil recovery (EOR). This nearby field has many faults and fissures in the natural geology as well as those created from fracturing. Several abandoned wells and other bore holes have also been discovered. Because of this, CO_2 and/or hydrogen sulfide (H_2S) gas has been released in unexpected areas resulting in the death of several birds and other wildlife. These incidences have occurred primarily in low lying areas in and around drainages containing water where wildlife tends to congregate. We recommend that the future owner be informed of this and that they take the necessary precautions to prevent such releases from occurring in the future. Such measures could include monitoring for releases of gases that can occur in unexpected location, conducting inspections for dead wildlife, plugging abandoned wells, and contacting our office should birds or other wildlife mortalities be discovered.

For our internal tracking purposes, the Service would appreciate notification of any decision made on this project (such as issuance of a permit or signing of a Record of Decision or Decision Memo). Notification can be sent in writing to the letterhead address or by electronic mail to FW6_Federal_Activities_Cheyenne@fws.gov.

We appreciate your efforts to ensure the conservation of endangered, threatened, and candidate species and migratory birds. If you have questions regarding this letter or your responsibilities under the ESA and/or other authorities or resources described above, please contact Kim Dickerson of my office at (307) 772-2374, extension 230.

Sincerely,

for

R. Mark Sattelberg
Field Supervisor
Wyoming Field Office

cc: DOI, Regional Environmental Officer, Office of Environmental Policy and Compliance, Denver, CO (R. Stewart) (robert_f_stewart@ios.doi.gov)
FWS, Project Planning Coordinator, Region 6, Denver, CO (D. Carlson)
WGFD, Interim Non-game Coordinator, Lander, WY (M. Grenier)
WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (M. Flanderka)

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April 2, 2014

Mr. Mike Taylor
Director, Technical Assurance
U.S. Department of Energy
Rocky Mountain Oilfield Testing Center
907 North Poplar, Suite 150
Casper, Wyoming 82601

RE: Draft Site-Wide Environmental Assessment for the Divestiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No.3

Dear Mr. Taylor,

The Standing Rock Sioux Tribe's Tribal Historic Preservation Office (SRST-THPO) is in receipt of a draft environmental assessment (EA) titled "Site-Wide Environmental Assessment for the Divestiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No.3" by the Department of Energy (DOE) and provides the following comments.

General Statement for the Environmental Assessment.

The SRST-THPO believes that it is a conflict of interest to have Navarro Research and Engineering Inc. (Navarro) conduct this environmental assessment or any assessment for the purposes of National Environmental Policy Act (NEPA). Navarro Research and Engineering conducts multiple multi-million dollar contracts with the Department of Energy (DOE) and lists themselves as a premier contractor for the DOE for a variety of services. There is no possible way that Navarro can remain unbiased in their opinions about this project given the amount of money in terms of contracts that the DOE gives to Navarro. For example, Navarro was given a 25 million dollar contract to operate the Rocky Mountain Oilfield Testing Center (RMOTC) and to produce and sell crude oil and its related petroleum products from NPR-3. Additional contracts from the DOE to Navarro include:

- 16.8 million dollar contract for technical support in Golden, Colorado
- 50 million dollar contract to support Department of Energy renewable energy programs

So that is almost 100 million dollars in just three contracts with the DOE. Given that there is so much money provided to Navarro from the DOE this seems to be in conflict with Section 1506.5 of NEPA.

According to NEPA, per 40 CFR 1508.9 (a) (1), the Environmental Assessment will briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). This EA has failed in numerous regards to provide sufficient evidence that an EIS is not necessary for this proposed action and that a FONSI should be issued. The DOE has repeatedly ignored foreseeable effects and downplayed or outright misrepresented other effects to ensure that the proposed and preferred alternative would be accepted. The EA and the procedures followed by the DOE have been conducted in clear violation of NHPA by not conducting cultural resource inventories for historic properties of significance to tribes. The DOE has also not provided any inherent need for the proposed action that differs from the no action alternative beyond the fact that they must sell the property per congressional mandate. This action would violate NEPA and the NHPA as it currently stands as the foreseeable affects under the proposed action far outweigh and outnumber the continued maintenance and use of the site by the DOE. According to the EA provided, the no action alternative clearly has less potential to affect the environment and cultural resources as outlined in the SRST-THPO statements below. The DOE implies that the proposed and preferred action will not have a significant effect yet an examination of significance according to NEPA 1508.27 determines they have failed to prove this, in particular with regards to intensity and the severity of impacts as they relate to significance per 1508.27 (3) and 1508.27 (b) (8). The DOE fully acknowledges the direct impacts that will occur to historic properties under Section 5.1.1 of the EA but refuse to see that as deterrent to the proposed action. The DOE specifically removed from consideration numerous foreseeable and potential impacts under the proposed alternative in an attempt to downplay the proposed actions effects (alternative energy development and transferring the property to another federal agency in particular).

Specific information from the Environmental Assessment

Page 1; Section 1.1 Proposed Actions and Alternatives; Third Paragraph:

> *Given the current energy production environment, another alternative is to sell or lease the property for utility scale renewable energy production. This would involve placing a wind farm, solar farm or geothermal plant on the property.*

Why is the renewable energy alternative included as a proposed alternative or a portion of the proposed action when these alternative energy proposals are erroneously dismissed as viable alternatives within Section 3.3 of the EA? Statements such as these are used to give the appearance that additional alternatives were evaluated for this EA when in fact only the preferred alternative (selling the property) and the no-action alternative are only ever considered.

Page 3; Section 1.3 Background; First Paragraph under the graphic:

> *Recently, however, the DOE Secretary determined that continued government operation of NPR-3 was not in the national interest. DOE developed a disposition plan, which it presented to Congress and is now pursuing divestment of the property (DOE 2013a). Given that NPR-3 has been operated at the MER since 1976, the operational goals of private ownership are not expected to be significantly different from those of the DOE.*

How was the "continued government operation of NPR-3 not in the national interest" determined? Given that six years ago, the DOE was looking to expand the facilities and developing enhanced oil recovery (EOR) techniques (DOE 2008, 2011). Additionally, how was NPR-3 operated at maximum efficient rate (MER) if EOR techniques were not being applied as recently as six years ago? This is inherently contradictory.

Page 4; Section 1.4.2 Summary of Tribal Agency Scoping Comments; entire section:

> *Several tribal agencies also noted that the potential impacts of the Proposed Action on cultural resources and historic properties are required to be evaluated within this SWEA. DOE concurred with this observation and addresses cultural resources in Sections 4, Affected Environment, and 5 Environmental Consequences. Moreover, additional Class II and III inventories have been completed and conservation/preservation measures are being addressed under the process outlined in Section 106 of the NHPA.*

Currently, the tribes are being denied opportunities to conduct identification efforts pursuant to Section 106 of the National Historic Preservation Act (NHPA). This statement quoted above within the EA is misleading and misrepresentative of the good faith effort that is required by the DOE specifically as it relates to identification of historic properties per 36CFR800.4. The DOE is completely failing in its section 106 process as it pertains to the tribes. The Advisory Council on Historic Preservation (ACHP) commented that tribal identification efforts are necessary to account for traditional cultural properties and sacred sites. Class III archaeological surveys are not equivalent. This is being ignored by the DOE as well yet the DOE continues to maintain that they are following the law. They are not. There is no attempt being made by the DOE for conservation/preservation of any historic properties as they fully acknowledge that the proposed preferred action will remove historic properties from Federal protection. The SRST-THPO concurs with the Wyoming Archaeological Society comment in section 1.4.1 on page 4 that the NPR-3 remain under federal jurisdiction to conserve and preserve our sites. The SRST-THPO recommends that any future studies for historic properties include tribal personnel to account for our sites of significance which are often overlooked by the archaeological community.

Page 5; Section 1.4.3 Bureau of Land Management Comments; entire section but in particular:

> *BLM noted the potential complexities of continuing oil production on the property under potential multiple lease holders, as well as potential environmental liabilities discussed in previous Phase I Environmental Site Assessments.*

The BLM currently has multiple lease holders on numerous properties throughout the Great Plains and this project would not be handled any differently. The more concerning quote is the fact that previous Phase I Environmental Site Assessments demonstrated potential environmental liabilities that this current EA is ignoring in an attempt to rush this to a finding of no significant impact (FONSI). This is not the only time this EA ignores previous research to down play the effects that the preferred alternative will have.

Page 9; Section 3.1 Proposed Action (Preferred Alternative); entire section:

> *Under the Proposed Action (which is also DOE's preferred alternative), DOE would sell NPR-3 in its entirety to a private entity for continued use as an oilfield. Future management is expected to continue primary production activities (which also involve well refurbishment and down-hole stimulation), as well reintroducing a combination of secondary recovery and EOR techniques to dramatically increase future oil production.*

Why isn't the DOE continuing to use and maintain ownership of NPR-3 while employing these techniques themselves to "dramatically" increase future oil production? Neither the secondary nor tertiary recovery techniques have been employed at NPR-3 since the late 80's yet is being implied that any private company will need to employ them immediately to make it profitable.

The purpose and need of the Proposed Action (section 2 of the EA) is specifically predicated on the fact that the DOE must manage this property according to MER. The DOE seems to be ignoring the fact that this property could be profitable if they followed what they are predicting other companies to do once it is sold. The DOE outlines ideas on how to make this property profitable but doesn't account for that as an alternative within the EA for themselves. Once again, the DOE is downplaying and misrepresenting this section of the EA by not including this as an alternative within the EA. Private companies are profit driven. It would likely not be profitable to buy the property unless the activities as outlined by the DOE are undertaken yet the DOE dismisses them for their own accounting of profitability of this property as it applies to MER. This is purposefully misleading to ensure that the Proposed Action and preferred alternative are accepted.

Page 9-10; Section 3.1.1 Primary Production Activities to Incrementally Increase Oil Production; entire section:

> *Together, these routine activities could increase oil production by approximately 15 percent over current levels (Frahme and Mortiz 2012).*

Does an additional 15% over current levels meet and exceed the threshold for MER and therefore the profitability of continued maintenance of the property by the DOE? If it does, why is the DOE not listing this as an alternative to the Proposed Action and preferred alternative? These same questions can be applied to section 3.1.2 and 3.1.4. Additionally, the entirety of these sections amount to little more than speculation on the part of the DOE on how a private entity will access oil deposits once it is transferred to them. Primary production techniques only recover between 5-15% of the oil

within a reservoir to start. According to this sentence within the EA for primary recovery techniques; following the practices outlined in this section would account for 20-30% of the oil in the reservoir which is an extremely high number for primary recovery without even addressing the secondary and tertiary techniques. This high amount of oil recovery certainly should meet any levels set out in any MER plan and therefore invalidate the supposed need to sell the property due to it not being profitable.

Page 11; Section 3.1.3 Enhanced Oil Recovery; final paragraph of section:

> *For the purposes of this assessment, DOE assumes that the new ownership will drill 100 new injection wells and disturb 300 ac (121.4 ha) for pipeline installation. Moreover, DOE anticipates that the new owners will follow existing crude oil product pipeline route for EOR chemical distribution pipelines, so no additional disturbance will result.*

EOR techniques account for recovery of between 30-60% of an oil reservoir. If this amount is coupled with the primary techniques and numbers as outlined above it amounts to between 50 and 90% of the reservoir being recovered. The SRST-THPO has concerns about how the DOE has managed to say that recovery on this scale would not be profitable. Perhaps if the DOE was not issuing 25 million and 50 million dollar contracts to Navarro Research and Engineering they would be able to turn a profit off the NPR-3 and ROMTC area. Coincidentally, one of those contracts expires at the same time it is congressionally mandated to sell this property.

DOE cannot accurately predict what any potential new owner will do for the property so the numbers outlined above would be considered to be speculative. There is absolutely no feasible way that DOE can expect that the new owners will carry out any of these actions let alone predict what routes they will follow for any new pipelines. Once again, this is speculation to attempt to minimize and down play any potential environmental effects.

Page 12; Section 3.1.5 Summary of the Proposed Action:

> *In summary, DOE proposes to sell NPR-3 to a private entity and that the new owner will continue routine operations to promote primary production while also employing an EOR strategy to increase oil production. This would be consistent with the site's highest economic use.*

Was this highest economic use model used in determining that NPR-3 is not profitable and no longer in the national interest? Given that somewhere between 50 to 90% of the oil in the reservoir can be recovered based upon the numbers in this EA this seems to be a huge discrepancy in terms of profitability for the DOE. Once again, the DOE is speculating on actions that they have no prior knowledge of supposedly. These comments would seem to be more appropriate in terms of cumulative and indirect effects as foreseeable and likely effects and not to be used as the basis for downplaying any environmental factors.

Page 13; Section 3.2 Property Transfer and Lease of NPR-3 to a Private Entity for Continued Oil Production, third paragraph of Section:

> *Implementation of the Lease Alternative is unlikely. The property could not be leased in full because the Minerals Leasing Act (MLA) of 1920 as amended and administered by the Department of the Interior, limits individual leases to no more than 2560 ac (1036 ha) each. This situation would reduce the pool of potential lessees and thereby significantly impact the revenue potential to be gained from offering the leases. Moreover, because the site has operated as a single oilfield since its inception, current infrastructure and facilities are not designed to be operated by multiple entities. Therefore, it is likely that much of the existing infrastructure would need to be substantially modified or replaced in order for multiple lessees to be able to effectively operate on their portion of the field. Finally, the legislative language withdrawing the land and establishing NPR-3 would have to be rescinded by Congress before the property could be transferred to BLM. Given that the BLM commented during the scoping process for this SWEA that the transfer would not be in the publics' interest, DOE believes that the Lease Alternative is not feasible and will not be further discussed in this SWEA.*

Regardless of any legislative action required to transfer the property; the DOE has undertaken such actions in the decades since 1976 per the DOE Website (http://energy.gov/fe/services/petroleum-reserves/naval-petroleum-reserves):

> *NOSR-1 and -3 - Subsequently, the Department of Energy transferred two of the Naval Oil Shale Reserves, both in Colorado, to the Department of the Interior's Bureau of Land Management. Like many other federally owned lands, these properties are offered for commercial mineral leasing, primarily for natural gas production and future petroleum exploration.*
>
> *NPR-2 - Enactment of the Energy Policy Act 2005 effected the transfer of administrative jurisdiction and land management of the Naval Petroleum Reserve #2 (NPR-2) to the Department of the Interior, with the exception of certain lands that were conveyed to the City of Taft, Calif., and some sites in Ford City that are to be disposed of by the Government after environmental assessments are completed. Those activities are ongoing.*

Only one Naval Petroleum Reserve has ever been sold privately (NPR-1) with the majority being transferred to other Federal ownership and management. It is inexcusable for this EA to ignore this option when it has been the standard practice for divesting DOE's interest and management in the past. The comments considering the problems of individual leasing per the MLA are not affecting any of the other NPR's that were transferred to Department of Interior (DOI) nor do they affect NPR-A in Alaska which has been under BLM management since 1976. The comments contained within this section are without merit and have no grounds for consideration to eliminate this alternative from consideration within this EA given that similar issues occurred on other NPR's that were ultimately transferred to DOI.

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DOE Website (http://energy.gov/fe/services/petroleum-reserves/naval-petroleum-reserves)

> *NOSR-2 - In 2000-2001, the Department returned the undeveloped Naval Oil Shale Reserve #2 in Utah to the Northern Ute Indian Tribe in the largest transfer of federal property to Native Americans in the last century.*

The Cheyenne River Sioux Tribe Tribal Historic Preservation Officer has specifically asked if returning the lands to the tribes was an option. Apparently, according to the DOE, returning the land to the tribes has been considered and achieved in the past but is not considered as an alternative for NPR-3. Why the discrepancy? This should be considered as an alternative within the EA.

Page 13; Section 3.3.1 Wind Power, second paragraph:

> *However, the wind power density at NPR-3 ranges from Class 2 to Class 4 (Frahme and Moritz 2012).*

Areas designated class 3 or greater are suitable for most utility-scale wind turbine applications, whereas class 2 areas are marginal for utility-scale applications but may be suitable for rural applications (http://www.nrel.gov/gis/wind_detail.html). Therefore, dismissing the potential for this area for wind power farms based upon wind density holds no merit given that additional lands could be bought or easements obtained in the adjacent lands where wind power is Class 3 or greater. This is not being considered as a foreseeable effect when it could very well be considered by a developer.

> *Further, in 2004, staff from DOE's NREL and Gulf Engineers and Consultants assessed NPR-3 for wind power potential. They determined that utility-scale wind farming (30MW+) at NPR-3 was not economically viable due to insufficient land, poor ground conditions, potential impacts on cultural and historic sites, and strong competition from other sites within the State.*

One of the arguments against wind power development at NPR-3 according to this study is the potential impacts to cultural and historic sites. However, the DOE's proposed action will absolve them of any Federal responsibility to protect these sites by selling the property privately. 10,000 acres is a considerable amount of land just for the NPR-3 site itself. If additional adjacent land is bought or easements are obtained for utility scale wind power purposes it would be economically viable to undertake at NPR-3. This is a potential foreseeable effect that is being ignored and downplayed in this EA. The private sale of this land would eliminate one of the major federal actions to developing a wind farm which is compliance with Section 106 of the NHPA by the Federal agency.

A report written by Navarro Research and Engineering in 2007 titled "Geothermal Resources at Naval Petroleum Reserve-3 (NPR-3), Wyoming" commented that NPR-3 is an excellent test site for wind and solar generation alternative energy projects. The assertion that this type of development is not feasible has no grounds and is without merit when carefully considered.

Page 14; Section 3.3.2 Solar Power, entire paragraph:

> *Entities interested in utility-scale solar power would find that infrastructure costs would be substantially lower at sites that are within five miles of their primary customers. Therefore, DOE believes that utility-scale development of solar energy at NPR-3 is not feasible and will not be further discussed in this SWEA.*

The DOE is misrepresenting solar power with this comment by confusing utility scale solar power with distributed generation. Utility scale solar power is energy generated into electricity and sold to utility providers while distributed generation refers to electricity that is produced at or near the point where it is used. Distributed solar energy can be located on rooftops or ground-mounted, and is typically connected to the local utility distribution grid. Utility scale solar power would never need to be located near its primary customers as that is not the intended recipient of the electricity. Utility scale solar power only needs an interconnection with capacity to carry the electricity and does not therefore need to be located anywhere near where the primary customers of the electricity are. There are currently Right of Way easements within NPR-3 for power lines that could easily accommodate this assuming capacity exists on the line. A report written by Navarro Research and Engineering in 2007 titled "Geothermal Resources at Naval Petroleum Reserve-3 (NPR-3), Wyoming" commented that NPR-3 is an excellent test site for wind and solar generation alternative energy projects. Once again, the DOE is downplaying and misrepresenting this section by not including this as a foreseeable and viable possibility within the EA. The assertion that this type of development is not feasible has no grounds and is without merit when carefully considered.

Page 14-15; Section 3.3.3 Geothermal Power, entire section:

> *The geothermal gradient at NPR-3 is rather steep (approximately 20* F per thousand vertical ft.). The temperature of the water co-produced from the Pennsylvanian Tensleep Sandstone (the deepest formation from which oil is produced at NPR-3) is about 180 F.

These numbers contradict the report written by Navarro Research and Engineering in 2007 titled "Geothermal Resources at Naval Petroleum Reserve-3 (NPR-3), Wyoming. The geothermal gradient in this report is listed as 25 F and lists the Tensleep formation at 180-200 F. NPR-3 currently as of 2007 conducted surface disposal of waste water at 190 F. It is disingenuous of the DOE to only use the lowest number to misrepresent the potential for geothermal when they are currently operating at higher numbers. The following is a direct quote from the conclusions of the Navarro Research and Engineering 2007 report:

> *The Rocky Mountain Oilfield Testing Center has been recognized by the geothermal power industry as a potential world class demonstration site for the recovery of waste heat from co-produced oil field water.*

Page 15; Section 3.3.3 Geothermal Power, entire section:

> *Results of the test indicated that if the geothermal gradient persists at greater depths water would have to be extracted from approximately 12,000 ft. (3.6 km) below land surface to make electrical production economical. Unfortunately, the top of the Precambrian basement at NPR-3 starts at 7,000 ft. The basement is composed mostly of Archean granites and granitic gneisses. These types of rocks do not have enough natural permeability to provide sufficient fluid for a successful geothermal power plant. Therefore, DOE believes that utility-scale development of geothermal energy at NPR-3 is not feasible and will not be further discussed in this SWEA.*

This section once again contradicts the 2007 Navarro Research and Engineering report in which it states that water supply wells drilled beneath the Tensleep zone into the underlying Mississippian Madison Limestone yielded rates exceeding 20 MBWPD flowing at formation temperatures projected to be about 230 F. 20 MBWPD would be the equivalent of 600 gallons per minute of flow. Currently, the wasted heat on a daily basis is equivalent to 22 MW of electrical power although only a small percentage is usable with 2007 technology. RMOTC testing partners predicted that about 300 KW of usable power from the 2007 co-produced throughput. Substantially more power could be produced from deeper formations using wells specifically designed for hot water production. Artificially fracturing granitic basement rocks and circulating water within a pattern of producing and injection wells at depths of 8000-12000 ft. or more would exceed temperatures of 300 F according to this report. The 2007 report specifically mentions that using modern binary power plants; temperatures as low as 165 F can be utilized. This would place the Tensleep formation well above the range for modern capabilities yet the DOE is choosing to ignore and downplay this option yet again to ensure that only the preferred option is considered. The assertion that this type of development is not feasible has no grounds and is without merit considering that the DOE and Navarro Research and Engineering analysis from 2007 completely contradicts the statements made in this section.

Page 15; Section 3.4 No Action Alternative, entire section:

> *Primary production activities discussed above would continue.*

Why is the DOE ignoring their anticipated developments for private ownership, in particular with EOR, when they address the No Action Alternative? Why is the DOE not considering maximizing the yield as they have for the preferred alternative under the No Action alternative? Why are these methods not being considered under the No Action Alternative for MER? This section is misleading as it ignores processes and developments outlined under the preferred alternative that the DOE could easily adopt themselves in assessing which alternative to undertake. However, a real assessment of these alternatives might not push the preferred alternative to the forefront therefore it is not surprising that they are being ignored under the No Action alternative.

Page 40-41; Section 4.6 Cultural Resources, entire section:

> *Cultural resources include archaeological, historical, and ethnographic sites, and numerous sites have been identified onsite at NPR-3.*

The DOE is once again downplaying this entire section. The use of vague terminology such as numerous instead of providing actual numbers for National Register eligible sites or for sites in total thus far on NPR-3 is evidence of this. It is one thing to state that there are numerous sites on a property; it is entirely different to state that there are 200 sites eligible to the National Register of Historic Places. The DOE is refusing to list the actual numbers in this section to downplay the importance of this area from a traditional, cultural and archaeological perspective. As mentioned previously, there is no attempt being made by the DOE for conservation/preservation of any historic properties as they fully acknowledge that the proposed preferred action will remove historic properties from Federal protection despite any mitigative actions that the DOE might undertake in accordance with a MOU as mentioned within the EA.

> *DOE initiated the National Historic Preservation Act Section 106 process described in 36 CFR 800 in 2013 in order to consult with the WYSHPO, Advisory Council on Historic Preservation (ACHP), appropriate Native American tribes, and other members of the public as necessary to identify and implement appropriate mitigation for existing historic and cultural sites on the property. A site-wide Class I historic/cultural/archaeological survey was completed as were additional Class II and Class III inventories to identify all sites potentially eligible for listing on the NRHP.*

Currently, the tribes are being denied the opportunity to conduct surveys for sites of traditional and cultural significance to them as afforded under Section 106 of the NHPA. The SRST-THPO, Cheyenne River Sioux Tribe Tribal Historic Preservation Office (CRST-THPO) and the ACHP have all recommended that surveys for our sites of significance be undertaken yet the DOE refuses to allow this and will only allow site visits for one day to NPR-3. This contradicts the requirements of Section 106 entirely. Site visits do not equal identification nor does a Class III archaeological survey equal a survey by tribes for their sites of significance. 36CFR800.4 sets out the steps that an agency must follow to properly identify sites. Asking the tribes if there are any sites in an area is not sufficient for identification according to case law (Sandia Pueblo v United States of America 50 F.3rd 856 March 14th, 1995).

> *Representatives of various Sioux and Crow tribes and the National Park Service participated in a series of site visits to evaluate the cultural significance of the existing historic properties. Previous Section 106 efforts did not identify any traditional cultural properties (DOE 2008).....*

Who identified the presence of traditional cultural properties (TCP) for NPR-3? The SRST-THPO defines TCP's as sites of religious and cultural significance to tribes and not by the limited definitions contained within Bulletin 38. Non-tribal personnel cannot properly identify sites of significance for tribes due to the reasons as outlined in the following paragraphs.

The archaeological community lacks the requisite knowledge to understand or assess sites of significance to tribes. Archaeologists fail to see the same features or understand features the way tribal

personnel can. Archaeologists interpretations of these sites do not reflect the traditional knowledge of tribal members in terms of the activities conducted at these sites and as such only tribal members can make recommendations in terms of what is actually out there and what needs to be avoided. Therefore, archaeologists do not possess the required knowledge to accurately delineate stone feature sites. Tribal personnel should be the only people delineating and making recommendations on stone feature sites. Therefore, there exists a discrepancy in site boundaries and buffers that results in site destruction that could have been avoided had tribal personnel surveyed the project which is allowed for within 36CFR800.4 (parts A and B) and to assess the eligibility of sites of significance to tribes per our expertise (36CFR800.4 (C)). This is due to the continued destruction of sites that have only been assessed by archaeologists.

The SRST-THPO disagrees with the interpretations made by archaeologists and SHPO's for the functions, definitions and uses of sites of significance to tribes. In particular, the definition of stone rings as "Tipi" rings or habitation sites and the assessment that cairns are isolates in some states. This directly relates to the knowledge that tribal personnel possess in understanding these sites. For further clarification, all eligibility determinations for sites of significance to tribes and any sites containing features that are significant to tribes (in particular, but not limited to, stone rings, stone arcs, cairns, burials) must have their eligibility assessed by tribal personnel and their expertise per 36CFR800.4 (c) (1). Additionally, the boundaries of any such sites and any proposed undertaking affecting them will need to be examined at these sites as well per 36CFR800.4. The SRST-THPO disagrees with any determinations made for sites of significance to our tribe as recommended in previous Class I and Class III documents until such time as we can assess their eligibility utilizing our specialized expertise per 36CFR800.4 (c) (1) as part of our identification efforts under Section 106.

The SRST-THPO is concerned with the adequacy of site visits for the numerous sites identified by archaeologists and tribal members (Cheyenne River Sioux Tribe) in terms of fulfilling your Section 106 identification issues in coordination with NEPA. This statement is based primarily upon a review of the reports from the archaeological field, discussions with the Cheyenne River Sioux Tribe Tribal Historic Preservation Officer and the November 08, 2013 and April 02, 2014 phone conferences.

Page 52; Section 5.1.4.2.1 Surface Water, entire section:

> *DOE expects the new owners will implement EOR projects that may increase oil production by more than 4000 bbls/day...*

These EOR techniques will increase the gallons taken out of the NPR-3 reservoir by 168,000 gallons per day (1 barrel equals 42 gallons). This is a substantial increase and must not be dismissed throughout this EA

Page 53; Section 5.1.4.2.1 Surface Water, entire section:

> *If the new owners choose to implement horizontal drilling in the Niobrara or Steele Shale formations, then DOE estimates that each well would require approximately 160,000 gal (0.6 million L) of water for fracking.*

Fracking was dismissed earlier in the EA (Section 3.1.4) as it was determined to not be viable due folds and faults present in the geology. Why is this being discussed here? Additionally, where did the DOE get this estimate from? Horizontal fracking typically uses approximately 7 to 31 times that amount of water per well (1 to 5 million gallons of water per well). Once again, it appears that the DOE is adjusting the numbers as they did previously in this EA to ensure passage of their preferred alternative.

Page 53; Section 5.1.4.3 Surface Water, third paragraph:

> *Water for fracking new wells (including horizontal wells if installed) would come from produced water out of oil bearing formations rather than site groundwater.*

This is factually and blatantly incorrect. Horizontal fracking requires clean water sources and not produced water or else there would be no need for the oil industry to constantly find clean sources of water such as the Missouri River in North Dakota to use in the Bakken formation. The outright and blatant misinformation contained within this EA is alarming and should invalidate it entirely.

Page 54, Section 5.1.6.1, Aquatic Biology, entire section:

> *NPR-3 is bisected and drained by Teapot and Little Teapot Creeks. These drainages are naturally intermittent and are not considered to provide well-established aquatic habitat at the NPR-site. Because no perennial water bodies occur on or in close proximity.....*

According to Section 4.3 of this EA, Teapot Creek remains a perennial stream throughout the entirety of its course through NPR-3. The Little Teapot creek also becomes perennial in section as well. This discrepancy in listing these water body flows requires a re-evaluation of adverse effects to aquatic biology. The DOE is once again downplaying the potential effects to any aquatic environments.

> *However, if the water discharge is stopped, the wetlands that are currently dependent on produced water discharges will revert back to their natural condition. This is not considered an adverse environmental impact, as it does not result in a condition inferior to that which existed before the start of oilfield operations.*

This is some truly faulty logic being applied here. Any change to the current status of a wetland would be considered an adverse environmental effect if it results in the wetland no longer being considered a wetland. This is the equivalent of a telling a heart transplant patient that they are going to remove the transplanted heart and put back the faulty heart they had previously and that it is ok because it won't

cause any adverse effect to them. The current status of the wetland must be considered with any potential effect.

Page 54, Section 5.1.6.2, Terrestrial Vegetation, entire section:

> *Routine new well installation would disturb approximately 40 ac (16.2 ha) of vegetated land per year.*

Where did the DOE come up with this number? Considering that numerous sections within this EA have had their numbers adjusted or downplayed, the SRST-THPO is concerned that this number is in no way factual. This number seems extremely low given the amount of EOR procedures that are recommended.

Page 56, Section 5.1.7, Cultural Resources, entire section:

Please see the comments listed for Section 4.6 of the EA above.

Page 60, Section 5.1.11, Cumulative Effects, entire section:

This section does not adequately address the potential effects that this proposed action will have. It is simply insufficient to address the whether or not anything will be significantly affected per the definition at 40CFR1528.7.

If you have any question regarding these comments please contact Waste'Win Young –Tribal Historic Preservation Officer (wyoung@standingrock.org) and Terry Clouthier – Tribal Archaeologist (tclouthier@standingrock.org) or by phone at (701) 854-2120.

Please refer to THPO file # 14-13 for this project.

Sincerely,

STANDING ROCK SIOUX TRIBE

Terry Clouthier
Tribal Archaeologist

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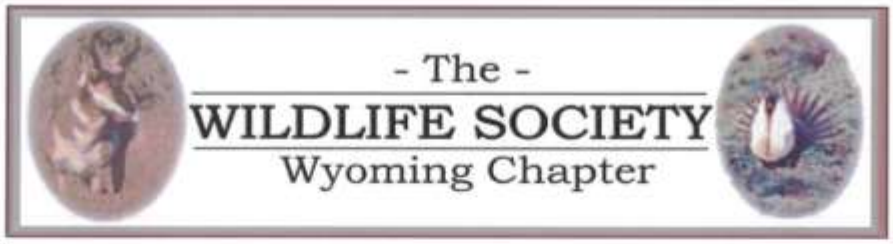

12 April 2014

Mr. Mike Taylor
Director, Technical Assurance
U.S. Department of Energy
Rocky Mountain Oilfield Testing Center

Dear Mr. Taylor:

On behalf of The Science Committee of the Wyoming State Chapter of The Wildlife Society (WYTWS), we appreciate being contacted for commenting on the *Draft Site-Wide Environmental Assessment for the Diversiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No. 3*. The proposed action obviously has the potential to impact wildlife and their habitats on site, and possibly sets a precedent that will be revisited in the future depending on what occurs with this particular situation. We provide comments consistent with scientific perspective as to which alternative would be in the best interest of wildlife that inhabit the area of interest.

Based on the alternatives provided through the assessment, we believe that alternatives 2 or 3 would be most beneficial for wildlife and their habitats. Under alternative 2, the BLM would likely have greater authority and incentive to implement policy, standards, and guidelines that protect and mitigate negative effects to wildlife and their habitats when compared to operations that occur under private ownership. Invasive plant species and noxious weeds are a problem on the site, and if sold as deeded land, it would be difficult to direct or negotiate actions that control or mitigate the spread of non-native and invasive species. For example, there are several golden eagle nests on and directly adjacent to the property and clearly defined eagle foraging areas on the property (i.e., prairie dog towns) that would likely be better managed by BLM in light of BGEPA.

In the long-term, if the BLM leased the property or managed the area under DOE ownership we believe that conservation and management of the area would be much more feasible than if ownership was transferred to a private entity. If the property was managed or overseen by a public agency (i.e., alternatives 2 or 3), future leases would be required to follow standards and guidelines put in place to help protect Wyoming's wildlife and habitat resources. The argument could be made that, even though it may not be economically profitable for the DOE to continue administering the area, other interests for the resource make it worth maintaining in the current *status quo*. We believe an area's value to the state and country can't be judged solely by the net economic value of current and future mineral production.

Based on the scientific merits and potential to impact wildlife and wildlife habitats, it is critical to maintain some kind of oversight from the standpoint of maintaining and promoting natural benefits of the landscape and wildlife populations therein. If the DOE continues to operate the area, perhaps there could be efforts set forth to transfer direction to a federal or state agency in the future. Prior to transition, DOE

could close existing permits not required for maximum efficient rate (MER) and concentrate activities to central portions of NPR-3 for future lease use. This would allow remaining production wells and infrastructure to be leased and would potentially open lands to the public and to beneficial management strategies.

We realize the difficulty in evaluating this situation from fiscally and biologically feasible perspectives. From our viewpoint, it is most critical to assess the potential negative impacts to wildlife and wildlife habitats. We believe that potential negative impacts to wildlife would most likely result from increasing oil exploration and drilling activities in the area if the property were sold to a private entity that is not necessarily required to draft and implement a plan with standards and guidelines that promote wildlife and wildlife habitats or mitigate negative impacts therein. Again, we sincerely thank you for the opportunity to comment, and the WYTWS would be happy to provide to provide you any other expertise or assistance as this project moves forward.

Sincerely;

Martin Grenier
WYTWS President

Dan J. Thompson
WYTWS Science Committee Chair

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APR 18 2014

Ref: 8EPR-N

Mr. Mike Taylor
Director, Technical Assurance
U.S. Department of Energy
Rocky Mountain Oilfield Testing Center
907 North Poplar, Suite 150
Casper, WY 82601

Re: Draft Site-Wide Environmental Assessment for the Divestiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No.3

Dear Mr. Taylor:

The U.S. Environmental Protection Agency Region 8 has reviewed the Department of Energy's Draft Site-Wide Environmental Assessment (SWEA) for the Divestiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No.3 (NPR-3). Under the Proposed Action of the SWEA, DOE would discontinue testing at the Rocky Mountain Oilfield Testing Center (RMOTC) and sell NPR-3 to one or more entities for use in commercial oil production. We are providing comments in accordance with Section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4332(2)(C) regarding the status of the landfills, the petroleum contaminated soils treatment areas and on the applicability of Section 120(h)(3)(C) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to the proposed property transfer.

The SWEA indicates that there are two inactive industrial waste landfills onsite (IND-1 and IND-2). Scoping comments submitted by Wyoming Department of Environmental Quality (WDEQ) on March 15, 2013, indicate that DOE is working with WDEQ on closure and long term monitoring for the two landfills. It is our understanding from discussions with WDEQ that the DOE is investigating groundwater monitoring results that may indicate the presence of benzene. We recommend that DOE continue to work with WDEQ on any remaining outstanding issues related to the landfills.

The SWEA indicates that three of the composting facilities currently comply with Wyoming Oil and Gas Conservation Commission requirements and will be transferred to the new owner in their existing condition. The document does not describe the status or future plans for the fourth composting facility. We recommend that DOE continue to work with WDEQ and the Wyoming Oil and Gas Conservation Commission, as appropriate, regarding requirements for the petroleum contaminated soils treatment areas.

The Bureau of Land Management (BLM) submitted scoping comments indicating a concern over potential liabilities if the BLM were to assume responsibility for the property. The BLM reviewed

numerous environmental reports regarding the facility and operations. Based on the information that is available in the SWEA and BLM's comments, it is unclear whether CERCLA hazardous substances have been well investigated. Further investigation may be required for transferring the property to a private company. The transfer of the property will require a CERCLA 120(h) certification in the context of a Finding of Suitability to Transfer document and our concurrence. The point of contact for this effort is Rob Stites at (303) 312-6658. We recommend that the DOE contact Mr. Stites, at EPA, Region 8, for further information.

The EPA looks forward to working with the DOE on issues related to selling NPR-3 to another entity. Please feel free to contact Vanessa Hinkle of my staff, (303) 312-6561, if you have any questions or would like to discuss our comments or Rob Stites at (303) 312-6658 for issues related to property transfer.

Sincerely,

Philip S. Strobel, Acting Director
NEPA Compliance and Review Program

Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

Matthew H. Mead, Governor

Todd Parfitt, Director

April 14, 2014

Mr. Michael Taylor
US DOE
907 N. Poplar, Suite 150
Casper, WY 82601

Re: Comments on the *Draft Site-Wide Environmental Assessment for the Divestiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No. 3* (DOE/EA-1956)
SHWD File # 20.416

Dear Mr. Taylor:

The Wyoming Department of Environmental Quality, Solid and Hazardous Waste Division, Solid Waste Permitting and Corrective Action Program (Department) has reviewed the *Draft Site-Wide Environmental Assessment for the Divestiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No. 3* (Draft SWEA) dated March 2014. Based on our review, the Department is submitting the following comments pertaining to the Draft SWEA.

1. Section 4.3.2 (Groundwater) states that there are six groundwater monitoring wells at the Industrial Landfill #2 (IND-2). In a letter dated February 24, 2014, the Department advised RMOTC that the integrity of three of the monitoring wells (98-1-X-3, 98-2-X-3 & 98-2-X-4) was of concern and that well inspections would need to be conducted. In the same correspondence the Department also noted that benzene was detected slightly above the USEPA MCL in well 98-1-X-3 at 5.2 ppb during the October 2013 sampling event and would require additional confirmation sampling once well inspections have been completed. At this time, the Department is uncertain if the monitoring network at the IND-2 is adequate to effectively monitor impacts to groundwater.

2. Section 4.8.4 (Waste Disposal) states that "NPR-3 has two inactive waste landfills (IND-1 and IND-2), an inactive land farm (associated with IND-2) and four active petroleum composting facilities." The Department is not aware of the four "active" petroleum composting facilities and is requesting additional information to evaluate if further regulatory action(s) may be required by the Department.

Herschler Building · 122 West 25th Street · Cheyenne, WY 82002 · http://deq.state.wy.us

ADMIN/OUTREACH	ABANDONED MINES	AIR QUALITY	INDUSTRIAL SITING	LAND QUALITY	SOLID & HAZ. WASTE	WATER QUALITY
(307) 777-7758	(307) 777-6145	(307) 777-7391	(307) 777-7369	(307) 777-7756	(307) 777-7752	(307) 777-7781
FAX 777-7682	FAX 777-6462	FAX 777-5616	FAX 777-5973	FAX 777-5864	FAX 777-5973	FAX 777-5973

3. Section 5.1.9 (Waste Management) states that there are "four active petroleum composting facilities." However, the last paragraph in this section states that "three" composting facilities currently comply with Wyoming Oil and Gas Conservation Commission (WOGCC) requirements. As stated above, please provide additional information on the composting facilities so an evaluation by the Department can be made to assess if further regulatory action(s) may be required.

4. The NPR-3 site has two inactive industrial waste landfills (IND 1 and IND 2), an inactive PCS waste land farm associated with IND 2. The older industrial landfill (IND 1) pre-dated the Department's landfill permitting regulations and has been closed since 1991. The second industrial landfill (IND 2) and its associated land farm were constructed and permitted in 1990 and have been inactive since 2001. The post-closure period for the industrial landfill (IND 2) will be required to comply with the groundwater monitoring requirements of Chapter 3, Section 6 (b) (i) of the Solid Waste Rules and Regulations and shall extend for a period of not less than thirty (30) years after the certification of closure activities is approved by the WDEQ Administrator.

If you have any questions pertaining to this matter, you may contact David Reid at (307) 335-6933.

Sincerely,

Luke J. Esch
Administrator
Wyoming Department of Environmental Quality
Solid and Hazardous Waste Division

cc: Patrick Troxel, District Supervisor ☞ David Reid, Project Manager ☞ Lander SHWD File # 20.416
: Cheyenne SHWD File # 20.416
: Mike Barrash, Wyoming Attorney General's Office, Cheyenne

Bureau of Land Management

Site-Wide Environmental Assessment for the Divestiture of Rocky Mountain Oilfield Testing Center and Naval Petroleum Reserve No. 3 (EA-1956-DEA-2014) Comments

1. Page 1, Section 1.1, second paragraph: The assumption that oil production would be the same is wrong. The new federal agency would have no operational ability to continue productions and production would only continue under the BLM 'if' the area were lease 'and' those leases were developed to production. Under our present Oil and Gas Leasing program only about 6% of leases are ever developed to production.
2. Page 4, Section 1.4.2, Where is the mention of the letter from one of the Wyoming tribes that requested that the land be transferred to them?
3. Page 5, Section 1.4.3: Where is the analysis of the liabilities from the existing infrastructure that was stated in Rocky Mountain Oilfield Testing Center / Naval Petroleum Reserve No.3 Final Site-Wide Environmental Assessment (EA-1583-FEA-2008) page 40, states "While the future environmental liabilities to the United States Government would be minimized by this approach, a decision on the sale or transfer of NPR-3 would be made only when the remaining liabilities of the site and the residual value of the reserve could be quantified."
4. Page 13, Section 3.2, second paragraph: The assumption that a new lessee would take over responsibility for the existing infrastructure is wrong. There is no way for the BLM to force a lessee to take over any O&G infrastructure. That would all be the Federal Government's responsibility and would fall to the BLM to rehab and restore not the new lessee.
5. Page 13, Section 3.2, second paragraph: the assumption that all the activities for economic recovery would continue is completely wrong. The BLM would not necessarily be able to guarantee nor enforce this. It would all be dependent on market forces which the EA already alludes to the fact that oil and the field have already made the area less than payable so how can you assume anyone else would throw money down that hole (pun intended).
6. Page 13, Section 3.2: You state that the alternative will not be further considered yet 5.2 has an analysis of the impacts and goes so far as to say that they would the SAME as the proposed action in 5.1. 3.4 is dismissed and you do not analyze that alternative so why this one? You have analyzed the BLM alternative and you continue to look at the alternative. As such the BLM should be a cooperating agency and be allowed to have input into the document.
7. Why is there no "retain and remediate" alternative? One of the concerns with the alternative of divesting the property to the BLM was the level of remediation that would be necessary. If DOE would remediate the property I would assume we would be more willing to consider accepting the lands in the future. Remediation would also help maximize the value of the property which would meet their requirements under Title XXXIV of the National Defense Authorization Act for Fiscal Year 1996.
8. Under Public Law 94-258 DOE must operate the NPR-3 at its maximum efficient rate. Their projections are that the field will be unprofitable by 2015. The preferred alternative is to sell the property for commercial oil production. Why can't DOE make NPR-3 once again profitable if it is assumed a private entity could purchase the property and make it profitable?