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OPERATORS HANDBOOK FOR NONFEDERAL OIL AND GAS DEVELOPMENT IN UNITS OF THE NATIONAL PARK SYSTEM

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INTRODUCTION

The National Park Service (NPS) has developed this handbook to help existing and prospective nonfederal oil and gas operators in units of the National Park System to:

- understand and follow the NPS regulations at 36 C.F.R. Part 9 Subpart B, and
- prepare a "plan of operations" or "§ 9.32(e) application" to conduct oil and gas operations.

Petroleum development in national parks most often occurs where entities other than the federal government own the rights to the oil and gas. Individuals, corporations, state or local governments, Indian tribes, or native corporations may own these "nonfederal" rights. In some cases, the holder of oil and gas rights on a tract of land in a park may own both the surface and mineral estate. However, most often when the park was established the United States acquired the surface estate and left the mineral estate in private or state ownership.

The NPS must recognize nonfederal mineral rights in park units. It must also fulfill Congress' mandate to leave park resources and values unimpaired for the enjoyment of future generations.[1] In rare instances where nonfederal oil and gas activities would prevent the NPS from meeting this mandate, the federal government will seek to acquire the mineral interest.

Congress granted the NPS authority to issue regulations as needed to protect National Park System lands and waters.[2] The NPS issued regulations for nonfederal oil and gas operations on December 8, 1978. The regulations commonly known as the "9B Regulations" are found at Title 36 of the Code of Federal Regulations, Part 9, Subpart B. Appendix A contains a copy of the 9B regulations.

USE OF THIS HANDBOOK

Operators should first familiarize themselves with the NPS regulations by reading the overview in Chapter 1, the NPS oil and gas regulations in Appendix A, and the plan of operations permitting process in Chapter 2. Operators can then focus on the following chapter(s) pertaining to the particular types of activities that are planned:

Ch. 3 - Geophysical Exploration Operations,
Ch. 4 - Drilling and Production Operations,
Ch. 5 - Directional Drilling Operations,
Ch. 6 - Existing Oil and Gas Production Operations,
Ch. 7 - Well Plugging and Surface Reclamation,
Ch. 8 - Transpark Pipelines, and
Ch. 9 – 9B Flowlines and Gathering Lines.
Chapters 10, 11, and 12 cover performance bonds, spill control and emergency preparedness plans, and operator liability.

[1] The Organic Act [16 U.S.C. §§ 1 *et seq*] orders the NPS "...to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner...as will leave them unimpaired for the enjoyment of future generations." Thus, the NPS's greatest responsibility is to protect the natural, historical, and recreational qualities in each and every unit of the National Park System.

[2] AUTHORITY: Act of August 25, 1916, 39 Stat. 535 (16 U.S.C. § 1, et seq.); and the acts establishing the units of the National Park System, including but not limited to: Act of Sept. 28, 1962, 76 Stat. 650 (16 U.S.C. §§ 459d-459d-7); Act of Mar. 7, 1974, 88 Stat. 43 (16 U.S.C. § 460ee); Act of Oct. 11, 1974, 88 Stat. 1254 (16 U.S.C. §§ 698-698e); Act of Oct. 11, 1974, 88 Stat. 1258 (16 U.S.C. §§ 698f-698m-4); Act of Oct. 12, 1976, 90 Stat. 2329 (16 U.S.C. § 1274(15); Act of Nov. 10, 1978, 92 Stat. 3534 (16 U.S.C. §§ 230-230i); Act of Nov. 10, 1978, 92 Stat. 3544 (16 U.S.C. §§ 460m-15-460m-30);. Act of Nov. 12, 1996, 110 Stat. 4202 (16 U.S.C. §§ 698u-698u-7).

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ACRONYMS

19jj – Park System Resource Protection Act
9B, 9B Regulations – Nonfederal Oil and Gas Rights Regulations (36 C.F.R. Part 9 Subpart B)
ACHP – Advisory Council on Historic Preservation
ARPA – Archeological Resources Protection Act
BA – Biological Assessment
CAA – Clean Air Act
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
CE – categorical exclusion
C.F.R. – Code of Federal Regulations
CLPR – Current Legal and Policy Requirements
COE – U.S. Army of Corps of Engineers
CWA – Clean Water Act
CZMA – Coastal Zone Management Act
DEIS – draft environmental impact statement
DO-12 – NPS Director's Order 12 and Handbook
DO-28 – NPS Director's Order 28 – NPS Cultural Resources Management Guidelines
DO 77-1 – Director's Order 77-1, Wetland Protection
DO 77-2 – Director's Order 77-2, Floodplain Management
EA – environmental assessment
EIS – environmental impact statement
EO – Executive Order
EPA – Environmental Protection Agency
ESA – Endangered Species Act
FIFRA – Federal Insecticide, Fungicide, and Rodenticide Act
FIRM – Flood Insurance Rate Maps
FLPMA – Federal Land Policy and Management Act
FONSI – Finding of No Significant Impact
FWS – U.S. Fish and Wildlife Service
MBTA – Migratory Bird Treaty Act
NAGPRA – Native American Graves Protection and Repatriation Act
NEPA – National Environmental Policy Act
NHPA – National Historic Preservation Act
NMFS – National Marine Fisheries Service
NOAA – National Oceanic and Atmospheric Administration
NPS-77 – NPS Natural Resources Management Guidelines
OPA – Oil Pollution Act
RCRA – Resource Conservation and Recovery Act
ROD – Record of Decision
SHPO – State Historic Preservation Office
SOF – Statement of Findings
SPCCP – Spill Prevention Control and Countermeasure Plan
SUP – Special Use Permit
T&E – Threatened and Endangered Species
THPO – Tribal Historic Preservation Office
U.S.C. – U.S. Code
USDOC – U.S. Department of Commerce
USGS – U.S. Geological Survey
§ – section (this symbol is commonly used when citing laws and regulations

CHAPTER 1

KEY PROVISIONS OF THE NATIONAL PARK SERVICE NONFEDERAL OIL & GAS RIGHTS REGULATIONS

INTRODUCTION

The National Park Service promulgated oil and gas regulations at 36 C.F.R. Part 9, Subpart B ("9B regulations") in December 1978. The 9B regulations govern oil and gas activities that are associated with the exploration and development of nonfederal oil and gas rights located within park boundaries where access is on, across, or through federally owned or controlled lands or waters.

The legal authority for the 9B regulations stems first from the *Property Clause* [art. IV, § 3 (2)] and the *Commerce Clause* [art. I, § 8 (3)] of the United States Constitution, and then from statutes enacted by Congress and signed into law by the President. With respect to statutes, Congress has given the NPS, through the Secretary of the Interior, power to regulate nonfederal oil and gas activities in parks via the general language contained in sections 1 and 3 of the NPS Organic Act, and specific provisions in individual park enabling statutes. Not all parks with nonfederal oil and gas development occurring within their boundaries have specific provisions within their enabling statutes that cover nonfederal oil and gas development. In such units the power of the NPS to regulate falls back to the Organic Act.

Nonfederal oil and gas rights consist of those held by individuals, companies, nonprofit organizations, state and local governments. Although these property rights fall under the protection of the 5th Amendment of the U.S. Constitution ("No person ... shall be deprived of ... property without due process of law; nor shall private property be taken for public use without just compensation."), the NPS nonetheless has the authority to regulate these rights as stated above.

The 9B regulations are a park superintendent's primary tool in protecting park resources from adverse impacts associated with the exercise of nonfederal oil and gas rights. To assess and manage these potential impacts, the 9B regulations require that an operator submit a plan of operations to the NPS describing all of the activities (from exploration to site reclamation) that an operator intends to undertake in order to develop their oil and gas interest. An operator must also submit a suitable performance bond. The NPS reviews the operator's plan to make sure that the information is complete and, in turn, to ensure that park resources will be protected. Once the NPS has completed its review and environmental compliance responsibilities, it may approve the operator's plan. The approved plan allows the operator to conducts operations in a unit of the National Park System.

If an operator intends to directionally drill a well from outside a unit of the National Park System to develop nonfederal oil and gas underneath the park, the operator must submit an application under 36 C.F.R. § 9.32(e) to the NPS to determine if the operator is eligible for an exemption from the plan of operations and performance bonding requirements. A description of this process and the information requirements for a § 9.32(e) application can be found in *Chapter 5 – Directionally Drilling a Well from Outside Park Boundaries to Inside a Park Unit*.

Below is a summary of key provisions of the 9B regulations. Appendix A includes a reprint of the 36 C.F.R. 9B regulations from the Code of Federal Regulations.

GOALS OF THE 9B REGULATIONS

The 9B regulations ensure that oil and gas operators conduct their operations in ways that:

- are consistent with the purposes of the NPS unit,
- prevent or minimize damage to the environment and other resource values, and
- ensure, to the extent feasible, that all units of the National Park System are left unimpaired for the enjoyment of future generations.

It is important for operators to understand that Congress has mandated that the NPS protect park resources and values. Because oil and gas rights remain outstanding in some parks, the NPS must recognize those private property rights. However, the NPS must also fulfill its conservation mandate from Congress. The 9B regulations are reasonable time, place, and manner regulations that assist park managers in carrying out park mandates while allowing oil and gas operators to exercise their property rights.

RIGHT TO CONDUCT OIL AND GAS OPERATIONS IN NATIONAL PARK SYSTEM UNITS

The right to conduct oil and gas operations in units of the National Park system is based on ownership rights and obtaining NPS authorization to conduct the operation (36 C.F.R. § 9.30(a)). The following persons may conduct operations in parks:

- the owners of the nonfederal oil and gas interest, whether or not they own the surface interest,
- persons or companies that lease the oil and gas interests (lessee) from the owners (lessor), and
- persons or companies under contract with (or with the expressed written consent from) the owners or lessees to perform work specific to oil and gas operations.

DEMONSTRATION OF OWNERSHIP RIGHTS

To demonstrate ownership rights, operators must show the NPS that they hold either a “lease, deed, designation of operator, or assignment of rights…” (36 C.F.R. § 9.36(a)(2)). This is the most basic and important piece of information that an operator must provide to the NPS. Without a demonstration of ownership rights, the NPS owes no legal obligation to an operator to grant temporary approval, review a plan of operations, or evaluate a § 9.32(e) application.

APPLICABILITY OF THE 36 C.F.R. 9B REGULATIONS

The applicability of the 9B regulations depends on access on federal lands (36 C.F.R. § 9.30(a)). If an operator uses "access on, across, or through lands or waters owned or controlled by the United States" to conduct operations, they must comply with the NPS 9B regulations.

The 9B regulations apply in any of the following situations:

- The oil and gas site in the park is on land owned by the United States.
- The oil and gas site in the park is on private land but the operator's access route is on, across, or through lands or waters owned or controlled by the United States.
- The operator accesses his/her oil and gas underlying the park from a surface location outside the park such that the wellbore crosses in to the park through lands or waters owned or controlled by the United States.

Under the 9B regulations:

Access means any and all ways of entering, going over, across, or underneath an area of land or water. It includes travel by vehicle, watercraft, fixed-wing aircraft, helicopter, off-road vehicle, mobile heavy equipment, snowmobile, pack animal, and by foot. It also includes travel of the drill bit.

Federally owned or controlled lands are all lands where the United States owns the surface estate which has been acquired through purchase, donation, public domain, or condemnation. It also includes lands that the United States holds any interest, such as a lease, easement, right-of-way, or cooperative agreement.

Federally owned or controlled waters include all surface waters within the boundaries of a National Park System unit. It does not matter what entity holds title to the submerged lands.

PLAN OF OPERATIONS SCOPE

Operators have the flexibility to prepare a plan only for the activities they want immediate approval (36 C.F.R. § 9.30(c)). All future activities do not have to be included in a plan of operations. For example, an operator can choose to address only the activities of drilling a well and not include the production activities associated with the well. However, the operator must keep in mind that approval of a plan permits only those specific operations that are addressed in the plan.

The NPS has found that it sometimes makes sense to include the next phase of an oil and gas development project in a plan of operations. The most common example is a plan for drilling and then producing one or more wells. The advantage to this approach is that there would be no delays in beginning production operations if the well is successful in finding oil and gas. In many cases, operators have a fairly good idea of how many additional wells would be drilled and the necessary facilities that would be needed to produce the oil and gas to include that information in a single plan of operations. Also, when developing plans of operations for the production phase, operators should include future activities that are likely to be necessary. Common examples of actions that may not occur immediately, but are likely to be necessary in

the future include installation of compressors for gas wells, artificial lift, or well servicing/ workovers.

In other instances, the operator may not have the available information to develop a proposal for the next phase of the operation. For example, including plans for drilling an exploration well with a 3D seismic proposal may not be appropriate. On the other hand, if a successful well were based on 3D seismic data, it would probably be prudent to develop a plan of operations that includes full field development.

RECLAMATION REQUIREMENTS

All proposed plans of operations must adequately describe specific actions that will be taken to achieve compliance with the applicable reclamation requirements. The 9B regulations present two distinct sets of reclamation standards depending on ownership and control of the surface estate disturbed during the oil and gas operations. An operator must initiate reclamation as soon as operations cease, and no later than six months following completion of operations, unless the NPS authorizes a longer period of time. For more information on reclamation, see information for each type of oil and gas operation in *Chapters 3, 4, 5, 6, 7, and 8*.

PERFORMANCE BOND REQUIREMENTS

Every plan of operations is conditioned on the operator filing a performance bond or other acceptable type of security payable to the NPS. This bond is in addition to any bonds that might be required by other regulatory agencies. If the operator fails to comply with the conditions in the plan of operations, the NPS can attach the bond to pay for any damage caused by the noncompliance. See *Chapter 10, Performance Bonds* for information on the NPS performance bond requirements.

WELLS THAT ARE DIRECTIONALLY DRILLED WITH SURFACE LOCATIONS OUTSIDE A PARK AND BOTTOMHOLE LOCATIONS INSIDE A PARK

A well drilled underneath the park from a surface location outside the park is subject to the 9B regulations, but the NPS can grant an exemption from the 9B regulations if the NPS determines that "…such operation poses no significant threat of damage to park resources, both surface and subsurface, resulting from surface subsidence, fracture of geological formations with resultant fresh water acquifer contamination, or natural gas escape, or the like." (36 C.F.R. § 9.32(e)). Operators proposing to directional drill a well from outside a park unit to oil and gas within the park would prepare a § 9.32(e) application rather than a plan of operations. See *Chapter 5, Directionally Drilling a Well from Outside Park Boundaries to Inside a Park Unit* for information on how to prepare a § 9.32(e) application.

CHANGES TO A PLAN OF OPERATIONS

Revisions to a plan of operations might be necessary due to changes in environmental conditions, operational needs, or to address a circumstance that was unforeseen when the plan of operations was first approved. Any activity that is not in the approved plan would require a revision to the plan of operations. Examples include: any new surface disturbance such as enlarging a wellpad to accommodate expanded production facilities, widening a road to improve access to the site; major workovers; deepening a well; and redrilling a well.

Either the operator or the NPS can initiate amendments to a plan of operations (36 C.F.R. § 9.40). Proposed revisions are made in writing with a description of the changes and why they are needed. Appendix C includes a sample letter (see *Plan of Operations Amendment*) that can be used by an operator to amend or update a plan of operations.

The proposed revisions must go through the NPS review process and an environmental analysis required under the National Environmental Policy Act (NEPA).

When the NPS initiates a revision, the process can take one of the following two paths:

1. If the revision is not being made to remove an immediate threat of significant injury to the park, then the NPS notifies the operator in writing 60 days prior to the date when the revision will become effective.
2. If the revision is necessary to remove an immediate threat of significant injury to the park, then the superintendent uses the suspension authority under the 9B regulations (36 C.F.R. § 9.33(c)).

If a revision is being done to avoid a threat of significant injury to park resources, the superintendent will require the operator to immediately suspend operations until the threat is removed or remedied. If the superintendent issues a suspension order, the operator will be notified in writing within 5 days with the reasons the operation needed to be shut down, and what must be done to resume operations. The operator has the right to appeal the suspension order under § 9.49, Appeals.

SALE OR TRANSFER OF AN OPERATION

Under the 9B regulations, both the seller and buyer of an oil and gas operation have responsibilities if the operation that was sold was under an approved plan of operations (36 C.F.R. § 9.34).

The seller has 60 days to notify the superintendent with information about the transfer. The notification needs to include;

- the name and address of the new operator, and
- the description of the transferred interest.

The previous operator is responsible for the operations under the performance bond until the superintendent is notified of the transfer. At that time, the previous operator's bond may be released if the superintendent determines the operator has not retained any liability in the operation.

To continue operating, the new operator must either:

- accept in writing all the terms and conditions of the old plan of operations and file a performance bond, or
- cease operations and submit a new plan of operations to the NPS for review and approval.

In most cases, it makes sense for the new operator to ratify the old plan and file a performance bond. If and when the need arises, the new operator can then amend or submit a new plan of operations.

Appendix C includes sample letters that can be updated by an operator entitled, *Change of Operator Notification* (from new owner or from transferring owner).

EXEMPTIONS TO THE 36 C.F.R. 9B REGULATIONS

The 9B regulations do not apply to every oil and gas operation that occurs in a park unit. The following classes of operations do not fall under the 9B regulations:

- Operations that do not access federally controlled lands or waters.
- Operations on federal leases (36 C.F.R. § 9.30(b)). Federal leasing is prohibited in all national parks with the exception of three national recreation areas (Lake Mead, Glen Canyon, and Whiskeytown). The few federal leases that remain in other parks are remnants from leasing before the area was designated as a unit of the National Park System. The Bureau of Land Management regulates federal lease operations under 43 C.F.R. § 3100.
- Operations on mining claims (36 C.F.R. § 9.30(b)). Activities resulting from valid existing mineral rights on patented or unpatented mining claims are covered by NPS regulations at 36 C.F.R., Part 9, Subpart A.
- Transportation pipelines associated with rights-of-way do not fall under the 9B regulations, but are subject to special use permits issued by the NPS. See *Chapter 8 – Transpark Pipelines* if the park has indicated that the pipeline operation requires a NPS permit.

EXISTING OPERATIONS

Under the 9B regulations, an operator conducting “existing operations” may continue without submitting a plan of operations or filing a performance bond or security deposit. These operations are "grandfathered" (36 C.F.R. § 9.33).

An "existing operation" uses federal access, but meets one of the following conditions:

1. The operator was conducting operations under a valid state or federal permit as of January 8, 1979 (effective date of the 9B regulations),
2. The operator was conducting operations under a valid state or federal permit when the area became a new park unit, or
3. The operator was conducting operations under a valid state or federal permit when the area came into the park system by expansion of an existing unit.

If an operator was not required to obtain a federal or state permit prior to January 8, 1979, prior to the establishment of a new park unit, or prior to the expansion of an existing unit, he/she must come into compliance with the 9B regulations in accordance with the provisions of 36 C.F.R. § 9.33(b).

A state or federal permit is considered valid if:

- the permit was issued to the current operator on or before January 8, 1979, prior to the establishment of a new park unit, or prior to the expansion of an existing unit,
- the term of the permit has not expired, and
- the operations have not undergone any change requiring the operator to acquire a new permit since January 8, 1979, prior to the establishment of a new park unit, or prior to the expansion of an existing unit.

LOSS OF "EXISTING OPERATIONS" STATUS

An existing operation can lose its exempt (grandfathered) status. If this happens, the operator must comply with the 9B regulations. This includes filing a plan of operations with the NPS and submitting a performance bond. An operator loses its "existing operation" status after its valid state or federal permit expires by its own terms.

The list below gives some examples of situations where a valid state or federal permit expires by its own terms:

- The operation has a change in operator.
- The operator proposes well work that requires new state approval. Examples include recompleting a well to a different producing zone (plug backs and deepenings), or well plugging and abandonment.
- The operator proposes to use additional federally owned lands or waters. New use of federal land or water in a park unit requires a new permit from the NPS. Examples include enlarging a wellpad to accommodate expanded production facilities or widening a road to improve access to the site.

SUSPENSION OF EXISTING OPERATIONS

If "[a]t any time when [existing operations] pose an immediate threat of significant injury to federally owned or controlled lands or waters, the superintendent shall require the operator to suspend operations immediately until the threat is removed or remedied." (36 C.F.R. § 9.33(c))

The superintendent will notify the operator in writing (within 5 days) with the reasons the operation was shut down, and what must be done to resume the operations. The operator can appeal the suspension order under 36 C.F.R. § 9.49, Appeals.

Examples of an immediate threat of significant injury include, but are not limited to:

- escape of hydrogen sulfide or other toxic or noxious gas
- vegetation clearing or earth moving outside the area currently approved (by regulation or plan) for the operation

- uncontained or chronic oil, brine, or hazardous material spills
- well blow-out
- leaching or release of an environmental contaminant (*e.g.*, contaminated stormwater runoff)
- fire or fire hazard
- unmaintained oil or brine storage tanks that lack secondary containment such as berms
- inadequate safeguard for controlling well pressures
- inadequate safeguards for protecting visitors and wildlife from serious injury
- damage to cultural resources

PLUGGING AND RECLAMATION OF EXISTING OPERATIONS

Existing operations often lose their exempt status from the plan of operations and performance bond requirements because well plugging requires a new state permit. Prior to well plugging, the operator needs to:

1. file a plan of operations covering the well plugging and surface reclamation,
2. receive NPS approval, and
3. submit a performance bond.

It is very important for grandfathered operators to understand this aspect of the regulations, both environmentally and financially. The manner in which operations are conducted will directly affect the cost of the surface reclamation. It will also have a bearing on the sales price of the property because today's buyers are more aware of environmental liabilities.

ADMINISTRATIVE APPEAL OF A NPS DECISION

An operator can formally appeal any decision made by the superintendent or the regional director (36 C.F.R. § 9.49). The appeals process is described below:

1. Within 30 days of receiving a decision, the operator files a written statement to the NPS official who made the decision. The statement describes in detail, how the decision disagrees with the facts, law, regulations, or is otherwise in error. In most cases the NPS official will be the superintendent or the regional director. The NPS has no obligation to act on appeals received after 30 days of NPS making its decision.
2. Upon receiving the appeal, the NPS official reviews the decision based on the operator's statement. The regulation says the review must be prompt, but gives no specific time frame.
3. If the NPS official changes his/her decision, the appeal process ends.
4. If the NPS official agrees with the original decision, the official prepares a written response to the operator. The statement explains why the decision will not change. The official also gives a copy of the statement and all supporting information to the next in the chain of command. An appeal only proceeds to the next level of NPS supervision. (The superintendent reports to the regional director who reports to the director of the NPS.)

5. The operator then has to provide a statement to the NPS official's supervisor. The operator states the disagreement(s) with the NPS official's reasons for allowing the original decision to stand. The operator has 30 days to file the exceptions. If the operator doesn't file exceptions, it means the operator drops the appeal. The appeal process then ends and the decision stands.
6. The regional director (or director) has 45 days after receiving the operator's exceptions to decide on the appeal. The decision on the appeal will be a written statement that lays out the facts of the case and the conclusions. The conclusions will be supported with reasons included in the statement.
7. Once the highest NPS official to review the appeal (regional director or director) makes a decision, the operator is bound by that decision. During the appeals process, an operator can petition to have the decision in question “stayed” (suspended). A stay will keep the decision from becoming effective until the appeal process is completed. A request for a stay can accompany the first appeal or be sent directly to the director. The NPS will promptly rule on requests for a stay (see 36 C.F.R. § 9.49 (e)).

At the conclusion of the administrative appeal process, an operator may further appeal its case in federal court.

DAMAGES AND PENALTIES

Operators may be held liable for any damages to federally-owned or controlled lands, water, or resources resulting from failure to comply with:

- the plan of operations,
- the applicable permit under the existing operations provision of § 9.33, or
- where operations are temporarily approved under § 9.38, failure to comply with the terms of that temporary approval (§ 9.51(a)).

Additionally, the NPS has authority to recover up to treble damages from an operator under the Park System Resources Protection Act, 16 U.S.C. § 19jj. This statute a strict liability statute that authorizes the NPS to recover response costs and damages from a person who destroys, causes the loss of, or injures park system resources. For more information, see *Chapter 12 – Liability of operators, Contractors, and Subcontractors*.

9B TOPICS COVERED ELSEWHERE IN THIS HANDBOOK

The following topics from the 9B regulations are covered in other chapters of this handbook.

- Use of Water (§ 9.35): Chapters 3, 4, and 7
- Plan of Operations Approval (§ 9.37): Chapter 2 – Plan of Operations
- Temporary Approval (§ 9.38): Chapter 2 - Plan of Operations
- Reclamation Requirements (§ 9.39): Chapters 3, 4, and 7 – Information Requirements lists and Chapter 7: Well Plugging and Surface Reclamation – Operating Stipulations Table
- Operating Standards (§ 9.41): Chapters 3, 4, and 7 – Operating Stipulations Tables
- Handling of Wastes (§ 9.45):– Chapters 3, 4, and 7 – Operating Stipulations Tables
- Cultural Resource Protection (§ 9.47):– Appendix B, Part B – Environmental Compliance
- Performance Bond (§ 9.48): Chapter 10 – Performance Bonds
- Damages and Penalties (§ 9.51): Chapter 12 – Liability of Operators, Their Contractors and Subcontractors
- Public Inspection of Documents (§ 9.52): Chapter 2 – Public Review and Comment on the Plan of Operations and NEPA Document

Some sections of the 9B regulations are self-explanatory and are reprinted in Appendix A., including:

- Definitions: § 9.31
- High Pressure Precautions: § 9.43
- Open Flows and Control of Wild Wells: § 9.44
- Well Records and Reports, Plots and Maps, Samples, Tests, and Surveys: § 9.42
- Accidents and Fires: § 9.46
- Use of Roads by Commercial Vehicles: § 9.50

CHAPTER 2
PLAN OF OPERATIONS PERMITTING PROCESS

INTRODUCTION

A plan of operations (plan) is the heart of the 9B regulations. The operator is responsible for preparing the plan of operations. The plan is essentially the operator's blueprint of intended activities over the life of the oil and gas operation and may include exploration, well drilling, production, and well plugging and surface reclamation. It describes the proposed operation, including the equipment, methods, and materials to be used in the operation, access to the site, mitigation measures that will be implemented to protect park resources and values, environmental conditions in the vicinity of the site, alternatives to the proposal, and the environmental impacts of the proposed operation. When approved, the plan of operations serves as the operator's permit to conduct operations in a unit of the National Park System.

This chapter describes the plan of operations application and permitting process and is organized sequentially from the first steps in the preparation of a plan to its final approval. Table 2.1 outlines a typical plan of operations application and approval process.

NOTE: Operators that intend to access their nonfederal minerals underneath a national park unit by directionally drilling from a surface location outside of the park should refer to *Chapter 5 - Directionally Drilling a Well from Outside Park Boundaries to Inside a Park Unit* for a description of the application and approval process.

To assist an operator in developing a plan of operations, specific information requirements, operating stipulations, and recommended mitigation measures for each type of oil and gas operation are presented in *Chapter 3 - Geophysical Operations, Chapter 4 - Drilling and Production Operations, Chapter 5 – Directional Drilling Operations, Chapter 6 – Existing Oil and Gas Production Operations, Chapter 7 - Well Plugging and Surface Reclamation, Chapter 8 – Transpark Pipelines,* and *Chapter 9 – Flowlines and Gathering Lines*.

A comprehensive list and description of the legal and policy requirements applicable to oil and gas operations on NPS lands is included in *Appendix B – Current Legal and Policy Requirements for Nonfederal Oil and Gas Operations in National Park System Units*. *Appendix B, Part B – Environmental Compliance Requirements for the Major Laws Affecting Nonfederal Oil and Gas Operations* includes overviews of key environmental laws that apply to nonfederal oil and gas operations, including flowcharts outlining the primary compliance processes. These flowcharts are included in this handbook to aid the operator in understanding his/her responsibilities as well as to illustrate the legal requirements the NPS must comply with in order to approve a 9B oil and gas operation.

Table 2.1.
National Park Service Estimated Processing Time for a Plan of Operations

ACTION[3]	NPS RESPONSE TIME	LIMITING FACTOR
1. Operator contacts park regarding interest in conducting oil and gas operations. Operator provides written documentation demonstrating right to conduct operations in the park.	Same day	Subject to park staff availability
2. Park provides operator with a CD ROM (or NPS web address) of the operator's handbook which includes the 36 C.F.R. 9B regulations, plan of operations information requirements, and other pertinent information.	Same day	Subject to park staff availability
3. Operator meets with park staff to determine: resources that would be affected by the operation; environmental planning and compliance requirements; and affected local, state and federal agencies.	Variable – NPS provides assistance as needed. Scoping meeting typically lasts one day.	Subject to park staff and operator availability
4. Operator meets with park staff and affected federal, state, and local agencies to: identify resource issues, permitting requirements, impact mitigation strategies, and performance standards.	Variable – NPS provides assistance as needed.	Subject to park staff, other agency staff, and operator availability
5. Operator submits written request for temporary access to gather basic information needed to complete the plan of operations.	Variable - NPS provides assistance as needed.	Subject to operator response
6. Park issues 60-day temporary data collection permit which includes applicable park resource and visitor protection requirements.	1 - 2 days	Subject to park staff availability
7. Operator conducts necessary surveys as applicable, including natural and cultural surveys, and surveys and stakes the operations area.	Variable - NPS provides assistance as needed.	Subject to operator response or timing requirements
8. Operator submits plan of operations to park.	Variable - NPS provides assistance as needed.	Subject to operator response
9. NPS performs a completeness and technical adequacy review of the plan of operations. Park accepts plan of operations as complete or returns the plan to the operator with specific directions on how to revise the plan.	30 days	NPS policy from NPS procedures governing nonfederal oil and gas rights, 1992; and 36 C.F.R. § 9.36(c)
10. Operator revises plan of operations, as necessary.	Variable - NPS provides assistance as needed.	Subject to operator response
11. Park staff prepares NEPA document (categorical exclusion, memo to the files, environmental assessment, or environmental impact statement) or adopts operator's NEPA document, incorporates other environmental compliance (National Historic Preservation Act, wetlands, floodplains, Endangered Species Act, Coastal Zone Management Act etc.), and initiates required consultations with other agencies. Park completes public review process, finalizes decision documents, and notifies the operator if the plan has been approved, conditionally approved, or rejected.	60 days (includes 30-day public review of EA)	36 C.F.R. § 9.37, 36 C.F.R. § 9.52(b), NPS Director's Order 77-1 (Wetland Protection), NPS Director's Order 77-2 (Floodplain Management), and Director's Order-12 (Conservation Planning, Environmental Impact Analysis, and Decision Making). Operator is notified if additional time is needed per 36 C.F.R. § 9.37(b)(6).
12. Operator agrees to conditions of approval (if any), submits applicable state and federal permits, and files suitable performance bond with the NPS.	Variable	Subject to operator response
TOTAL NPS RESPONSE TIME	Minimum of 3 to 4 months	Dependent on compliance requirements

[3] Steps 1 through 6 may not occur sequentially as presented in Table 2.1 because project scoping and data collection are iterative, rather than linear processes.

DEMONSTRATION OF AN OPERATOR'S OWNERSHIP RIGHT

To prevent damage to park resources and values and avoid wasting staff time, the NPS must ensure that a project proponent has bona fide property rights with respect to a mineral interest. Not surprisingly then, the first matter of business is for the NPS to verify the person's ownership right to oil and gas resources in the park.

Demonstration of ownership rights is a fundamental information requirement of the 9B regulations and is the first step in the oil and gas permitting process. The following types of documentation can be used to demonstrate the operator's property right to conduct oil and gas operations:

- lease,
- deed,
- assignment of rights, or
- designation of operator (may include a unit agreement).

Prior to an operator conducting any activities in a park unit, including data collection for the purpose of preparing a plan of operations, the operator must first demonstrate that he/she has an undisputed property right to the oil and gas resources in the park unit. In no event will the NPS issue a data collection permit or formally accept a plan of operations as complete if a prospective operator lacks documentation of property rights in all areas where operations are proposed.

For existing operations, the NPS may accept a copy of a state operating permit or equivalent documentation from the state agency responsible for regulating oil and gas activities, provided the state permitting process includes a demonstration of the permit holder's ownership right. For more information on existing operations, see *Chapter 6 Existing Oil and Gas Operations*.

Appendix C includes an *Operator's Ownership Right* sample letter that can be updated by an operator to demonstrate the operator's right to conduct operations in a unit of the National Park System.

PROJECT SCOPING AND ONSITE MEETING

Scoping is the initial phase of the project planning process and involves the park staff and operator. Project scoping needs to be conducted as early as possible to be effective; when an operator demonstrates its ownership right, and before the operator begins to prepare a plan of operations.

Scoping is a process in which an operator describes the proposed oil and gas operation to the park staff; and together, the park staff and operator identify:

- applicable legal and policy requirements,
- roles and responsibilities,
- project-specific issues,
- alternative locations and methods for the operation,
- mitigation measures,

- available sources of data,
- additional data collection / information requirements, and
- project timeline.

Most often the park staff will conduct project scoping with the operator. Depending on the complexity of the proposal and the types of issues to be described and evaluated, participation by other state/federal/tribal agency staff, and NPS technical specialists from NPS Support Offices, Geologic Resources Division, and other Natural Resource Program Center offices may also be necessary at the scoping meeting.

Effective scoping helps the operator prepare a complete and environmentally sound plan of operations. Poor scoping can result in information deficiencies in the plan that could require revisions to the plan and result in delays in approving and beginning the operation.

DISCUSSION ITEMS FOR PROJECT SCOPING/ONSITE MEETING

The following topics should be covered during the scoping/onsite meeting to assist operators in the preparation of a plan of operations:

Operator

The operator should describe the proposed operation. The discussion should include:

- type of operation,
- location,
- access to the operation's site,
- methods to be used, and
- proposed schedule.

National Park Service

The NPS will:

1. Describe the 36 C.F.R. 9B permitting process, including:
   a. overview of the plan of operations preparation, review, and approval process,
   b. content requirements for a plan of operations,
   c. specific data/information requirements,
   d. temporary permit for data collection, surveying, and staking the operations area,
   e. other-agency consultation and permitting requirements,
   f. plan of operations completeness and technical adequacy review,
   g. NEPA and other environmental compliance documentation,
   h. public review and comment, and
   i. performance bonding.
2. Identify other applicable legal mandates and direction such as: park enabling act, Organic Act and General Authorities Act, National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Clean Water Act (CWA), Coastal Zone Management Act (CZMA), Wetland Protection (DO 77-1), Floodplain Management (DO 77-2), applicable park planning documents (General

Management Plan, Statement for Management, Oil and Gas Management Plan etc.), and Park System Resource Protection Act (also known as 19jj).

3. Identify interested and affected state/federal/tribal agencies, such as, the U.S. Army Corps of Engineers (COE), State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), and adjacent landowners.
4. Identify roles and responsibilities of NPS staff, operator, other state/federal/tribal agencies (*e.g.* , determine who coordinates meeting with interested state/federal/tribal entities; prepares plan of operations, NEPA document, Biological Assessment (BA), wetlands and/or floodplains Statement of Findings (SOF); coordinates public involvement; consults with affected state and federal agencies; and issues permit(s)).
5. Review available NPS data for the proposed operations area and identify additional data collection/information needs.
6. If applicable to the proposed operation, discuss the requirement for a third party monitor. The NPS will provide the operator with the roles and responsibilities and necessary qualifications of the third party monitors. In some cases this information may not be developed until after the NPS technical adequacy review of the plan of operations.

Site Visit

The operator and NPS should visit the proposed operations area, including the proposed access route(s), layout of seismic lines, well location, staging area(s), etc. During the site visit the operator and NPS will:

1. Identify resources and values that could potentially be affected by the operation. Use Table 2.2, Environmental Screening Form (ESF) as a basis for discussion. Identify information and data needs listed on the ESF.
2. Discuss alternative ways to develop the project. In order to minimize impacts, consider different:
   a. locations and access routes,
   b. types of equipment,
   c. operating methods, and
   d. times to conduct operations.
3. Identify potential impacts on park resources and values from the proposed operation and alternatives.
4. Develop mitigation measures to protect park resources and values. See *Tables of Operating Stipulations and Recommended Mitigation Measures for Geophysical Exploration Operations (Chapter 3), Drilling and Production Operations (Chapter 4), and Well Plugging and Surface Reclamation (Chapter 7)* in this handbook.
5. Develop a project schedule for data-collection, preparation of the plan of operations, and implementation of the proposal.

Following the scoping meeting, the park staff compiles the meeting notes and distributes them to the operator and NPS staff. The meeting notes summarize the decisions that were made at the meeting (required resources surveys, alternatives considered, mitigation measures etc.).

Table 2.2. Environmental Screening Form

ENVIRONMENTAL SCREENING FORM (ESF)
(Revised June 2004, per DM)

This form should be attached to all NEPA documents sent to the regional director's office for signature. Sections A and B should be filled out by the project initiator (may be coupled with other park project initiation forms). Sections C, D, E, and G are to be completed by the interdisciplinary team members. While you may modify this form to fit your needs, you must ensure that the form includes information detailed below and must have your modifications reviewed and approved by the regional environmental coordinator. To access this form and other compliance project information, go to http://pepc.nps.gov.

A. PROJECT INFORMATION

Park Name _____ Project/PMIS Number _____

Project Type (*Check*): ☐ Cyclic ☐ Cultural Cyclic ☐ Repair/Rehab ☐ ONPS
☐ NRPP ☐ CRPP ☐ FLHP
☐ Line Item ☐ Fee Demo ☐ Concession Reimbursable
☐ Other (specify) _____

Project Location _____

Project Originator/Coordinator _____

Project Title _____

Contract # _____ Contractor Name _____

Administrative Record Location _____

Administrative Record Contact _____

B. PROJECT DESCRIPTION/LOCATION *(To begin the statutory compliance file, attach to this form, maps, site visit notes, agency consultation, data, reports, categorical exclusion form (if relevant), or other relevant materials.)*

_____

_____

_____

_____

Preliminary drawings attached? ☐ Yes ☐ No Background info attached? ☐ Yes ☐ No

Date form initiated _____ Anticipated compliance completion date _____

Projected advertisement/Day labor start _____ Projected construction start _____

Is project a hot topic (controversial or sensitive issues that should be brought to attention of Regional Director)?
☐ Yes ☐ No

C. RESOURCE EFFECTS TO CONSIDER *(Please see section F, Instructions for Determining Appropriate NEPA Pathway, prior to completing this section. Also use the process described in DO-12, 2.9 and 2.10; 3.5(G) to (G)(5) and 5.4(F) to help determine the context, duration, and intensity of effects on resources.)*

	Identify potential effects to the following physical, natural, or cultural resources	No Effect	Negligible Effects	Minor Effects	Exceeds Minor Effects	Data Needed to Determine
1	Geological resources – soils, bedrock, streambeds, etc.					
2	From geohazards					
3	Air quality					
4	Soundscapes					
5	Water quality or quantity					
6	Streamflow characteristics					

ENVIRONMENTAL SCREENING FORM (ESF)
(Revised June 2004, per DM)
-continued-

	Identify potential effects to the following physical, natural, or cultural resources	No Effect	Negligible Effects	Minor Effects	Exceeds Minor Effects	Data Needed to Determine
7	Marine or estuarine resources					
8	Floodplains or wetlands					
9	Land use, including occupancy, income, values, ownership, type of use					
10	Rare or unusual vegetation – old growth timber, riparian, alpine					
11	Species of special concern (plant or animal; state or federal listed or proposed for listing) of their habitat					
12	Unique ecosystems, biosphere reserves, World Heritage Sites					
13	Unique or important wildlife or wildlife habitat					
14	Unique, essential or important fish or fish habitat					
15	Introduce or promote non-native species (plant or animal)					
16	Recreation resources, including supply, demand, visitation, activities, etc.					
17	Visitor experience, aesthetic resources					
18	Archeological resources					
19	Prehistoric/historic structures					
20	Cultural landscapes					
21	Ethnographic resources					
22	Museum collections (objects, specimens, and archival and manuscript collections)					
23	Socioeconomics, including employment, occupation, income changes, tax base, infrastructure					
24	Minority and low income populations, ethnography, size, migration patterns, etc.					
25	Energy resources					
26	Other agency or tribal use plans or policies					
27	Resource, including energy, conservation potential, sustainability					
28	Urban quality, gateway communities, etc.					
29	Long-term management of resources or land/resource productivity					
30	Other important environmental resources (e.g., geothermal, paleontological resources)?					

Comments _____

ENVIRONMENTAL SCREENING FORM (ESF)
(Revised June 2004, per DM)
-continued-

D. MANDATORY CRITERIA

Mandatory Criteria: If implemented, would the proposal:	Yes	No	Comment or Data Needed to Determine
A. Have significant impacts on public health or safety?			
B. Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); and other ecologically significant or critical areas?			
C. Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources (NEPA section 102(2)(E))?			
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?			
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?			
F. Have a direct relationship to other actions with individually insignificant, but cumulatively significant, environmental effects?			
G. Have significant impacts on properties listed or eligible for listing on the National Register of Historic Places, as determined by either the bureau or office?			
H. Have significant impacts on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?			
I. Violate a federal law, or a state, local, or tribal law or requirement imposed for the protection of the environment?			
J. Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898)?			
K. Limit access to and ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007)?			
L. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112)?			

For the purposes of interpreting these procedures within the NPS, any action that has the potential to violate the NPS Organic Act by impairing park resources or values would constitute an action that triggers the DOI exception for actions that threaten to violate a federal law for protection of the environment.

ENVIRONMENTAL SCREENING FORM (ESF)
(Revised June 2004, per DM)
-continued-

E. OTHER INFORMATION *(Please answer the following questions/provide requested information.)*

Are personnel preparing this form familiar with the site? ☐ Yes ☐ No

Did personnel visit site? ☐ Yes ☐ No *(If yes, attach meeting notes re: when site visit took place, who attended, etc.)*

Is the project in an approved plan such as a General Management Plan or an Implementation Plan with an accompanying NEPA document? ☐ Yes ☐ No If so, plan name _____

Is the project still consistent with the approved plan? ☐ Yes ☐ No

(If no, you may need to prepare plan/EA or EIS.)

Is the environmental document accurate and up-to-date? ☐ Yes ☐ No

(If no, you may need to prepare plan/EA or EIS.)

FONSI ☐ ROD ☐ *(Check one)* Date approved _____

Are there any interested or affected agencies or parties? ☐ Yes ☐ No

Did you make a diligent effort to contact them? ☐ Yes ☐ No ☐ NA

Has consultation with all affected agencies or tribes been completed? ☐ Yes ☐ No ☐ NA *(If yes, attach additional pages re: consultations, including the name, dates, and a summary of comments from other agencies or tribal contacts.)*

Are there any connected, cumulative, or similar actions as part of the proposed action (e.g., other development projects in area or identified in GMP, adequate/available utilities to accomplish project)? ☐ Yes ☐ No *(If yes, attach additional pages detailing the other actions.)*

F. INSTRUCTIONS FOR DETERMINING APPROPRIATE NEPA PATHWAY

First, always check DO-12, section 3.2, "Process to Follow," in determining whether the action is categorically excluded from additional NEPA analyses. Other sections within DO-12, including sections 2.9 and 2.10; 3.5; 4.5(G) and (G)(5); and 5.4(F), should also be consulted in determining the appropriate NEPA pathway. Complete the following tasks: conduct a site visit or ensure that staff is familiar with the site's specifics; consult with affected agencies, and/or tribes, and interested public; and complete this environmental screening form.

If your action is described in DO-12, section 3.3, "CEs for Which No Formal Documentation is Necessary," follow the instructions indicated in that section.

If your action is not described in DO-12, section 3.3, and IS described in section 3.4, AND you checked YES or identified "data needed to determine" impacts in any block in section D (Mandatory Criteria), this is an indication that there is potential for significant impacts to the human environment, therefore you must prepare an EA or EIS or supply missing information to determine context, duration, and intensity of impacts.

If your action is described in section 3.4 and NO is checked for all boxes in section D (Mandatory Criteria), AND there are either no effects or **all** of the potential effects identified in Section C (Resource Effects to Consider) are no more than minor intensity, usually there is no potential for significant impacts and an EA or EIS is not required. If, however, during internal scoping and further investigation, resource effects still remain unknown, or are at the minor to moderate level of intensity, and the potential for significant impacts may be likely, an EA or EIS is required.

In all cases, data collected to determine the appropriate NEPA pathway must be included in the administrative record.

ENVIRONMENTAL SCREENING FORM (ESF)
(Revised June 2004, per DM)
-continued-

G. INTERDISCIPLINARY TEAM SIGNATORIES *(All interdisciplinary team members must sign.) By signing this form, you affirm the following: you have either completed a site visit or are familiar with the specifics of the site; you have consulted with affected agencies and tribes; and you, to the best of your knowledge, have answered the questions posed in the checklist correctly.*

Interdisciplinary Team Leader Name	Discipline/Field of Expertise	Date
Technical Specialists Names	**Discipline/Field of Expertise**	**Date**

H. SUPERVISORY SIGNATORY

Based on the environmental impact information contained in the statutory compliance files and in this environmental screening form, environmental documentation for the subject project is complete. If the project involves hot topics or sensitive issues, I have briefed the deputy or regional director.

Recommended:

Compliance Specialist	Telephone Number	Date

Approved:

Superintendent	Telephone Number	Date

APPLICATION FOR A TEMPORARY PERMIT

When scoping is completed, the operator and park staff have identified the proposed operations area (including access routes) and developed a list of resources and values that could potentially be affected by the proposed operation. The operator will then collect data in the operations area to describe the existing environmental conditions and incorporate this information in the plan of operations (36 C.F.R. § 9.36(16)(i)). The survey area includes all areas to be affected directly or indirectly by the operations, not just the immediate operations area. For some 3D seismic programs, it may not be feasible to select access routes, shotpoints, etc. over a large program area during the initial project scoping. When reconnaissance surveys are being conducted to actually develop proposed access routes, shotpoint locations, and necessary offsets, the NPS temporary approval may direct that the operator conduct resource surveys at the same time so that all resources are considered when selecting specific locations of operations.

The regional director may approve on a temporary basis, an operator's access on, across or through federally-owned or controlled lands or waters for the purpose of collecting basic information under 36 C.F.R. § 9.38(a)(1), Temporary Approval. A permit to survey and stake the proposed operations area for the purpose of collecting natural and cultural resource data, and to survey the site and access route is granted by the regional director for a period "…not in excess of sixty (60) days."

The NPS will only issue a data collection permit to a prospective operator after it receives the operator's documentation of its property right interest in the proposed operations area. Early in the project planning process, operators may be faced with a decision to complete the process of obtaining rights or modify their project to conduct operations only in the areas where they possess property rights. For example, in the case of seismic operations, a project may need to be modified because an operator is unable to obtain authorization to conduct operations from all of the mineral owners in the proposed project area.

Prior to collecting resource information, the operator should determine what data are available from the park and other state and federal agencies, and technical specialists. The resource information collected by the operator must be detailed enough for the NPS to analyze the potential impacts of the proposed operation in its National Environmental Policy Act (NEPA) document.

Information needed by the NPS to issue the temporary permit, includes:

- Name of operator,
- Description of proposed operations,
- Documentation demonstrating the operator's property right to explore for and/or develop nonfederal minerals underlying the park. (This information is not required if it has already been provided to the park to initiate the scoping process for the proposed operations),
- Type of survey(s) to be conducted,
- Location of survey(s) - include a map showing access routes and boundary of survey(s),
- Proposed date to start survey(s) (NOTE: a minimum 2-week advance notice to the NPS is recommended), and

- Type of equipment and methodology proposed to conduct the survey(s), including a description of the type of equipment/methods proposed to access and survey the proposed project area (*e.g.* by foot, vehicle, ATV, helicopter etc.).

To ensure the quality and accuracy of the data, it is critical that qualified professionals conduct all natural resource, cultural resource, and engineering surveys. Prior to the park issuing a data collection permit, NPS resources specialist(s) will review and approve the technical qualifications of the surveyors. This information is typically included in a scope of the work for the survey.

The 60-day temporary permit will be issued by the NPS via a letter to the operator, and will specify start and end dates. The park superintendent may include operating stipulations in the permit letter that would be applied to protect park resources and values, park management activities, and visitor uses and experiences. The permit letter must be carried by the individual(s) while they are conducting the survey(s) in the park. The operator or their subcontractors must coordinate site visits with the park to ensure that a park representative is available to accompany workers engaged in gathering data and/or surveying in the park.

Appendix C – Sample Letters for Nonfederal Oil and Gas Operations includes the sample letter - *Request for a Temporary Access Permit* and supplementary information that can be used by an operator to request a temporary access permit for data collection to conduct a new operation or to continue an existing operation.

TYPES OF SURVEYS

Based on the data needs determined during project scoping, 60-day temporary permits are issued for the following types of surveys:

1. **Proposed operations area** – Conduct a field survey and stake the proposed operations area, including:
   a. location and boundaries of existing and proposed access roads or routes to the operations site, wellpads, and other operational areas, and
   b. topographic profile(s) of wellpad and access road, including cut and fill areas.
2. **Geologic resources** – Collect baseline information to describe soils, topography, and surface and subsurface geologic formations, and determine if unique geologic features (*e.g.* , filled chimneys, pimple mounds, salt diapirs, caves/karst, geothermal resources), and surface and subsurface geohazards (*e.g.*, landslide areas, highly erodible soils, shrink-swell soils, zones of hydrogen sulfide, high pressure zones) occur or are likely to occur in the operations area.
3. **Paleontological resources** – Determine if fossil remains occur or are likely to occur in the operations area.
4. **Surface and groundwater hydrology** – Collect information to describe surface water and groundwater in the vicinity of the proposed operations area to establish a baseline for possible future clean-up and remediation activities.
5. **Floodplains** – In the absence of Flood Insurance Rate Maps (FIRM), hydrologic and hydraulic analyses will be required to determine if the operations area is located within or adjacent to the 100-year, 500-year, or extreme floodplain.

6. **Wetlands** – Determine if the operations area is located within or adjacent to wetlands and assess wetland functions and values.
7. **Vegetation** – Establish baseline vegetation conditions (percent composition and diversity), baseline data will be used to reclaim the operations area after completion of the operations and determine if threatened or endangered plants or their habitats occur or are likely to occur in the operations area.
8. **Fish and wildlife/species of management concern (threatened and endangered species)** – Collect baseline information on the fish and wildlife that inhabit the proposed operations area and determine if threatened or endangered animals or their habitats occur or are likely to occur in the operations area.
9. **Cultural resources** – Determine if ethnographic resources, archeological resources, historic structures, and/or cultural landscapes occur in the operations area and if resources are listed in or eligible for listing in the National Register of Historic Places.
10. **Coastal zone resources** – If an operation is proposed in a state that has an USDOC/NOAA-approved Coastal Zone Management Program, and potential exists for proposed operations to have a "spillover effect" on coastal resources located outside the park, identify coastal resources in the operations area that extend outside of the park.

PLAN OF OPERATIONS PREPARATION AND SUBMITTAL

When site-specific resource information has been collected and analyzed,[4] and all required consultations and permit applications have been initiated with the appropriate entities, the operator, or a contractor paid by the operator, prepares the plan of operations. The operator should confirm with the park the type of media (*e.g.*, printed or electronic version, CD-ROM) and the number of copies that are needed for NPS review. If printed copies are sent to the park, extra copies may be necessary so that the public may review the plan. The plan should be sent directly to the park representative that is responsible for overseeing the oil and gas operation. The staff is listed in *Appendix E – NPS Nonfederal Oil and Gas Program Contacts*.

ADEQUACY DETERMINATION ON A PROPOSED PLAN OF OPERATIONS

A proposed plan of operations submitted by an operator will be officially accepted for formal review by the NPS when the regional director[5] determines that the plan:

1. contains all information required by the superintendent, and
2. is sufficiently detailed for the NPS to effectively analyze the impacts of the proposed operations on park resources and values.

[4] The operator is required to conduct a pre-operational analysis to adequately describe the natural, social, and economic environments that would be affected by the operations (surveys may include: air quality, geology, topography, soils, paleontological resources, surface and subsurface hydrology, vegetation, floodplains, wetlands, fish and wildlife, threatened and endangered species, cultural resources, all water and oil and gas wells within a 2-mile radius of proposed operation) (36 C.F.R. § 9.36(a)(16)(i)).

[5] The 9B regulations specify that the regional director will officially accept a plan for formal review by the NPS (36 C.F.R. § 9.36(c)(1). However, this responsibility may be delegated to the superintendent in some NPS regions.

The 9B regulations do not give a required time period for the NPS to make the adequacy determination. Every effort will be made to review the plan for completeness and respond to the operator within several weeks of receipt of the plan.

The NPS adequacy review will take place at different NPS offices at the same time. The superintendent prepares a response letter for the operator. If the plan is not accepted as adequate, the superintendent will respond in writing and explain what information is needed to complete and/or revise the plan.

PUBLIC REVIEW AND COMMENT ON THE PLAN OF OPERATIONS AND NEPA DOCUMENT

Once the internal NPS adequacy review of the plan of operations has been completed and the plan is accepted by the NPS, the NPS prepares the environmental documentation required under the National Environmental Policy Act (NEPA). The plan and NEPA document are then made available for public review and comment (36 C.F.R. § 9.52(b)). The NPS policy is to have concurrent public review of a plan of operations, NEPA document, and if required, wetlands and floodplain Statements of Findings (SOF). The NPS required public review period for a plan of operations and environmental assessment is 30 days, and 60 days for an environmental impact statement. For more information on the NEPA planning process and other compliance requirements, see *Appendix B, Part B - Environmental Compliance*.

As part of the plan review process, the NPS also must comply with requirements under federal laws that mandate “consultation.” This may affect the timeline for the decision on the plan.

Required consultations for a plan of operations may include:

- Endangered Species Act (ESA) consultations with the U.S. Fish and Wildlife Service (FWS), and if applicable, the National Marine Fisheries Service (NMFS);
- National Historic Preservation Act (NHPA) consultations with the State Historic Preservation Office (SHPO), Tribal Historic Preservation Office (THPO), and if necessary, the Advisory Council on Historic Preservation (ACHP);
- Consultation with appropriate state and federal agencies if direct or indirect effects are expected to wetlands or floodplains under Executive Orders and NPS implementing guidelines such as the U.S. Army Corps of Engineers (COE); and
- Consultations with the state agency responsible for implementation of the Coastal Zone Management Program under the Coastal Zone Management Act (CZMA) if the operation(s) could affect resources in the coastal zone.

The compliance processes for the above statutes are presented in detail in *Appendix B, Part B - Environmental Compliance*.

NATIONAL PARK SERVICE APPROVAL STANDARDS AND DECISION ON A PROPOSED PLAN OF OPERATIONS

APPROVAL STANDARDS

The regional director must use the following approval standards when making a decision on a proposed plan of operations:

1. In all cases, the operator must use methods that are least damaging to the park's resources and provide protection of public health and safety (36 C.F.R. § 9.37(a)(1)).
2. Where operations occur on nonfederal property, operations cannot significantly damage federally-owned or controlled lands and waters (36 C.F.R. § 9.37(a)(2)).
3. Where operations occur on federally owned or controlled lands, the regional director cannot approve a plan if the operations would prevent the park from meeting its legal obligations of preserving its long-term natural and ecological integrity. If applying this standard would, under applicable law, constitute a taking of a property interest rather than an appropriate exercise of regulatory authority, the NPS may either approve the operations if it uses least damaging methods or acquire the mineral interest (36 C.F.R. § 9.37(a)(3)).
4. The plan must contain all of the information set out in § 9.36 as it applies to the type of operation that is proposed (36 C.F.R. § 9.37(a)(4)).

DECISION ON A PLAN OF OPERATIONS

The NPS has 60 days to make a decision on the plan of operations after the plan has been determined to be technically adequate (36 C.F.R. § 9.37(b)). The 60-day NPS time period includes the preparation and public review of the NEPA document and compliance with all other applicable federal and state laws, regulations, federal executive orders, and NPS policies. Within 60 days, the regional director will make a determination and notify the operator in writing that the plan:

- is approved,
- is rejected and the reasons for the rejection,
- is conditionally approved, subject to the operator's acceptance of specific provisions and stipulations,
- must be modified prior to its approval, or
- must contain additional information to effectively analyze the impacts that the proposed operation would have on the preservation, management, and use of the NPS unit.

If there are circumstances that require additional processing time, the permitting process may be extended. The permitting process could be extended if:

- the analysis shows that a threatened or endangered species is present in the proposed project area and the NPS is required to undertake Endangered Species Act formal Section 7 consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service (36 C.F.R. § 9.37(b)(6)),
- the analysis shows that cultural resources that are listed or eligible for listing on the National Register of Historic Places may be present in the proposed operations area. To ensure protection of cultural resources, it may be necessary to undertake formal

consultation under the National Historic Preservation Act § 106 with the State Historic Preservation Office, Tribal Historic Preservation Office, and/or the Advisory Council on Historic Preservation (36 C.F.R. § 9.37(b)(6)),

- the project is highly controversial or there is potential for significant impacts, then an environmental impact statement must be prepared and released for a mandatory 60-day public review and comment period (36 C.F.R. § 9.37(b)(5)), and/or
- the NPS needs additional time to provide opportunities for public comment and NPS analysis of these comments (36 C.F.R. § 9.37(b)(6)).

Failure of the NPS to make a determination on the plan of operations within the timeframes specified in § 9.37 constitutes a rejection of the plan. The operator has a right to appeal this decision under 36 C.F.R. § 9.49.

NECESSARY STEPS PRIOR TO CONDUCTING OPERATIONS

- If the NPS includes conditions of approval in the approved plan of operations, the operator must agree in writing to comply with the operating stipulations specified in the NPS approval letter.
- An Affidavit of Compliance with other federal, state, and / or local requirements must be signed by the operator and be on file with the NPS. The affidavit must be signed by a representative of the company with authority to bind the company. See *Appendix C – Sample Letter for an Operator Affidavit of Compliance*.
- At the superintendent's request, operators will need to provide the NPS with a copy of all applicable federal, state, and local permits. If the permits are still pending, operators may submit a copy of the application for such permits. For more information on applicable permitting requirements, see *Appendix B, Part B – Environmental Compliance*.
- Submit performance bond with satisfactory surety that meets NPS requirements.
- The operator must notify the NPS at least 5 days prior to beginning an oil and gas operation on NPS lands. Operations include all onsite activities, such as, mobilization, site construction, drilling operations, well workovers, well plugging etc. This notification will help to ensure that park staff is available to inspect and monitor compliance with the approved plan of operations.

CHAPTER 3
GEOPHYSICAL EXPLORATION OPERATIONS

This chapter includes the following information:

- NPS permitting process checklist for geophysical operations,
- Plan of operations information requirements for geophysical operations,
- Seismic shotpoint offset distances,
- Third part monitoring,
- Required operating stipulations and recommended mitigation measures, and
- Pictorial overview of geophysical operations.

NPS PERMITTING PROCESS CHECKLIST FOR GEOPHYSICAL EXPLORATION

The following checklist outlines the permitting process for geophysical operations in units of the NPS. The items on the checklist are described throughout this handbook. This checklist can be used by an oil and gas operator to make sure that all of the required steps have been completed to prepare a plan of operations for NPS review.

- ☐ Operator contacts park regarding interest in conducting oil and gas operations (for more information see Ch. 2).
- ☐ Operator provides written documentation demonstrating property right to oil and gas in the park (for more information see Ch. 2).
- ☐ Operator meets with park staff to scope proposed project (for more information see Ch. 2).
- ☐ Operator meets with affected federal, state, and local agencies to identify resource issues, permitting requirements, and impact mitigation strategies (for more information see Ch. 2).
- ☐ Operator requests temporary access permit to gather information needed to complete the plan of operations (for more information see Ch. 2).
- ☐ Operator conducts necessary surveys, including natural and cultural surveys, as applicable and surveys / stakes the operations area (for more information see Ch. 2).
- ☐ Operator prepares plan of operations and submits draft plan to the NPS (for more information see Ch. 2).

  The Plan of Operations for Geophysical Exploration must include the following sections:
  - ☐ I. Ownership and Contact Information
  - ☐ II. Maps and Plats
  - ☐ III. Timeline for Operations
  - ☐ IV. Description of Operations
  - ☐ V. Spill Control and Emergency Preparedness Plan
  - ☐ VI. Reclamation Plan
  - ☐ VII. Affidavits and Statements
  - ☐ VIII. Other Applicable Permits
  - ☐ IX. Background Environmental Information
  - ☐ X. Relationship to Park Planning Documents

- ☐ NPS performs a completeness and technical review of the plan of operations (for more information see Ch. 2).
- ☐ Operator revises plan of operations, if necessary (for more information see Ch. 2).
- ☐ Park staff prepares NEPA document (or adopts the operator's or consultant prepared NEPA document), incorporates other environmental compliance, and initiates mandated consultations with other agencies (for more information see Ch. 2 and Appendix B).
- ☐ Park completes public review process, finalizes decision documents, and notifies the operator that the plan has been approved, conditionally approved, or rejected (for more information see Ch. 2).
- ☐ Operator agrees to conditions of approval (if any), submits applicable state and federal permits, and files performance bond with the NPS (for more information see Chs. 2 and 10).

PLAN OF OPERATIONS INFORMATION REQUIREMENTS FOR GEOPHYSICAL EXPLORATION OPERATIONS

Below is an explanatory list of requirements that nonfederal oil and gas operators need to include in a plan of operations for geophysical exploration operations. These requirements are based on the regulatory provisions under 36 C.F.R. § 9.36. This list is also used by the NPS to determine if a proposed plan of operations is complete and sufficiently detailed to merit "official acceptance" for review and analysis in accordance with the regulations at 36 C.F.R. § 9.36(c).

A plan of operations may not need to address all of the information requirements presented below. The operator and NPS staff will narrow the list during project scoping. In some instances, the NPS may require additional information to effectively analyze the proposed operation (36 C.F.R. § 9.36(a)(18)). Any additional information requirements would be identified during project scoping.

The operator will submit the plan of operations, tender the performance bond, and be the responsible party for compliance with the plan of operations.

I. OWNERSHIP AND CONTACT INFORMATION

The purpose of this section is to identify the “operator” as defined under the NPS regulations, to document the operator’s property right to oil and gas in the park, and to identify primary company contacts for planning, field operations, and emergencies.

A. Name(s) and address(es) of:
   1. Surface owner(s) (if other than the NPS), and
   2. Lessor (mineral owner).

B. Name, address, and telephone number of the operator including:
   1. Person accountable for operations,
   2. Field representative, and
   3. Contact person in case of spill or other emergency.

C. Copy of the instrument(s) demonstrating the operator’s right to conduct geophysical operations for all tracts of land within the project area. Examples include:
   1. Lease,
   2. Deed,
   3. Assignment of rights, or
   4. Designation of operator.

   NOTE: When an operator is proposing large-scale seismic programs that involve operations on many different tracts with numerous mineral owners, it may be difficult to obtain all of the desired permissions from all of the owners and the related property right documentation. In such cases operators may still be gathering the necessary property rights while developing a plan of operations. However, before the NPS will issue a data collection permit or accept the plan of operations as complete for formal processing, the operator must provide the NPS with documentation demonstrating that it has a right to conduct geophysical operations in all of the proposed project area.

II. MAPS AND PLATS

The purpose of this section of a plan is to graphically show the operator's mineral tracts and the area of proposed activities in relation to the park, and the locations of man-made or environmental hazards that may affect the methods of operations. The scaled location plats are intended to clearly and accurately define the area that the operator has available for conducting well operations and to identify the area that the operator is responsible for reclaiming.

A. Operation Location Map(s) – Provide map(s) showing the proposed seismic survey area. Use 1:24,000 scale USGS quadrangle map(s) and show the following:
   1. NPS park unit boundary,
   2. Each mineral tract or lease cross-referenced to the property right information provided in Section I. C.,
   3. Proposed locations of source and receiver lines within the park,
   4. Locations of pipelines, wells, or any other potential hazards within a one-mile radius of the proposed survey lines, and
   5. Locations of environmentally sensitive areas that might require avoidance or other mitigation measures.

III. TIMELINE FOR OPERATIONS

The purpose of this section of the plan is to identify when operations will be conducted and how long they will last. Any proposals to avoid or modify operations due to seasonal timing restrictions should also be noted in this section.

A. Provide an estimated timeline for the proposed operation, including the following information (as applicable):
   1. Estimated date to begin equipment transportation to the staging area,
   2. Estimated date to begin geophysical operations,
   3. Estimated geographic sequence of operations for the 3D seismic survey,
   4. Anticipated longevity of operations,
   5. Estimated date when reclamation will begin, and
   6. Estimated time to complete reclamation.

IV. DESCRIPTION OF OPERATIONS

The description of operations should provide enough detail on the proposed methods, sequence, and equipment to assess the proposal's impacts on the environment. Thus, the amount of information in this section will vary depending both on the planned activities and the areas where they will be conducted. Address the following requirements as applicable, providing enough detail for the NPS to have a clear understanding of the proposal.

A. Methods, sequence of work, and all equipment to be used in acquiring seismic data (include photographs of equipment):
   1. Vehicle description and use,

2. Source point locations and line layout,
3. Receiver lines configuration, and
4. Energy sources (*e.g.* explosives, vibroseis trucks, etc.).

NOTE: Operators cannot use sources of water inside the park without written permission of the regional director. The regional director can only approve a plan of operations that uses a source of water from inside the park if: 1) the operator's water right is superior to the United States claim, or 2) if the water right is subordinate to the U.S. government's, the operator shows that removal of the water would not damage park resources (36 C.F.R. § 9.35).

B. Description of all actions to control, minimize, or prevent damage to the recreational, biological, scientific, cultural, and scenic resources of the park. Include those measures (place, time, methods, and equipment) that the operator and NPS identified during scoping and the onsite meeting to improve operations with respect to park resources, values, and visitor safety (as well as other measures developed by the operator during their plan preparation). This also includes all actions to be taken to comply with regulatory operating standards and state and federal permit requirements, as applicable. See Tables 3.2 and 3.3 for lists of required operating stipulations and recommended mitigation measures for geophysical operations.

C. Description of all security measures that will be used to ensure public health and safety.

D. Statement that operator will comply with operating standards of 36 C.F.R. § 9.41-9.46. Requests for variances should be accompanied with supporting information.

V. SPILL CONTROL AND EMERGENCY PREPAREDNESS PLAN

The NPS has combined informational requirements and operating standards from the 9B regulations to develop the format for a Spill Control and Emergency Preparedness Plan. This plan covers the substances or site conditions that pose risks to human health and safety and the environment. It also describes the actions the operator would take to minimize these risks in the event of a spill or natural disaster (*e.g.*, flood, fire, hurricane, or tornado). See *Chapter 11 – Spill Control and Emergency Preparedness Plan* in the Operator's Handbook for the organization and content of a Spill Control and Emergency Preparedness Plan.

VI. RECLAMATION PLAN

The reclamation plan will describe the actions needed to meet the general regulatory reclamation standards[6] as well as site-specific reclamation goals. It will be based on the disturbance anticipated from the proposed operations (as described in Section IV.), and reclamation expectations of the NPS as identified during project scoping. For more information on site reclamation, see *Chapter 7 – Well Plugging and Surface Reclamation*. The operator should organize the reclamation plan with the following sections.

[6] See § 9.39, Reclamation Requirements, and Chapter 7, Well Plugging and Surface Reclamation in this handbook.

A. Reclamation Goals

1. Summarize the site-specific reclamation goals developed during project scoping. Site-specific goals might include a desired percent of vegetative ground cover, the type of plants, soil stabilization, repair of ruts, etc.
2. State the timeframes for reclamation. Describe when the reclamation activities would begin, how long they would last, and the schedule for monitoring the results of the reclamation.

B. Reclamation Procedures

The 9B regulations identify steps that need to be completed at a minimum to satisfy reclamation standards for operations on federal surface.[7] The following steps have been adjusted to fit the impacts from seismic operations that commonly need active reclamation. They may be used as an outline for developing the plan's reclamation procedures. The operator can describe the methods and equipment that will be used to accomplish each of these steps.

1. Restore areas of disturbance around shotholes including natural topographic contours and vegetation. (NOTE: The method(s) of plugging shotholes should be covered in the description of operations section of the plan.)
2. Remove all equipment, stakes and flagging, and all other man-made debris that resulted from operations.
3. Restore trails created or altered by vehicles to their natural contours and vegetative cover.
4. Monitor and report on the results of the reclamation effort.
5. Remove or neutralize contaminating substances. The operator is responsible for removing soils or any other material that becomes contaminated. If there is reason to suspect soils or groundwater have been contaminated, the operator will likely need to collect and test samples to verify that contaminating substances have been removed or neutralized. Neutralization or removal of contamination means that contaminant concentrations will be reduced in soils (or groundwater) to a condition that will not adversely affect, injure, or damage federally-owned or controlled lands and waters, provides for the safe movement of native wildlife, and which does not jeopardize visitor health and safety.

C. Reclamation Cost Estimate

The cost of reclamation in part determines the amount of the performance bond.[8] Provide an estimate of costs for a third party to complete the reclamation procedures in Section B above. Provide enough detail to support the total estimate for reclamation.

The NPS will verify and use the cost estimates to set the reclamation portion of the performance bond. If the operator chooses not to provide the cost estimate for reclamation, the performance bond may be set at the maximum amount allowed by regulation,[9] which is $200,000 per operator per park unit. If the operator already holds a $200,000 bond for other operations in the same park, it is unnecessary for the operator to provide the cost estimate information required by this section. Nonetheless, the operator will remain responsible for carrying out reclamation associated with his/her activities in the park.

[7] For operations on private surface estate, see Chapter 7 in this handbook.
[8] See § 9.48(d)(1) and Chapter 10 in this handbook.
[9] See § 9.48(d)(3) and Chapter 10 in this handbook.

VII. AFFIDAVITS AND STATEMENTS

Include an "Affidavit of Compliance" signed by an official that is authorized to legally bind the company as required by regulations at 36 C.F.R. § 9.36(a)(15). The affidavit should state that the proposed operations are in compliance with all applicable federal, state and local laws and regulations. An example Affidavit of Compliance is included in *Appendix C – Sample Letters for Nonfederal Oil and Gas Operations*.

VIII. OTHER APPLICABLE PERMITS

At the superintendent's request, operators will need to provide the NPS with a copy of all applicable federal, state, and local permits. If the permits are still pending, operators may submit a copy of the application for such permits.

IX. BACKGROUND ENVIRONMENTAL INFORMATION

The purpose of this section of the plan is to present information on existing natural and cultural resources in the project area, assess the environmental impacts of the proposed operation, and discuss any technologically feasible alternatives for the proposed operation. Information that should be presented in this section will be determined during project scoping with park staff. The park may have some of the required natural and cultural resource information for the operator's use in preparing this section of the plan.

A. Description of natural resources in the proposed operation area as they relate to the design and implementation of the seismic survey.

   1. Generalized description of the surface and subsurface geology for the area of operations. Include the following in the discussion:
      a. surface formation(s) and thickness;
      b. generalized description of the subsurface geology, including stratigraphy and depths to formation tops;
      c. proposed total depth of penetration of seismic waves and depth of potential (or known) producing formations;
      d. soil type(s) and engineering properties such as permeability, porosity, erosion potential, etc.; and
      e. description of paleontological resources known to occur or likely to occur in the project area (if applicable). The discussion should include the results of a paleontological survey of the project area performed by a qualified paleontologist.
   2. Hydrology and water quality, including the following:
      a. proximity to surface water (intermittent or permanent watercourses, streams, ponds, lakes, springs, etc.);
      b. depth to groundwater;
      c. proximity to any wetland boundary (defined by site-specific wetland delineation);
      d. proximity to the base floodplain, 100-year floodplain, and 500-year floodplain; and
      e. water quality in nearby surface water and/or shallow groundwater.

3. Vegetation species composition in operation area, including predominant herbaceous, shrub, midstory and overstory species. (NOTE: This information is necessary to properly design a reclamation plan).
4. Wildlife species composition in the proposed operation area.
5. Federal or state threatened/endangered plant or wildlife species that inhabit or frequent the proposed operation area.
6. Air quality in the proposed operation area, including information on pollutant levels and existing point sources for pollutants in the area.
7. General description of baseline noise levels in the proposed operation area, including local sources contributing to increased noise levels.

B. Description of cultural resources in the proposed operation area should include the following information:
   1. Background information on archeological and historic resources documented in the general area, including review of the National Register of Historic Places.
   2. Results of an archeological and historic resource field survey of project area performed by a qualified archeologist approved by the NPS.

C. Identification and proximity of park visitor use areas (*e.g.*, trails, campgrounds, public roads, picnic areas, overlooks etc.) from the proposed operation area.

D. Description of the anticipated direct, indirect, and cumulative effects of the proposed operation on the park natural and cultural resources, and socioeconomic environments listed above. (This is the operator's opportunity to support their conclusions on environmental effects of their operations.)

X. RELATIONSHIP TO PARK PLANNING DOCUMENTS

The plan of operations must discuss how the proposed operation relates to park planning documents (General Management Plan, Oil and Gas Management Plan, etc.) in terms of considering and integrating operational measures described in the plan(s) to achieve park management objectives. The park's oil and gas contact where the operations are proposed will furnish a copy of all applicable park planning documents upon request.

SEISMIC SHOTPOINT OFFSET DISTANCES

The 9B regulations state that "…surface operations shall at no time be conducted within 500 feet of…any structure or facility (excluding roads) used for unit interpretation, public recreation or for the administration of the unit, unless specifically authorized by an approved plan of operations." (36 C.F.R. § 9.41(a)) If the operator proposes to place shotpoints closer to a cultural object or facility than the distances identified in Table 3.1, the burden is on the operator to demonstrate that the reduced offset distances would have negligible effects on those resources. If the NPS requests that the operator conduct operations different than the 500 foot operating standard in the 9B regulations, the NPS will demonstrate that the variance to the offset distances is necessary to protect infrastructure and resources.

The following table developed by the International Association of Geophysical Contractors shows recommended offset distances from wells, buildings, and other infrastructure for the detonation of explosives at seismic shotpoints. While keeping the 9B regulatory 500-foot offset distance in mind, operators may use these guidelines in designing seismic surveys in park units.

Table 3.1. Industry Recommended Minimum Safe Offset Distances from Wells, Buildings and Other Infrastructure for the Detonation of Explosives at Seismic Shotpoints

OBJECT	CHARGE SIZE (IN POUNDS)							
	½	1	2 ½	3	5 ½	6-10	11-15	16-20
Pipeline less than 6" diameter	50'	100'	150'	150'	200'	250'	300'	400'
Pipeline 6" to 12" diameter	75'	150'	200'	200'	300'	400'	500'	600'
Pipeline greater than 12" diameter	100'	200'	300'	350'	400'	500'	600'	800'
Telephone lines	20'	20'	50'	50'	50'	56'	76'	80'
Railroad track or main paved highway	50'	100'	100'	150'	150'	220'	280'	350'
Electric power line (shotholes not to exceed 200' depth)	75'	100'	200'	200'	200'	200'	250'	300'
Water wells, excluding irrigation wells, buildings, underground cistern, and other similar objects	225'	300'	500'-600'	500'-600'	600'-1000'	800'	1000'	1200'
Brick and/or concrete block buildings	275'	400'	500'	600'	800'	1000'	1200'	1500'
Producing oil and gas wells	350'	450'	600'	700'	800'	900'	1000'	1000'
Irrigation wells	500'	800'	1000'	1200'	1500'	2000'	2500'	2500'

Source: Table adapted from the International Association of Geophysical Contractors (1998) by Acadian Geophysical, 1999.

THIRD PARTY MONITORING

The NPS may require an operator to hire a third party monitor to oversee the geophysical operation. The purpose of third party monitoring is to ensure operator compliance with the terms of the approved plan of operations and to protect park resources and values.

The company hired to do the third party monitoring must meet the following three requirements:

1. Third party monitors shall not include any representatives or employees of the operator, or any contractors or subcontractors of the operator working on any task related to this project, or any persons who would have a financial or other interest in the outcome of the geophysical operation.
2. The persons hired to do the monitoring must meet the technical qualifications to monitor the specific resources in the NPS unit where the operations would occur (*e.g.*, wetlands scientist, wildlife biologist, archeologist etc.).
3. The scope of work must meet the objectives of monitoring in the park.

The operator and park staff will work together during project scoping and development of the plan of operations to come up with an effective plan for monitoring the operations. During project scoping, the operator and NPS will discuss the requirement for third party monitoring and the technical qualifications that would be needed by the monitor(s). The NPS will provide the operator with a list of roles and responsibilities and necessary qualifications of the third party monitor(s). In some cases this information may not be developed until after the NPS technical adequacy review of the plan of operations. The operator will include details in the plan of operations concerning the use of a third party monitor and disclose that there will be no conflict of interest between the operator and the company that will be hired to do the monitoring and

that the monitor(s) will have the technical expertise to do the monitoring. Once the third party monitor(s) have been selected by the operator, a list of the persons and their qualifications must be provided to the NPS.

The NPS may develop stipulations that specify conditions of the third party monitoring (36 C.F.R. § 9.37(f).[10] Examples of these stipulations include, but are not limited to:

- The third party monitor must be paid by the operator.
- The monitor must report directly to the park superintendent or his/her representative.
- The NPS will identify the frequency and type of compliance reports.
- If a violation of the terms of the monitoring contract occurs, the NPS would require immediate corrective actions from replacement of the monitor up to suspension of the approved plan of operations.
- The NPS may suspend the operations if the monitor demonstrates to the NPS that the operation poses an immediate threat of significant injury to federally owned or controlled lands or waters. (36 C.F.R. § 9.51(c)(2))

Third party monitors would be required to ensure operator compliance with the approved plan of operations. Monitoring may include making sure that:

- Access in the unit is along designated routes and by approved means (*e.g.*, on foot or by vehicle).
- Vegetation trimming meets the park's specifications.
- Operations avoid rare, threatened or endangered plant and animals; archeological sites; watercourses; research plots; sensitive resource areas; and Special Management Areas.
- There are no spills of oil or contaminating or hazardous substances.
- Shotholes are drilled according to the approved plan.
- There is proper handling, transport, and storage of explosives.
- The operations area is cleaned up and reclaimed following the geophysical operation.

[10] Under this provision all approved plans are conditioned upon the superintendent's right to access an operation to monitor and ensure compliance with a plan of operations. Since under this scenario a third party will handle monitoring, the superintendent can exercise his or her right to access and monitor the operation through the third party via specific stipulations in its approval letter.

OPERATING STIPULATIONS AND MITIGATION MEASURES FOR GEOPHYSICAL EXPLORATION

The tables in the following section list operating stipulations (Table 3.2) required by the NPS and suggested mitigation measures (Table 3.3) for geophysical exploration on NPS lands. The primary resource(s) that would be protected by the operating stipulations and mitigation measures listed in the tables are denoted by a √ symbol.

Table 3.2 focuses on the NPS 36 C.F.R. 9B regulations but also includes operating stipulations required under other federal laws and regulations. The appropriate citation is shown in parentheses after each requirement. To ensure compliance with all applicable legal and policy mandates, it is the operator's responsibility to consult with the appropriate federal, state, and local agencies prior to beginning operations in a unit of the National Park System and determine which statutory and regulatory requirements would apply to each operation. An additional source of information on environmental protection measures for geophysical operations is the *Environmental Guidelines for Worldwide Geophysical Operations* published by the International Association of Geophysical Contractors.

Table 3.3 lists mitigation measures for geophysical exploration. Use of mitigation measures shown in the table are recommended by the NPS to ensure compliance with the NPS approval standard to utilize "…technologically feasible methods least damaging to the federally-owned or controlled lands, waters and resources of the unit while assuring the protection of public health and safety" (36 C.F.R. § 9.37(a)(1)). Many of the mitigation measures are derived from environmental guidelines and publications developed by the oil and gas industry and environmental professionals and may not address every environmental topic or risk that may be encountered during oil and gas operations. These tables are intended to be a tool to be used during project planning. An operator can look through the tables to see which measures would apply to an operation and select the most appropriate measures to include in his/her plan. An operator has the discretion to select the most appropriate mitigation to meet the NPS least damaging approval standard.

Table 3.2. Required Operating Stipulations for Geophysical Exploration Operations on National Park Service Lands

Geophysical Exploration Required Operating Stipulations **THE APPLICABLE LEGAL CITATION IS NOTED IN [PARENTHESIS] AFTER THE STIPULATION.**	**RESOURCE PROTECTED**	**Air Quality**	**Geology and Soils**	**Paleontological Resources**	**Water (Surface and G.W.)**	**Floodplains**	**Vegetation**	**Wetlands**	**Fish and Wildlife**	**T & E Species**	**Cultural Resources**	**Visitor Use and Experience**	**Human Health and Safety**
In order to use surface or subsurface water from inside the park, the operator must demonstrate in the plan of operations that his/her water rights are superior to any claim of the U.S. to use the water, and where the use is subordinate to that of the U.S., that use of the water will not damage park resources. Since any use of park water has the potential to negatively affect water quality, quantity, and flow patterns, the operator should note what resources would benefit from the in-park water use and how they would benefit the resources. [36 C.F.R. § 9.35]					√				√				
Prepare an Emergency Response Plan to ensure safe operating procedures in the event of a reportable quantity spill; damage to wells, pipelines, or other structures; fire; explosion; medical evacuation; or other emergencies such as strong winds, heavy rainfall, swift currents, and flooding. [36 C.F.R. § 9.36(a)(10)(vi), 40 C.F.R. § 112]			√		√	√	√	√	√			√	√
Prior to beginning operations, in consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service (if applicable), and NPS, identify all threatened, endangered, and sensitive species that may be present in the project area. Based on the species and the proposed operation, operators may be required to conduct biological surveys in the project area. [36 C.F.R. § 9.36(a)(16)(i); Endangered Species Act of 1973 -16 USC 1531 *et. seq.*]										√			
Conduct a pre-operational analysis to adequately describe the natural, social and economic environments that would be affected by the operations (including air quality, geology, topography, soils, surface and subsurface hydrology, vegetation, wetlands, fish and wildlife, threatened and endangered species, cultural resources, and all water and oil and gas wells) within a 2-mile radius of proposed operation. [36 C.F.R. § 9.36(a)(16)(i)]		√	√	√	√	√	√	√	√	√	√		
Conduct cultural resource surveys to document the location and significance of any cultural resource (includes various components of archeological, ethnographic, historic architectural, and historic landscape resources) that might be affected by operations. [36 C.F.R. §9.36 (a)(16)(i), 36 C.F.R. Part 63, 36 C.F.R. § 800.4]											√		
For geophysical operations using underground explosives, conduct a risk assessment of proposed operating methods (depth, size, pattern, and array of explosives) with respect to site conditions (landscape features and physical properties of soils, including depth and thickness of aquitards or water-retardant layers). [36 C.F.R. § 9.37(a)(1)]			√		√								
Discharge explosives at safe distances from pipelines, telephone lines, railroad tracks, roads, power lines, water wells, oil and gas wells, oil and gas production facilities, buildings, etc. Use accepted industry minimum safe offset distances, unless otherwise specified. [36 C.F.R. § 9.37(a)(1)]													√

Geophysical Exploration
Required Operating Stipulations

THE APPLICABLE LEGAL CITATION IS NOTED IN [PARENTHESIS] AFTER THE STIPULATION.

RESOURCE PROTECTED	Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
Surface operations shall at no time be conducted within 500 feet of the banks of perennial, intermittent or ephemeral watercourses; or within 500 feet of the high pool shoreline of any natural or man-made impoundments…unless specifically authorized by an approved plan of operations. If necessary, the operators must specifically request exemptions from this standard in the plan of operations and demonstrate that the exemptions are necessary for acceptable data quality, can be conducted with insignificant affects on park waters or manmade infrastructure, and result in overall resource impact reduction. [36 C.F.R. § 9.41(a)]				√	√							
Protect all survey monuments, witness corners, reference monuments and bearing trees against destruction, obliteration, or damage from operations. Operator shall be responsible for the reestablishment, restoration, or referencing of any monuments, corners, or bearing trees which are destroyed, obliterated, or damaged by such operations. [36 C.F.R. § 9.41(b)]						√						
Possession of firearms by persons conducting oil and gas operations is prohibited in NPS units. [36 C.F.R. § 9.41(f)]								√	√		√	√
The operator shall take technologically feasible precautions to prevent accidents and fires. [36 C.F.R. § 9.46]												√
Operators shall not injure, alter, destroy, or collect any object, structure, or site of historical, archeological, or cultural value, without written authorization from the NPS. [36 C.F.R. § 9.47(a); 43 C.F.R. §3]			√							√		
Ensure that a qualified 3rd party monitor is present during appropriate operational phase(s). Once operations have commenced, the operator shall immediately bring to the attention of the superintendent any cultural or scientific resource, or species of special concern encountered that might be altered, harmed or destroyed by the operation and shall leave such discovery intact until told to proceed by the superintendent. The superintendent will evaluate the discoveries brought to his/her attention, and will determine within ten (10) days what action will be taken with respect to such discoveries. [36 C.F.R. § 9.47(b)]		√	√	√	√	√	√	√	√	√	√	√
Include stop work provisions in the event of a cultural or scientific discovery in operator's contracts. [36 C.F.R. § 9.47(b); 36 C.F.R. § 800.13(b)(3)]										√		
Use of park roads must be in accordance with procedures outlined in an approved plan of operations. [36 C.F.R. § 9.50]		√									√	
Do not locate staging areas within the 100-year floodplain. If there is no practicable alternative to siting the staging area in the floodplain, design operations to minimize harm to the floodplain. [EO 11988 Sec 2 (a)(2)]				√	√							√

Geophysical Exploration **Required Operating Stipulations** **THE APPLICABLE LEGAL CITATION IS NOTED IN [PARENTHESIS] AFTER THE STIPULATION.**	**RESOURCE PROTECTED**	**Air Quality**	**Geology and Soils**	**Paleontological Resources**	**Water (Surface and G.W.)**	**Floodplains**	**Vegetation**	**Wetlands**	**Fish and Wildlife**	**T & E Species**	**Cultural Resources**	**Visitor Use and Experience**	**Human Health and Safety**
Develop an adequate flood warning system which monitors one or more physical parameters (*e.g.*, rainfall, runoff, streamflow) and provides warning of an impending flood to the operator, operator's contractors and subcontractors, visitors and park personnel with adequate time to permit evacuation; and use signs, high-water indicators, and other information indicating that a site is floodprone and suggesting appropriate actions in the event of flooding. [NPS Procedural Manual 77-2]													√
Wetlands (both Cowardin classification system and jurisdictional wetlands) must be delineated where proposed operations would directly or indirectly adversely impact wetlands. Wetland delineations shall be approved by the U.S. Army Corps of Engineers and the Water Resources Division of the NPS and incorporated in the Statement of Findings and Plan of Operations. [Executive Order 11990, NPS Procedural Manual 77-1 § 5.1]			√		√		√	√					
Plan work to avoid known cultural resources. If work cannot avoid known cultural resources, assess and mitigate effects on National Register eligible or listed properties in consultation with State Historic Preservation Office and Advisory Council on Historic Preservation. [36 C.F.R. § 800.3-800.9]											√		
An incidental take of a federally listed species must be immediately reported to the NPS and FWS, all other protected species would be reported to the NPS. [Endangered Species Act, 16 USC §§ 1531 – 1544, 50 C.F.R. Parts 402, 450]										√			

Table 3.3. Recommended mitigation measures for geophysical exploration on National Park Service lands

Geophysical Exploration Recommended Mitigation Measures	Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
RESOURCE PROTECTED												
Hold daily safety and environmental meetings with crews to reinforce crew and public safety, environmental concerns, and operating procedures.												√
Minimize conflicts with visitors by avoiding designated visitor use areas. If operations are needed in or around designated visitor use areas for successful completion of the project, then schedule work during low visitor use times and/or implement strategies to minimize the sights, sounds, and duration of operations in and around designated visitor use areas.											√	√
Use minimum number of vehicles, boats, or aircraft necessary to provide efficient and safe access for personnel and equipment.	√	√	√	√	√	√	√	√	√	√	√	√
Reduce vehicle speeds on access roads to minimize dust. Consider spraying roads and access routes with freshwater to reduce dust.	√											
Use properly designed, maintained and operated equipment to reduce emissions such as proper engine fuel mixtures, regularly serviced exhaust systems, and proper engine tuning.	√											
Use designated access routes, designated roads, and natural routes (*e.g.*, waterways) whenever possible during operations and during travel to and from the project area.		√		√							√	√
Locate primary staging areas outside of the park. Confine refueling, lubrication, and maintenance of vehicles and equipment to areas outside the park where feasible.		√		√								
Where feasible, use global positioning systems (GPS) technology to minimize the amount of vegetation removal when surveying source and receiver lines.						√					√	
In areas where vegetative cover precludes the use of traditional GPS survey equipment, use of non-satellite kinematic and inertial survey control systems to survey source and receiver lines to eliminate the need to trim or remove vegetation.						√					√	
Conduct operations during dormant (plant dormancy) seasons.						√						
Cut vegetation by hand, supplementing as necessary with chain saws or other motorized cutting equipment.											√	√
Selectively cut vegetation along source and receiver lines, offsets, and designated access routes as necessary to accommodate safe passage of personnel and equipment.						√					√	√
Leave small vegetation in place (low shrubs, and herbaceous vegetation), consistent with safe passage of personnel and equipment.						√		√			√	
Leave topsoil, rootstock, and seeds on lines and designated access routes to encourage natural revegetation.		√				√						
Clear vegetation in accordance with the park's current vegetation management plans or policies.						√					√	

Geophysical Exploration
Recommended Mitigation Measures

RESOURCE PROTECTED	Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
Secure flagging, other markers, cables, or other equipment without cutting or slicing vegetation.						√					√	
Do not permanently mark any tree in the park.											√	
Use means of access other than land vehicles when soils are saturated to minimize compaction, displacement, and rutting of clayey soils.		√										
Conduct operations during dry seasons when soils are less susceptible to compaction, displacement and rutting.		√	√									
Use vehicles with low ground pressure to minimize surface impacts. In lieu of using large mechanized drilling equipment, use lightweight, walk behind tracked drills or hand augers as appropriate in the park.		√										
Use sonic drilling technology to reduce shothole cuttings.				√			√					
Plan efficient refueling of vehicles and equipment to minimize travel and chances for spills.		√		√								
Refuel or lubricate equipment over secondary containment such as drip pans, drip basins, or impenetrable polyvinyl covered by absorbent materials.		√		√								
Periodically check for leaks under all operating vehicles and equipment; contain and remove contaminated soil for proper disposal.		√		√								
Replace all cuttings in shotholes / boreholes, including proper tamping of cuttings during shothole plugging. Avoid backfilling shotholes too quickly to avoid bridging. Spread any remaining cuttings on the surface into a thin layer at each hole. Note: Plugging materials may be required for shotholes less than 20 feet deep.		√									√	
Use high velocity seismic energy source charges and electric detonation systems that allow smaller energy sources with better signal strength and a high degree of safety.												√
Use existing stream crossings whenever practicable.				√								
Minimize stream crossings, if necessary to conduct operations, cross at right angles to the stream.				√								
Ensure that approaches to stream crossings do not alter natural drainage into the stream. Temporary runoff diversion and/or erosion control structures may be appropriate to minimize erosion and vegetation loss.				√		√						
Whenever practical, cross streams or watercourses where the water is shallow and the streambed or bottom is firm.				√				√	√			
Minimize width of survey lines and designated access routes, particularly at water crossings to minimize input of sediment and vegetation in watercourses.				√								
Avoid blocking or filling any natural drainage path.				√								
When traveling in water, use slow vehicle and boat speeds to minimize resource damage.				√		√		√	√			
When using boats, ensure adequate water depth to minimize bank erosion and effects on aquatic life.		√				√		√	√			

Geophysical Exploration
Recommended Mitigation Measures

RESOURCE PROTECTED	Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
Secure portable fuel tanks to the boat for safety and to prevent loss.				√								√
Use loading poles or tamping poles to ensure charges are placed and seated at the proper depth, and shotholes are properly plugged with cuttings and/or other authorized materials. Use plugging materials that meet International Association of Geophysical Contractors (IAGC) standards.		√		√								√
Use plugging materials in tubes or casing which will expand appropriately. Recommended tube diameter is 75 percent of shot-hole diameter.		√		√								
Plugs should set at least 24 hours before detonation of charges.		√		√								
If a flowing shothole occurs (groundwater under artesian conditions), attempt to plug it immediately. If the flow is too great, use expansive plugging material inflatable plug above the aquifer and backfill with expansive plugging material to the surface.		√		√								
Clean vehicles and equipment prior to entering the project area to avoid introducing foreign plant materials.						√						
For vehicles, clear the undercarriage of brush to prevent fires when driving over dry areas. Use spark arresters and spark suppression accessories on equipment.						√						√
Avoid threatened, endangered and sensitive species and their habitats during project design.						√			√			
Use US Fish and Wildlife Service "Conservation Guidance for Plant and Animal Candidate Species" to plan and conduct operations that will minimize disturbances to these species.						√			√			
Provide field personnel with training in identification and habits of wildlife in the project area.								√	√			
If using helicopters, locate helipads as far apart as practical in existing clearings.								√	√		√	
Consistent with safety, minimize the number of helicopter flyways.								√	√		√	
Use GPS field asset tagging technology for real-time monitoring and helicopter support operations to minimize flight time and reduce the need for field staging areas.								√	√		√	
Use long sling lines, consistent with safety, to minimize the effects of down draft from the rotor.								√	√		√	
Avoid or bypass wildlife areas marked on the project map and/or in the field to minimize disruption to wildlife, especially in areas of active denning, nesting, spawning, migration, and feeding. Where interaction with wildlife is unavoidable, minimize the sights, sounds, and duration of operations to the maximum extent feasible.								√	√			
Report any sighting of threatened, endangered, or sensitive species or paleontological resources to the NPS.			√			√			√			
Inform visitors and area residents and users while planning and conducting an operation. For example, post warning and informational signs, notices in visitor centers, notices in local newspapers and publications, etc.											√	√

Geophysical Exploration
Recommended Mitigation Measures

RESOURCE PROTECTED	Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
Conduct operations during low visitor use periods.											√	√
Adequately sign project area, especially at visible intersections and locations, indicating type of operation and other information and appropriate actions.											√	√
Immediately following completion of operations, remove survey stakes, flagging, trash, and other debris or waste from the project area.											√	
Do not burn vegetation, survey stakes, flagging, refuse, or other debris or waste incidental to maintenance or operation.	√										√	√
Provide trash bags and trash receptacles for cans, bottles, paper, and other trash generated daily by crews.											√	
Bury and/or secure capwire from undetonated or live charges to reduce risk to human health and safety.												√
Take appropriate measures to ensure all charges are fired. Disable misfired charges by breaking or cutting the capwire as deep below ground as practical.												√
When working in dry vegetation, prohibit smoking, or only allow smoking at designated times and locations.						√						√
Ensure fire-fighting equipment and personnel are available while operating in dry vegetation. Consider both fire danger and fire danger rating during planning and conduct of operations.						√						√
Use seed, mulch, or other authorized materials or structures to mitigate the potential for erosion. Use certified weed-free mulch, native seed, or sterile cover crops that are not sources of undesireable nonnative plant species.		√	√	√		√						

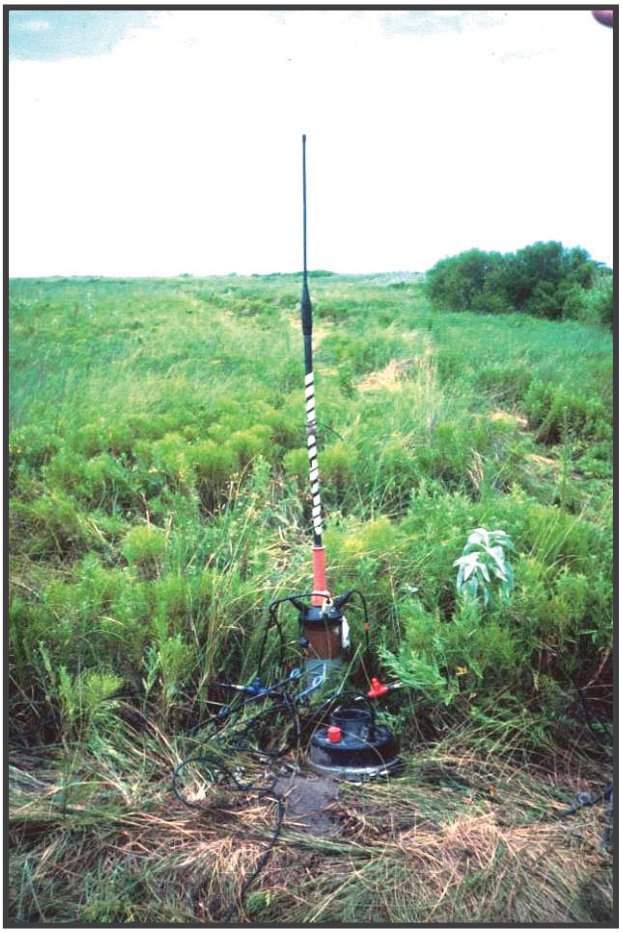
GEOPHYSICAL OPERATIONS - A PICTORIAL OVERVIEW

Geophysical operations are of relatively short duration and can usually be planned and executed in a way that surface impacts will be temporary. Crews may be in the field for 1 to 4 weeks for a conventional single line survey, and several months or more for an average 3-dimensional survey. The intensity of surface impacts will be largely controlled by the methods of access and the equipment used to drill shotholes. The following resource issues are commonly associated with geophysical activities:

- Access along source and receiver lines may require varying levels of vegetation removal.
- Travel along source and receiver lines by overland vehicles may damage soils (compaction or rutting) and vegetation.
- Water quality may be degraded from sedimentation (eroded soils or shothole cuttings).
- Small spills and improperly handled wastes can degrade soils and waters, harm vegetation, fish, and wildlife, air quality, and aesthetics.
- Air quality is degraded from dust and engine emissions.
- The natural sound is interrupted by vehicles and drilling noises.
- Fish and wildlife are injured by human presence, vehicular injury, exposure to contaminants, loss or degradation of habitat, or unauthorized takings.
- Cultural resources may be threatened by direst disturbance, increased human accessibility and fire.
- Large crews that are active in an area may disrupt park visitor uses and experiences.

STRATEGIES TO MINIMIZE IMPACTS FROM SEISMIC OPERATIONS

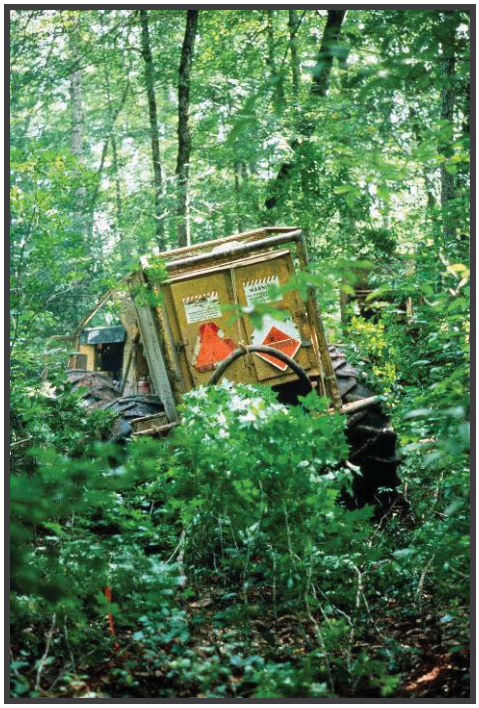
- Schedule operations to avoid conflicts with visitors and critical wildlife nesting or mating periods. Seasonal timing of operations may also help minimize impacts on soils, water, and vegetation.
- When siting and accessing seismic lines, use existing roads and trails to the maximum extent feasible.
- Position survey lines and access routes to minimize the number and size of stream crossings.
- Use global positioning devices instead of line of sight surveying to minimize the amount of vegetative cutting. Hand cut vegetation along seismic lines where a line of sight survey is necessary.
- Use vehicles that will not disturb the soils and vegetative root systems. Seasonal timing may help minimize impacts on vegetation. Foot access and hand portable drills may be feasible in areas where large vehicles would cause noticeable damage to soils and vegetation.
- Use foot access for receiver lines if vehicular access will require active reclamation steps.
- Consider the use of mini-shothole patterns so that smaller, less damaging equipment may be used to drill the shotholes.
- Minimize the number of passes along a line that uses vehicular access. Often single passes are achievable with careful project planning.
- In areas where cultural resources are expected, have a qualified archeologist accompany each survey crew to identify and avoid cultural sites.
- Offset shotpoints from structures, water bodies, and sensitive resource areas.



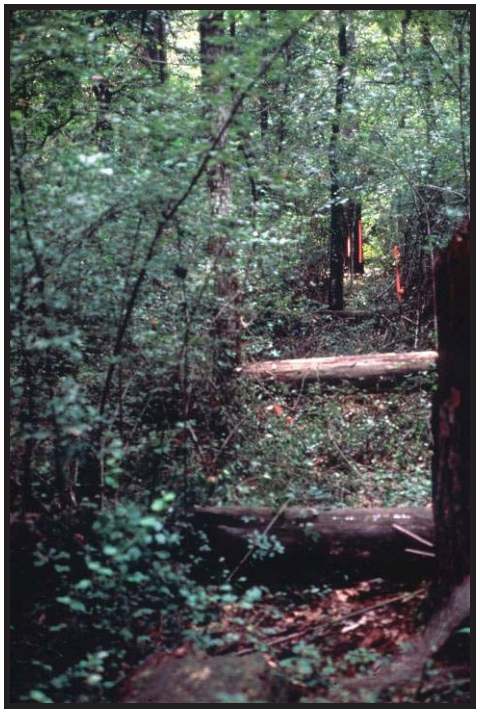
A recording station uses telemetry to transmit geophone data to the recording truck.

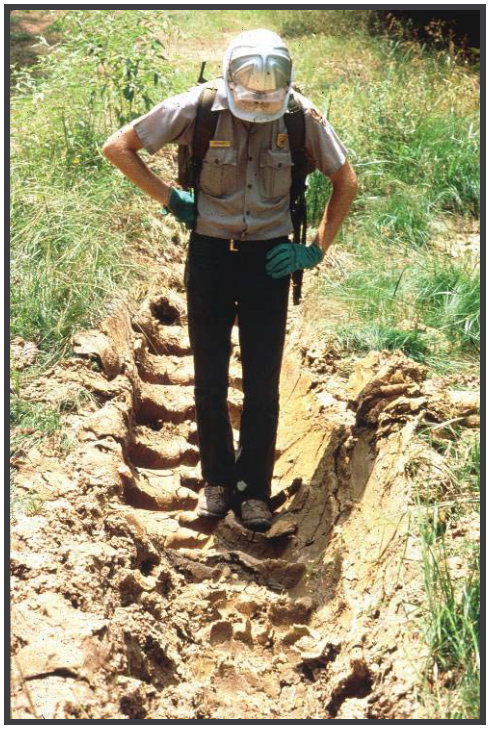
PROPER SELECTION OF SHOTHOLE DRILLING EQUIPMENT

Proper selection of shothole drilling equipment is the key to reducing impacts on park resources.

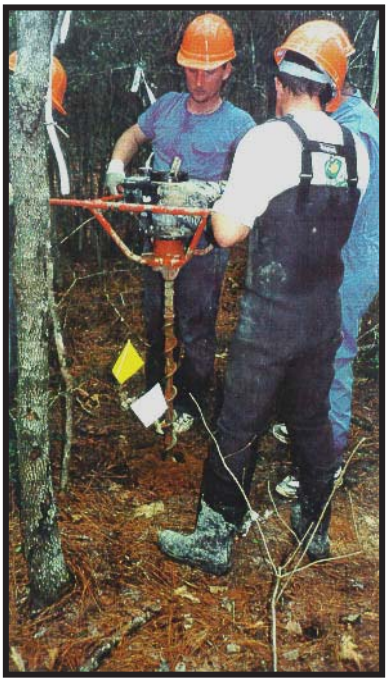


Shotholes previously drilled to 100-feet depths have given way to mini-shothole patterns in some seismic surveys. The mini-shothole patterns may consist of 5 to 10 shotholes drilled to depths of 3 to 5 feet. Heavy articulated buggies that are used to drill deep shotholes can destroy small trees, create wide pathways, and leave sizeable ruts. When used at Big Thicket National Preserve, this method of access has resulted in less damage to park resources.



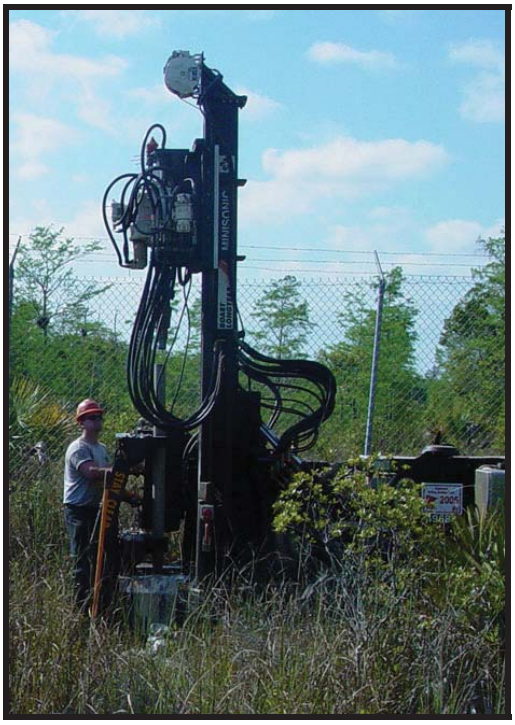


In this photo, trails were cut to provide access for large drilling equipment.



Use of hand portable drills to drill mini-hole patterns that are used in some seismic surveys minimizes vegetation cutting and soil disturbance.

When the flagging is removed from this mini-hole seismic line (photo taken looking down the line), it will be difficult to identify the line's location.



In other areas such as Big Cypress National Preserve, operators have used sonic drilling technologies to drill shotholes which eliminated drill cuttings on the surface that must later be cleaned up.

USE OF EXISTING TRAILS AND ONE PASS STRATEGIES

In Big Cypress National Preserve, some areas have a high concentration of existing trails from recreational ATV and swamp buggy use. An operator successfully designed a 3D seismic survey with source lines maximizing the use of existing trails in the survey area. A muskeg carrier fitted with a water tank and drill was effective for drilling shotholes along the existing trails. Surface impacts were minimal and generally required no active reclamation measures.

Proper planning along a seismic line that requires vehicular access is the key to limiting the number of trips the vehicle makes up and down the line. One-pass operations are feasible in many instances. Helicopters have also been used successfully to move personnel, equipment, and supplies to minimize the number of vehicle passes.

USE OF HELICOPTERS

Helicopter transport of drilling equipment precludes the need for new trails in sensitive and difficult to reclaim areas. Surface impacts are limited to the immediate area around each shothole.

In Big Cypress National Preserve the operator staged helicopters from an existing disturbed area, in this case, from an active production site.

For this 3D seismic survey, three heliportable drilling units kept a single helicopter busy and minimized the time the crew had to wait for equipment.

Four sling loads were used to move the air drilling unit, compressor, power unit, and toolbox from one shotpoint to the next.

USE OF LOW IMPACT VEHICLES

The wide tracks on this shothole drilling rig distribute the vehicles weight over a large area giving it a very low pound per square inch displacement. Aluminum construction of many typically steel components contributes to the very low displacement of this tracked marsh buggy.

A person might leave footprints two inches deep on this sensitive mudflat environment, but the aluminum buggy did not create any ruts over 1/2 inch deep. Reclamation was restricted to just a few areas.

Conventional vehicles with tires created rutting in this mudflat area over 15 years ago. Restoration to pre-disturbance conditions would be difficult to accomplish in this type of environment.

Avoid damage to the soil and root structure and eliminate costly reclamation projects.

Use of vehicles with large "terra-tires" is another method used to distribute a vehicle's weight, like on this water truck. ATV's are designed with this principle, and may be appropriate for transporting personnel and equipment along survey lines.

Though the exposed blades of grass are damaged by the vehicle, the root systems and soil structure are not.

Soon after the survey is complete, the grass is growing again without the need for the company to perform any type of active reclamation.

CHAPTER 4
DRILLING & PRODUCTION OPERATIONS

This chapter includes the following information:

- NPS permitting process checklist for drilling and production operations,
- Plan of operations information requirements for drilling and production,
- Third party monitoring,
- Required operating stipulations and recommended mitigation measures, and
- Pictorial overview of drilling and production operations.

NPS PERMITTING PROCESS CHECKLIST FOR DRILLING AND PRODUCTION OPERATIONS

The following checklist outlines the permitting process for drilling and production operations in units of the NPS. The items on the checklist are described throughout this handbook. This checklist can be used by an oil and gas operator to make sure that all of the required steps have been completed to prepare a plan of operations for NPS review.

- ☐ Operator contacts park regarding interest in conducting oil and gas operations (for more information, see Ch. 2).
- ☐ Operator provides written documentation demonstrating property right to oil and gas in the park (for more information, see Ch. 2).
- ☐ Operator meets with park staff to scope proposed project (for more information, see Ch. 2).
- ☐ Operator meets with affected federal, state, and local agencies to identify resource issues, permitting requirements, and impact mitigation strategies (for more information, see Ch. 2).
- ☐ Operator requests temporary access permit to gather information needed to complete the plan of operations (for more information, see Ch. 2).
- ☐ Operator conducts necessary surveys, including natural and cultural surveys, as applicable and surveys / stakes the operations area (for more information, see Ch. 2).
- ☐ Operator prepares the plan of operations and submits the draft plan to the NPS (for more information, see Ch. 4).

  The Plan of Operations for drilling and production operations must include the following sections:

  - ☐ I. Ownership and Contact Information
  - ☐ II. Maps and Plats
  - ☐ III. Timeline for Operations
  - ☐ IV. Description of Well Geology
  - ☐ V. Description of Operations
  - ☐ VI. Spill Control and Emergency Preparedness Plan
  - ☐ VII. Well Plugging and Reclamation Plan
  - ☐ VIII. Compliance with Operating Standards
  - ☐ IX. Affidavits and Statements
  - ☐ X. Other Applicable Permits

- ☐ XI. Background Environmental Information
- ☐ XII. Relationship to Park Planning Documents

☐ NPS performs a completeness and technical review of the plan of operations (for more information, see Ch. 2).

☐ Operator revises plan of operations, if necessary (for more information, see Ch. 2).

☐ Park staff prepares NEPA document (or adopts the operator's or consultant prepared NEPA document), incorporates other environmental compliance, and initiates mandated consultations with other agencies (for more information, see Ch. 2 and Appendix B).

☐ Park completes public review process, finalizes decision documents, and notifies the operator that the plan has been approved, conditionally approved, or rejected.

☐ Operator agrees to conditions of approval (if any), submits applicable state and federal permits, and files performance bond with the NPS (for more information, see Ch. 10).

PLAN OF OPERATIONS INFORMATION REQUIREMENTS FOR DRILLING AND PRODUCTION OPERATIONS

Below is an explanatory list of requirements that nonfederal oil and gas operators need to include in a plan of operations for a drilling and/or production operation where the surface location is sited within the park. These requirements are based on the regulatory provisions under 36 C.F.R. §9.36. This list is also used by the NPS to determine if a proposed plan of operations is complete and sufficiently detailed to merit "official acceptance" for review and analysis in accordance with the regulations at 36 C.F.R. §9.36(c).

A plan of operations may not need to address all of the information requirements presented below. Information requirements should be tailored to the type of operation proposed (*e.g.*, drilling operation, production operation, pipeline construction and operation, well plugging, etc.). The list should be used in conjunction with the 36 C.F.R. Part 9B regulations to determine which items are applicable to the proposed operation, and are therefore required in a plan of operations. The operator and NPS staff will focus the list of information requirements during project scoping. In some instances, the NPS may require additional information to effectively analyze the proposed operation (36 C.F.R. §9.36(a)(18)). (For additional information, contact the park for assistance in determining information requirements for particular types of proposed operations.)

The operator will submit the plan of operations, tender the performance bond, and be the responsible party for compliance with the plan of operations.

I. OWNERSHIP AND CONTACT INFORMATION

The purpose of this section is to identify the “operator” as defined under the NPS regulations, to document the operator’s property right to oil and gas in the park, and to identify primary company contacts for planning, field operations, and emergencies.

A. Name(s) and address(es) of:
   1. Surface owner, and
   2. Lessor (mineral owner).

B. Name, address, and telephone number of:
   1. Operator,
   2. Lessee (if different than operator),
   3. Field representative, and
   4. Contact person in case of spill or other emergency.

C. Copy of instrument(s) demonstrating the operator’s right to operate. Examples include:
   1. Lease,
   2. Deed,
   3. Assignment of rights, or
   4. Designation of operator.

   NOTE: The operator must provide the NPS with documentation demonstrating that it has a property right to conduct drilling and production operations in all of the proposed project

area before the NPS will issue a data collection permit or accept the plan of operations as complete for formal processing.

II. MAPS AND PLATS

The purpose of this section of a plan is to graphically show the operator's mineral tract(s) and the area of operations in relation to the park. The area of operations includes proposed new surface disturbance associated with the operations such as the wellpad, access road, and any other planned surface use. The scaled location plats are intended to clearly and accurately define the area that the operator has available for conducting well operations and to identify the area that the operator is responsible for reclaiming.

A. **Tract/Lease Boundary Map** - use 1:24,000 USGS quadrangle map(s) and show the following:
   1. NPS park unit boundary,
   2. Mineral tract/lease boundary, and
   3. Drilling unit boundary.

B. **Operation Location Map** - use 1:24,000 USGS quadrangle map(s) and show the following:
   1. Lease or mineral tract boundary and park boundary,
   2. Proposed oil/gas well(s) and production facilities,
   3. Existing access road(s),
   4. Proposed new access road(s),
   5. Existing flowlines/pipelines in area,
   6. Proposed new flowlines/pipelines,
   7. Helicopter landing zone (if applicable),
   8. Location of any fill or borrow material necessary for operations, and
   9. All existing wells within 1 mile radius of the area of operations (potable water, disposal, producing, shut-in, exploratory, and abandoned).

C. **Operation Plats** – Submit large-scaled plats showing the dimensions and equipment layout of the operations area. Show the following, as applicable:
   1. Access road dimensions, including cross sections of cut and fill areas and road profile.
   2. Wellpad dimensions for drilling operations, including cross sections of cut and fill areas.
   3. Excavations for ditches, sumps etc. on or around wellpad (show cross-sections).
   4. Drill rig and drilling equipment layout:
      a. compressors, drill pipe, mud tanks, fuel storage, drilling mud storage, etc.;
      b. area to be protected with liner, liner type and thickness;
      c. temporary living quarters;
      d. sanitary facilities; and
      e. ring levee/berm and stormwater containment construction.
   5. Wellpad dimensions for production operations, noting partial reclamation area, following drilling operations (if applicable).

6. Wellhead and production equipment layout:
   a. tanks, flowlines, meters, heater treaters, separators, etc.;
   b. flowline/pipeline control values, pressure and volume regulators, monitors and alarms, and cathodic protection;
   c. electrical powerlines;
   d. ring levee/berm and stormwater containment construction;
   e. produced water disposal well, associated equipment, and flowline;
   f. enhanced recovery systems equipment; and
   g. all other equipment necessary for operations.

D. **Topographic Plats** – use scaled plats prepared by registered surveyor/engineer and show the following:
   1. Existing contours of proposed wellpad area,
   2. Existing contours of proposed access road area, and
   3. Existing contours of proposed new flowline/pipeline route.

III. TIMELINE FOR OPERATIONS

The purpose of this section of the plan is to identify when operations will be conducted and how long they will last. Any alteration of normal operations due to seasonal timing considerations for natural resources or visitor uses should also be noted in this section.

A. Provide an estimated timeline for the proposed operation, including the following information (as applicable):
   1. Date to begin site preparation and construction,
   2. Date to spud well,
   3. Days to drill to total depth,
   4. Days to test/complete well and start production,
   5. Anticipated longevity of operation,
   6. Date to begin reclamation, and
   7. Time to complete reclamation.

IV. DESCRIPTION OF WELL GEOLOGY

A. Provide the following information for the area of operations:
   1. Total depth of oil/gas well(s),
   2. Depth of anticipated producing zone(s) and formation name(s),
   3. Depth of useable quality water zone(s) (aquifers),
   4. Depth(s) of known brine zones and other minerals (coal, oil shale, etc.), and
   5. Depth(s) of abnormally high/low pressure or other geologic hazards (H2S, etc.) and methods to account for such conditions.

V. DESCRIPTION OF OPERATIONS

The description of operations should provide enough detail about the proposed methods, sequence, and equipment for each component of the operation (*e.g.*, road and pad construction, drilling, production, flowlines, etc.) to allow the NPS to assess the proposal's impacts on the environment. Specific actions that will be taken to minimize or eliminate adverse impacts on park resources and visitor related values should also be presented. The amount of information in this section will vary depending both on the planned activities and the environment where they will be conducted.

NOTE: Operators cannot use sources of water inside the park without written permission of the regional director. The regional director can only approve a plan of operations that uses a source of water from inside the park if: 1) the operator's water right is superior to the United States claim, or 2) if the water right is subordinate to the U.S. government's, the operator shows that removal of the water would not damage park resources (36 C.F.R. §9.35).

A. **New Access Road and Pad Construction**

1. Topsoil removal and storage;
2. Excavations (cut/fill) for road and pad;
3. Type and quantity of material for road and pad base (gravel, board mat, etc.);
4. Number, type and placement of culverts or bridges;
5. Pad slope to cellar or other point to collect spilled contaminants;
6. Cellar, mouse hole and rat hole construction;
7. Type, thickness and placement of liner on wellpad; and
8. Diking around pad to prevent contaminant release into adjacent lands/waters.

B. **Drilling Operations**

1. Mobilization of equipment.
2. Site security and public safety (*e.g.*, traffic control, signing, road gate, security guard, etc.).
3. Freshwater quantity, source, transport, and storage.
4. Stormwater management.
5. Blowout preventers and other pressure control equipment:
   a. minimum specifications and pressure ratings;
   b. schematic diagram of pressure control equipment; and
   c. testing procedures and frequencies.
6. Drilling program:
   a. total depth and directional program;
   b. hole size for each casing string;
   c. setting depths of each string; and
   d. casing size, grade, and weight of each string.

7. Mud program:
    a. mud types, properties, weights, and additives, for each well segment; and
    b. mud handling and containment system (*e.g.*, number, type and size of mixing tanks and reserve fluid tanks; separation, storage and fate of cuttings; etc.).

NOTE: The NPS requires a closed loop "closed loop containerized mud system" for surface operations within park units to protect park resources.

8. Casing program.
9. Cementing program:
    a. types and amounts of cement,
    b. cement additives, and
    c. cementing procedures.

NOTE: For cementing surface casing or any other casing that protects useable quality water zones, include a description of methods to achieve proper mud and hole conditioning prior to cementing, pipe reciprocation during conditioning and cementing, proper preflush relative to adequate contact times and turbulent flow regime, proper slurry design for sufficient compressive strengths at critical zone isolation intervals, calculated slurry yield volumes, and pressure testing.

10. Testing/evaluation program:
    a. well logs,
    b. core Intervals, and
    c. drillstem test including handling of produced fluids.
11. Completion program:
    a. completion type (openhole, perforated, slotted liner, etc), and
    b. completion procedure including considerations for well control.

C. **Production Operations**

Production operations may be described "generically" if equipment and layout cannot be predicted; however, if the information is not supplied in the initial plan, a supplemental plan of operations may be required prior to the conduct of production operations. Describe the following, as applicable:

1. Site security and public safety (*e.g.*, fencing, road gate, signing etc.).
2. Stormwater management.
3. Artificial lift equipment.
4. Pressure and flow control equipment:
    a. tree configuration, specifications, and pressure ratings; and
    b. downhole and/or flowline pressure or flow control equipment including testing procedures and frequencies.
5. Treating and separating process and equipment.
6. Produced water storage and disposal.

7. Tank battery, including number, type, size, and storage volume; berm or "firewall" dimensions; and type and thickness of liner.

   NOTE: Firewall dimensions must contain 1.5 times the volume of the largest tank, and an impermeable liner must be installed under the tank battery to protect soils and groundwater.
8. Removal/disposal of precipitation within tank battery firewall.
9. Flowline and pipelines:
   a. size, type, length, depth, etc.;
   b. inspection and testing procedures and frequency;
   c. maximum and mean flow rate of product;
   d. maximum and mean operating pressure;
   e. cathodic protection methods;
   f. pig launching/retrieving station(s); and
   g. vegetation management along line routes.
10. Metering points, including LACT units, orifice meters, and turbine meters.
11. Sales point (if on lease).
12. Tanker pick-up points (if on lease).
13. Gas compressor, including type and size (if applicable).
14. Enhanced recovery methods and equipment including waterflooding, fireflooding, polymer flooding, and any other secondary or tertiary recovery facilities (if applicable).
15. Maintenance of access road and pad, including vegetation management.
16. Anticipated recompletion, stimulation, workover, and well plugging activities:
    a. considerations for preventing oil, brine, chemicals, and other materials from reaching the ground (*e.g.* use of plastic liners beneath the workover rig, pipe racks, and other equipment as necessary; collection of all fluids and solids returned to the surface from the wellbore in metal tanks; waste disposal outside park, etc.); and
    b. park notification prior to conducting such operations.

VI. SPILL CONTROL AND EMERGENCY PREPAREDNESS PLAN

The NPS has combined informational requirements and operating standards from the 9B regulations to develop the format for a Spill Control and Emergency Preparedness Plan. This plan covers the substances or site conditions that pose risks to human health and safety and the environment. It also describes the actions the operator would take to minimize these risks in the event of a spill or natural disaster (*e.g.*, flood, fire, hurricane, or tornado). See *Chapter 11 – Spill Control and Emergency Preparedness Plan* in the Operator's Handbook for the organization and content of a Spill Control and Emergency Preparedness Plan.

A Spill Control Emergency Preparedness Plan should describe all actions, equipment, procedures, training, etc. to control and effectively respond to releases of contaminating substances (oil, brine, drilling fluids, blow-out, or any other toxic or hazardous substance) to ensure protection of park resources and human health and safety.

VII. WELL PLUGGING AND RECLAMATION PLAN

This section of the plan must describe all actions to be taken to achieve proper plugging of the well and reclamation of the area disturbed by the operation. Final reclamation of the site must be initiated as soon as possible following completion of the operation, and shall not be later than six months unless the regional director authorizes a longer period of time. For more information see *Chapter 7 – Well Plugging and Surface Reclamation*.

A. **Plugging Program** – describe the equipment and procedures for well plugging including the following:
   1. Types of plugs and setting depths,
   2. Casing removal, perforation depths, and cement placement technique,
   3. Type and amount of cement required, and
   4. Type of abandoned hole marker.

B. **Reclamation Plan** – The reclamation plan will describe the actions needed to meet the general regulatory reclamation standards[11] as well as site-specific reclamation goals. It will be based on the disturbance anticipated from the proposed operation and reclamation expectations of the NPS as identified during project scoping. The operator should organize the reclamation plan by the following sections.

   1. Reclamation Goals
      a. summarize the site-specific reclamation goals developed during project scoping. Site-specific goals might include a desired percent of vegetative ground cover, the type of plants, soil stabilization, surface drainage characteristics, etc.
      b. state the timeframes for reclamation. Describe when reclamation activities would begin, how long reclamation activities would last, and the schedule for monitoring the results of the reclamation.

   2. Reclamation Procedures - The 9B regulations identify the steps that need to be completed to satisfy reclamation standards for operations on federal surface.[12] The following steps may be used as an outline for developing the plan's reclamation procedures. The operator can describe the methods and equipment that will be used to accomplish each of these steps.
      a. removal of all above ground equipment, structures, debris and materials, including road and pad material.
      b. purging of buried pipe and removal or capping and abandonment in place.
      c. removal or neutralization of contaminating substances, including sampling and testing procedures.
      d. restoration of pre-construction topographic contours.
      e. replacement and preparation of topsoil for revegetation.
      f. reestablishment of native vegetation community, including monitoring protocol and target percent cover.

[11] See §9.39, Reclamation Requirements, and Chapter 7, Well Plugging and Surface Reclamation in this handbook.
[12] For operations on private surface estate, see Chapter 7, Well Plugging and Surface Reclamation - Differences in Reclamation Requirements – Federal and Private Surface Estate in this handbook.

3. Reclamation Cost Estimate - The cost of reclamation in part determines the amount of the performance bond.[13] It is an estimate of costs to complete the reclamation procedures in Item B above. The subtotals may be used to determine amounts by which to reduce the operator's performance bond if reclamation is to be performed in phases. At a minimum, there needs to be enough detail to support subtotals for each of the following subcategories:
   a. well Plugging (Item A 1-4 above).
   b. removal of structures, equipment, debris, roads, pads, pipelines etc. (Items B. 2 a and b above).
   c. removal or neutralization of contaminating substances (Item B. 2 c above) including soil and water sampling and testing, soil and water remediation, disposal of contaminated soils or water, etc.
   d. site and soil preparation (Items B. 2 d and e above).
   e. vegetation and monitoring (Item B. 2 f above).

   The NPS will verify and use the cost estimate to set the reclamation portion of the performance bond. If the operator chooses not to provide the cost estimates for reclamation, the performance bond may be set at the maximum amount allowed by regulation[14], which is $200,000 per operator per park unit. If the operator already holds a $200,000 bond for other operations in the same park, it is unnecessary for the operator to provide the cost estimate information required by this section. Nonetheless, the operator will remain legally and financially responsible for fully reclaiming the operations area.

VIII. COMPLIANCE WITH OPERATING STANDARDS

Describe how the operator will comply with the following operating standards at 36 C.F.R. §9.41-9.46. Requests for variances should be accompanied with supporting information.

A. Surface operations shall not be conducted within 500 feet of a watercourse, high pool shoreline, mean high tideline, or any structure or facility (excluding roads) used for unit interpretation or administration, unless specifically authorized.
B. Protection of all survey monuments, witness corners, reference monuments and bearing trees.
C. Shut-in of well when drilling or production operations are suspended for 24 hours or more, but less than 30 days.
D. Shut-in of well when production operations are suspended for 30 days or more.
E. Posting of a sign showing operator name and operation identification number.
F. Fencing around all wells, storage tanks, and high-pressure equipment as specified by the park superintendent.
G. Posting of warning signs acceptable to the superintendent if operations are located in or near visitor use areas.
H. Preventing accumulation of oil and other materials deemed to be fire and environmental hazards.
I. Prompt removal of all equipment and materials not in use.

[13] See §9.48(d)(1) and Chapter 10 this Handbook.
[14] See §9.48(d)(3) and Chapter 10 in this Handbook.

IX. AFFIDAVITS AND STATEMENTS

Include an "Affidavit of Compliance" signed by an official that is authorized to legally bind the company as required by regulations at 36 C.F.R. §9.36(a)(15). The affidavit should state that the proposed operations are in compliance with all applicable federal, state and local laws and regulations. An example Affidavit of Compliance is included in *Appendix C – Sample Letters for Nonfederal Oil and Gas Operations*.

X. OTHER APPLICABLE PERMITS

A. Include a copy of the state drilling permit including the state requirements for protection of usable quality groundwater.
B. At the superintendent's request, operators will need to provide the NPS with a copy of all other applicable federal, state, and local permits. If the permits are still pending, operators may submit a copy of the application for such permits.

XI. BACKGROUND ENVIRONMENTAL INFORMATION

The purpose of this section of the plan is to present information on existing natural and cultural resources in the project area, assess the environmental impacts of the proposed operation, and discuss any technologically feasible alternatives for the proposed operation. Information that should be presented in this section will be determined during project scoping with park staff. The park may have some of the required natural and cultural resource information for the operator's use in preparing this section of the plan.

A. Description of natural resources in the proposed operation area should include the following information:
   1. Soil type(s) and engineering properties such as permeability, porosity, erosion potential, etc.
   2. Baseline soil chemical analysis on the proposed wellpad area, including the following parameters (NOTE: These parameters may change based on the proposed use of chemicals and substances):
      a. pH value
      b. arsenic
      c. total barium
      d. cadmium
      e. chromium
      f. lead
      g. mercury
      h. selenium
      i. silver
      j. zinc
      k. total petroleum hydrocarbon
      l. electrical conductivity
      m. sodium absorption ratio
      n. exchangeable sodium percentage
   3. Paleontological resources known to occur or likely to occur in the project area (if applicable). The discussion should include the results of the paleontological survey of the project area performed by a qualified paleontologist.
   4. Hydrology and water quality, including the following:
      a. drainage pattern of the project area;
      b. proximity to surface water (intermittent or permanent watercourses, streams, ponds, lakes, springs, etc.);

c. depth to groundwater;
d. proximity to any wetland boundary (defined by site-specific wetland delineation);
e. proximity to the base floodplain, 100-year floodplain, and 500-year floodplain; and
f. water quality in nearby surface water and/or shallow groundwater.

5. Vegetation species composition in access road and wellpad area, including predominant herbaceous, shrub, midstory, and overstory species. (NOTE: This information is necessary to properly design a reclamation plan).
6. Wildlife species composition in the proposed operation area.
7. Federal or state threatened / endangered plant or wildlife species that inhabit or frequent the proposed operation area.
8. Air quality in the proposed operation area, including information on pollutant levels and existing point sources for pollutants in the area.
9. General description of baseline noise levels in the proposed operation area, including local sources contributing to increased noise levels.

B. Description of cultural resources in the proposed operation area should include the following information:
   1. Background information on archeological and historic resources documented in the general area, including review of the National Register of Historic Places.
   2. Results of cultural resources survey of project area performed by a qualified archeologist approved by the NPS.

C. Identification and proximity of park visitor use areas (*e.g.*, trails, campgrounds, public roads, picnic areas, overlooks etc.) near the proposed operation area.

D. Description of the anticipated direct, indirect, and cumulative effects of the proposed operation on the park natural and cultural resources, and socioeconomic environments listed above. (This is the operator's opportunity to support their conclusions on the environmental effects of their operations.)

E. Description of all reasonable technologically feasible alternative methods of operation and associated environmental impacts.

XII. RELATIONSHIP TO PARK PLANNING DOCUMENTS

The plan of operations must discuss how the proposed operation relates to park planning documents (General Management Plan, Oil and Gas Management Plan, etc.) in terms of considering and integrating operational measures described in the plan(s) to achieve park management objectives. The park's oil and gas contact will furnish a copy of all applicable park planning documents.

THIRD PARTY MONITORING

The NPS may require an operator to hire a third party monitor to oversee certain aspects of the operation such as drilling, major workovers, well plugging, etc. The purpose of third party monitoring is to ensure operator compliance with the terms of the approved plan of operations and to protect park resources and values.

The company hired to do the third party monitoring must meet the following three requirements:

1. Third party monitors shall not include any representatives or employees of the operator, or any contractors or subcontractors of the operator working on any task related to this project, or any persons who would have a financial or other interest in the outcome of the drilling operation.
2. The persons hired to do the monitoring must meet the technical qualifications to monitor the specific resources in the NPS unit where the operations would occur (*e.g.*, wetlands scientist, wildlife biologist, archeologist etc.).
3. The scope of work must meet the objectives of monitoring in the park.

The operator and park staff will work together during project scoping and development of the plan of operations to come up with an effective plan for monitoring the operations. During project scoping, the operator and NPS will discuss the requirement for third party monitoring and the technical qualifications that would be needed by the monitor(s). The NPS will provide the operator with a list of roles and responsibilities and necessary qualifications of the third party monitor(s). In some cases this information may not be developed until after the NPS technical adequacy review of the plan of operations. The operator will include details in the plan of operations concerning the use of a third party monitor and disclose that there will be no conflict of interest between the operator and the company that will be hired to do the monitoring and that the monitor(s) will have the technical expertise to do the monitoring. Once the third party monitor(s) have been selected by the operator, a list of the persons and their qualifications must be provided to the NPS.

The NPS may develop stipulations that specify conditions of the third party monitoring (36 C.F.R. § 9.37(f)[15]. Examples of these stipulations include, but are not limited to:

- The third party monitor must be paid by the operator.
- The monitor must report directly to the park superintendent or his/her representative.
- The NPS will identify the frequency and type of compliance reports.
- If a violation of the terms of the monitoring contract occurs, the NPS would require immediate corrective actions from replacement of the monitor up to suspension of the approved plan of operations.
- The NPS may suspend the operations if the monitor demonstrates to the NPS that the operation poses an immediate threat of significant injury to federally owned or controlled lands or waters. (36 C.F.R. § 9.51(c)(2))

[15] Under this provision all approved plans are conditioned upon the superintendent's right to access an operation to monitor and ensure compliance with a plan of operations. Since under this scenario a third party will handle monitoring, the superintendent can exercise his or her right to access and monitor the operation through the third party via specific stipulations in its approval letter.

Third party monitors would be required to ensure operator compliance with the approved plan of operations. Monitoring may include making sure that:

- Access in the unit is along designated routes and by approved means (*e.g.*, on foot or by vehicle),
- Vegetation clearing and earthmoving activities to construct the access road and wellpad including the secondary containment system (liner, berms etc.) follow the approved plan of operations,
- Operations avoid rare, threatened or endangered plant and animals, archeological sites, watercourses, research plots, and Special Management Areas / sensitive resource areas,
- There is proper handling, transport, and storage of hazardous and other contaminating substances,
- Well casing and cementing is done according to state and NPS requirements.
- When the well is plugged, the operations area is cleaned up and reclaimed according to the approved plan of operations.

REQUIRED OPERATING STIPULATIONS AND RECOMMENDED MITIGATION MEASURES FOR DRILLING AND PRODUCTION OPERATIONS

The tables in the following section list operating stipulations (Table 4.1) required by the NPS and suggested mitigation measures (Table 4.2) for drilling and production operations on NPS lands. The primary resource(s) that would be protected by the operating stipulations and mitigation measures listed in the tables are denoted by a √ symbol.

Table 4.1 focuses on the NPS 36 C.F.R. 9B regulations. but also includes operating stipulations required under other federal laws and regulations. The appropriate citation is shown in parentheses after each requirement. To ensure compliance with all applicable legal and policy mandates, it is the operator's responsibility to consult with the appropriate federal, state, and local agencies prior to beginning operations in a unit of the National Park System and determine which statutory and regulatory requirements would apply to each operation.

Table 4.2 lists mitigation measures for drilling and production operations. Use of mitigation measures shown in the table are recommended by the NPS to ensure compliance with the NPS approval standard to utilize "…technologically feasible methods least damaging to the federally-owned or controlled lands, waters and resources of the unit while assuring the protection of public health and safety" (36 C.F.R. §.9.37(a)(1)). Many of the mitigation measures are derived from environmental guidelines and publications developed by the oil and gas industry and environmental professionals and may not address every environmental topic or risk that may be encountered during oil and gas operations. These tables are intended to be a tool to be used during project planning. An operator can look through the tables to see which measures would apply to an operation and select the most appropriate measures to include in his/her plan. An operator has the discretion to select the most appropriate mitigation to meet the NPS least damaging approval standard.

Table 4.1. Required Operating Stipulations for Drilling and Production Operations on NPS Lands

ROADS	DRILLING	PRODUCTION	FLOWLINES/PIPELINES	**Drilling and Production Operations Required Operating Stipulations** **THE APPLICABLE LEGAL CITATION IS NOTED IN [PARENTHESIS] AFTER THE STIPULATION.**	RESOURCES PROTECTED Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
√	√			In order to use surface or subsurface water from inside the park, the operator must demonstrate in the plan of operations that his/her water rights are superior to any claim of the U.S. to use the water, and where the use is subordinate to that of the U.S., that use of the water will not damage park resources. Since any use of park water has the potential to negatively affect water quality, quantity, and flow patterns, the operator should note what resources would benefit from the in-park water use and how they would benefit. [36 C.F.R. § 9.35]				√				√				
	√	√	√	Prepare an Emergency Response Plan to ensure safe operating procedures in the event of a reportable quantity spill; damage to wells, pipelines, or other structures; fire; explosion; medical evacuation; or other emergencies such as strong winds, heavy rainfall, swift currents, and flooding and secure storage tanks and other production equipment to reduce structural and environmental risks. [36 C.F.R. §§ 9.36(a)(10)(vi), (a)(14), (d), 9.39(a)(1)(ii) & (2)(iii), 9.41(e) & (f), 9.43, 9.44, 9.45]		√		√	√	√	√	√			√	√
√	√		√	Prior to beginning operations, in consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service (if applicable), and NPS, identify all threatened, endangered, and sensitive species that may be present in the project area. Based on the species and the proposed operation, operators may be required to conduct biological surveys in the project area. [36 C.F.R. § 9.36(a)(16)(i); Endangered Species Act of 1973 -16 USC 1531 *et. seq.*]									√			
√	√		√	Conduct cultural resource surveys to document the location and significance of any cultural resource (includes various components of archeological, ethnographic, historic architectural, and historic landscape resources) that might be affected by operations. [36 C.F.R. §9.36 (a)(16)(i), 36 C.F.R. § 63, 36 C.F.R. §800.4]										√		
√	√		√	Conduct a pre-operational analysis to adequately describe the natural, social and economic environments that would be affected by the operations (including air quality, geology, topography, soils, surface and subsurface hydrology, vegetation, wetlands, fish and wildlife, threatened and endangered species, cultural resources, and all water and oil and gas wells) within a 2-mile radius of proposed operation. [36 C.F.R. § 9.36(a)(16)(i)]	√	√	√	√	√	√	√	√	√	√	
	√			Use closed loop containerized mud system to minimize drilling mud volumes, drilling fluid wastes, and site disturbance. Earthen pits will not be permitted for nonfederal oil and gas operations inside NPS units [36 C.F.R. § 9.37(a)(1)].		√		√	√	√	√	√	√		√	

ROADS	DRILLING	PRODUCTION	FLOWLINES/PIPELINES	**Drilling and Production Operations Required Operating Stipulations** **THE APPLICABLE LEGAL CITATION IS NOTED IN [PARENTHESIS] AFTER THE STIPULATION.**	RESOURCES PROTECTED Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
√	√	√	√	Surface operations shall at no time be conducted within 500 feet of the banks of perennial, intermittent or ephemeral watercourses; or within 500 feet of the high pool shoreline of any natural or man-made impoundments…unless specifically authorized by an approved plan of operations. If necessary, the operator must specifically request exemptions from this standard in the plan of operations and demonstrate that the exemptions are necessary for acceptable data quality, can be conducted with insignificant affects on park waters or manmade infrastructure, and result in overall resource impact reduction [36 C.F.R. § 9.41(a)].				√	√		√					
√	√	√	√	Protect all survey monuments, witness corners, reference monuments and bearing trees against destruction, obliteration, or damage from operations. Operator shall be responsible for the reestablishment, restoration, or referencing of any monuments, corners, or bearing trees which are destroyed, obliterated, or damaged by such operations. [36 C.F.R. § 9.41(b)]						√					√	
	√	√		Whenever drilling or production operations are suspended for 24 hours, but less than 30 days, the wells shall be shut-in by closing wellhead valves or blowout prevention equipment. When production operations are suspended for 30 days or more, a suitable plug or other fittings acceptable to the park superintendent shall be used to close the well [36 C.F.R. §9.41(c)].											√	√
	√	√		Place signs at every operation or well in a conspicuous place and include the name of the operator or owner, well number, lease number, location, and phone number and take all necessary means and precautions to preserve these markings [36 C.F.R. § 9.41(d)].											√	√
		√		Secure production operation sites with acceptable fencing around wells, storage tanks, all high-pressure equipment, and storage tanks, unless otherwise authorized by the park superintendent [36 C.F.R. § 9.41(e)].								√			√	√
	√	√	√	Operators shall remove from the park or store in an orderly manner, all scrap materials or other materials that are not in use or other materials deemed to be fire hazards from the vicinity of well locations and lease tanks [36 C.F.R. § 9.41(f)].											√	√
√	√	√	√	Possession of firearms by persons conducting oil and gas operations is prohibited in NPS units. [36 C.F.R. § 9.41(f)]								√	√		√	√
	√	√		Operators must use procedures and equipment of sufficient pressure rating to keep the well under control at all times. Surface casing must be cemented to surface unless otherwise permitted. All other casing strings must be securely cemented in place to ensure control of the well [36 C.F.R. § 9.43].												√
	√	√		Operators must use procedures and equipment of sufficient pressure rating to prevent uncontrolled discharges of oil, gas, or brine. Operators must act quickly to control blowouts or burning wells. [36 C.F.R. § 9.44]												√

ROADS	DRILLING	PRODUCTION	FLOWLINES/PIPELINES	**Drilling and Production Operations Required Operating Stipulations** **THE APPLICABLE LEGAL CITATION IS NOTED IN [PARENTHESIS] AFTER THE STIPULATION.**	RESOURCES PROTECTED Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
	√	√		Oilfield brine, and all other waste and contaminating substances must be kept in the smallest practicable area, must be confined to prevent escape as a result of percolation, rain, high water or other causes, and such wastes must be stored and disposed of or removed from the area as quickly as practicable in such a manner as to prevent contamination, pollution, damage or injury to the lands, water (surface and subsurface), facilities, cultural resources, wildlife, and vegetation of or visitors of the unit [36 C.F.R. § 9.45].		√	√	√	√	√	√	√	√	√		√
	√	√		The operator shall take technologically feasible precautions to prevent accidents and fires [36 C.F.R. § 9.46].												√
√	√	√	√	Operators shall not injure, alter, destroy, or collect any site, structure, object, or other value of historical, archeological, or other cultural scientific importance, in violation of the Antiquities Act without written authorization from the NPS [36 C.F.R. §9.47(a); 43 C.F.R. §3].										√		
√	√		√	Ensure that a qualified 3rd party monitor is present during appropriate operational phase(s). Once operations have commenced, the operator shall immediately bring to the attention of the superintendent any cultural or scientific resource, or species of special concern encountered that might be altered, harmed or destroyed by the operation and shall leave such discovery intact until told to proceed by the superintendent. The superintendent will evaluate the discoveries brought to his/her attention, and will determine within ten (10) days what action will be taken with respect to such discoveries. [36 C.F.R. § 9.47(b)]	√	√	√	√	√	√	√	√	√	√		√
√	√	√	√	Include stop work provisions in operator's contracts in the event of a cultural or scientific resource discovery [36 C.F.R. § 9.47(b); 36 C.F.R. § 800.13(b)(3)].			√							√		
√	√	√	√	Use of park roads must be in accordance with procedures outlined in an approved plan of operations [36 C.F.R. § 9.50].		√				√					√	√
√	√	√	√	Dispose of stormwater in accordance with federal and state laws [33 U.S.C. §§ 1251 *et seq.,* Section 402 Permits].				√								√
	√	√		If required by the park superintendent, provide laboratory analyses of soils, surface water, groundwater, and sediment before and after well drilling or production operations (or change of ownership or lease rights) [refer to NPS "Guideline for the Detection and Quantification of Contamination at Oil and Gas Operations" found in Appendix D of this document].		√		√								
	√	√		Cover or place netting on storage tanks to minimize the likelihood of accidental deaths of migratory birds [Migratory Bird Treaty Act -16 U.S.C. §§ 703-712; Executive Order 13186].								√	√			
√	√	√	√	Schedule work during times least likely to affect T & E species [Endangered Species Act, 16 U.S.C. §§ 1531-1544, 50 C.F.R. Parts 402 & 450].									√			
√	√	√	√	Immediately report to the NPS and the FWS an incidental take of a federally listed species and immediately report to the NPS all other protected species. [Endangered Species Act, 16 USC §§ 1531 – 1544, 50 C.F.R. Parts 402, 450].									√			

ROADS	DRILLING	PRODUCTION	FLOWLINES/PIPELINES	**Drilling and Production Operations Required Operating Stipulations** **THE APPLICABLE LEGAL CITATION IS NOTED IN [PARENTHESIS] AFTER THE STIPULATION.**	RESOURCES PROTECTED Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
√		√	√	Do not locate oil and gas well access roads and flowlines and gathering lines in the 100-year floodplain unless no practicable alternative exists. Where such operations must be located in the 100-year floodplain, appropriate mitigation measures must be taken to floodproof or elevate the road, flowline, or gathering line to minimize structural and environmental risks associated with flooding, including debris flows. [EO 11988 § 3 (b), NPS Procedural Manual 77-2 § (VI) (G)]					√							√
	√	√		Do not locate drilling and production pads or oil and gas processing and storage facilities and equipment, including heater treaters, separators, oil storage tanks, produced water storage tanks, etc., in the 500-year floodplain unless there is no practicable alternative. Where such operations must be located in the 500-year floodplain, appropriate mitigation measures must be taken to floodproof or elevate the structures to minimize the environmental risks associated with flooding. [EO 11988 § 3(b), NPS Procedural Manual 77-2 § (VI) (G)]					√							√
√	√	√	√	Wetlands (both Cowardin classification system and jurisdictional wetlands) must be delineated where proposed operations would directly or indirectly adversely impact wetlands. The wetland delineations shall be approved by the U.S. Army Corps of Engineers and the National Park Service, Water Resources Division, and be incorporated in the Statement of Findings and operator's proposed plan of operations. [Executive Order 11990, NPS Procedural Manual 77-1 § 5.1]							√					
√	√	√	√	When proposed operations cannot avoid direct and/or indirect impacts on wetlands, the operator shall compensate for direct and indirect impacts on wetlands by restoring degraded or former wetland habitats. Wetland restoration must, at a minimum, provide for one-for-one (1:1) wetland function replacement (*i.e.*, focus on no net loss of wetland functions, not just wetland acreage). Compensation shall be performed prior to or at the same time impacts associated with approved oil and gas operations occur. [Executive Order 11990, NPS Procedural Manual 77-1 § 5.2 (C)]							√					
√	√	√	√	Plan work to avoid known cultural resources. If work cannot avoid known cultural resources, assess and mitigate effects on National Register eligible or listed properties in consultation with State Historic Preservation Office and Advisory Council on Historic Preservation. [36 C.F.R. § 800.3-800.9]										√		
		√		Firewalls constructed around storage tanks or tank batteries must be of sufficient size to contain at least 1.5 times the storage capacity of the largest enclosed tank. Firewalls must be properly constructed and maintained [40 C.F.R. § 112.7(e)(5)(B)].												√

Table 4.2. Recommended Mitigation Measures for Drilling and Production Operations on NPS Lands

ROADS	DRILLING	PRODUCTION	FLOWLINES/PIPELINES	**Drilling and Production Operations Recommended Mitigation Measures**	RESOURCES PROTECTED	Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
√	√	√	√	Avoid direct impacts to unit resources and values by siting surface operations outside the boundaries of the park (applies to directionally drilled wells, and siting of production facilities).		√	√	√	√	√	√	√	√	√	√	√	√
√	√	√	√	Utilize existing disturbed areas (roads, pads) to the extent feasible when planning new operations.			√	√	√	√	√	√	√	√	√	√	√
√	√	√	√	Avoid or bypass wildlife areas, especially in areas of active denning, nesting, spawning, migration, or feeding. Where interaction with wildlife is unavoidable, minimize the sights, sounds and duration of operations to the maximum extent feasible.									√	√			
√	√	√	√	Before moving equipment on or off location, make sure machinery is plugged, drained, or otherwise secured to keep fluids from leaking during transport.			√		√								
√	√	√	√	Reduce vehicle speeds to reduce chances of injuring wildlife.									√	√			
√	√	√	√	Use seed, mulch, or other authorized materials or structures to mitigate the potential for erosion. Use certified weed-free mulch, native seed, or sterile cover crops that are not sources of undesireable nonnative plant species.			√		√		√						
√	√	√	√	Use mechanical or physical methods to control vegetation along roadways, adjacent to wellpads, at wellheads, valves, meter stations, production facilities, etc.													√
√	√	√	√	Use NPS-approved herbicides to control vegetation where no other alternative method of control, including mechanical or physical methods exists.													√
√	√	√	√	Ensure that individuals applying herbicides are certified by the state for herbicide applications.													√
√	√	√	√	Apply pesticides when visitors are not in area and post signs in areas that have been treated until they are dry.												√	√
√	√	√	√	Apply pesticides according to label directions, when applying outdoors (especially herbicides); do not apply during windy conditions.												√	√
√	√	√	√	As authorized under an approved plan of operations, annually report the types and amounts of pesticide use to the park superintendent.													√
√	√	√	√	Do not burn vegetation, refuse, or other debris or wastes incidental to maintenance of operation.		√											√
√				Use the minimum road design standard sufficient to carry anticipated traffic and loads with reasonable safety and with minimum environmental impact.			√										√
√				Do not construct access roads on steep slopes. If there is no alternate access to wellpad, construct road with switchbacks to minimize steepness of roadway.			√										
√				Use gravel or other appropriate road surfacing materials on access roads to minimize erosion.			√									√	
√				When possible, construct roads in drainage divides.			√									√	

ROADS	DRILLING	PRODUCTION	FLOWLINES/PIPELINES	**Drilling and Production Operations Recommended Mitigation Measures**	RESOURCES PROTECTED	Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
√				Use alternative construction methods, such as board roads, for temporary access to well locations.			√										
√				Avoid constructing access roads in areas with clayey soils. If not possible, roads should trend perpendicular to contours when crossing clayey soils. In permeable soils, plan roads to run parallel to contours and design to enhance recharge.			√										
√				Crown or outslope the road surface to dissipate surface runoff and minimize erosion of the roadbed.			√										
√				Install drainage structures (ditches, culverts, cross drains, wing ditches, etc.) and bridges to maintain hydrology of the site and adjoining wetlands, and to protect aquatic life and to allow for safe passage of wildlife.					√			√	√				√
√				Post appropriate signs on access roads to indicate speed limits, animal crossings, turnouts, blind curves, etc.									√	√		√	√
√				Sign, gate, and lock oil and gas access roads that are used solely by the operator.													√
√				Remove and reclaim all oil and gas access roads that are not necessary for the conduct of operations.			√		√								
√				When designing access road, minimize the number of stream crossings. Crossings should be perpendicular to the stream, resulting in less vegetation clearing than oblique crossings.			√		√	√	√	√	√	√			
√	√	√		When possible, adding fill is preferable to grading and excavation to construct roadways, wellpads, berms, secondary containment, etc. All reasonable attempts should be made not to disrupt the hydrology and adjoining wetlands.			√		√		√	√					
	√			Consistent with safe operations, plan and conduct operations to minimize site disturbance. Site operation on elevated areas outside of floodplain and wetland areas and use the minimum size wellpad necessary to drill and produce well.					√	√		√					
	√			Design wellpads to conform to the natural topography and other surface features of the area.			√		√		√					√	
	√	√		Avoid locating new drilling and production operations on steep slopes to minimize soil disturbance and disruption of natural drainage patterns. Locating operations on steep slopes would not be permitted unless operator uses methods least damaging to resources and assures protection of human health and safety.			√		√		√						√
	√			Drill multiple wells from a single wellpad.			√	√	√	√	√	√	√	√	√	√	
√	√			During project design and construction, leave vegetation in place and create a buffer along perimeter of wellpad and access road to protect water quality, to minimize erosion/sedimentation, and to improve aesthetics.			√		√		√					√	
	√			Construct a berm or ring levee around the drilling location. Install impermeable liners underneath the drilling rig and associated equipment including fuel storage and transfer areas. Install the liner to direct fluids to a collection point(s) for recycling or disposal.			√		√								√
	√			Secure drilling site with appropriate fencing, gated access road, security guard, or signs.													√

ROADS	DRILLING	PRODUCTION	FLOWLINES/PIPELINES	**Drilling and Production Operations Recommended Mitigation Measures**	RESOURCES PROTECTED	Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
	√			Manage traffic to and from operation using two-way communications or other procedure. Drilling operations that operate continuously may be required to hire qualified security personnel to monitor egress and ingress to the drill site.												√	√
√	√			Conduct drilling operations during the dry season to avoid soil disturbance and compaction and disruption of water drainages caused by temporary access roads.			√		√								
	√			For air drilling, dampen particle discharge from the blooey line by treatment with a liquid sprinkler, scrubbers, or other effective controls at the blooey line discharge.		√	√		√								
	√			Use an inside-diameter wiping tool for drillpipe to reduce loss of drilling fluids.			√		√								
	√			Maintain ample materials to increase drilling fluid density in an emergency situation. Install and maintain equipment capable of efficient, even delivery and mixing of drilling fluid weighting material.													√
	√	√		For wells that may encounter hydrogen sulfide gas, prepare a contingency plan that provides an organized approach for alerting and protecting the public within an area of exposure prior to release, intentional or otherwise, of a potentially harmful volume of hydrogen sulfide.													√
	√	√		Use fuels and control technologies that minimize release of air emissions from compressors, turbines, and other equipment.		√											
	√	√		Prevent leaks and spills by practicing regular inspection and maintenance, and good housekeeping practices.			√		√								√
	√	√		Reduce vehicle speed to minimize dust.		√			√		√						
	√	√		Avoid or minimize flaring of gas from wells. Design facilities to use or sell wellhead gas.		√										√	√
	√	√		Install and maintain catalytic converters on engines.		√											
	√	√		Use natural gas engines or electric engines instead of engines fueled by diesel or other fuels.		√											
	√	√		Maintain thief hatch seals on storage tanks to minimize the release of volatile organic compounds.		√											
	√	√		When possible, use bulk drilling fluids, additives, and chemicals in reusable containers to reduce solid waste generation from empty sacks or buckets.			√		√								
	√	√		Use less volatile solvents and chemicals during operations. Properly store and label containers to prevent degradation, overflow, or contamination. Keep containers covered when not in use to decrease loss due to vaporization.		√											√
	√	√		Use nonhazardous products or less toxic substitutes whenever possible.													√
	√	√		Use and maintain, or upgrade as necessary, existing wellpads and access roads rather constructing a new wellpad/access road if it is properly located for operation(s).			√		√		√					√	
	√	√		Stabilize wellpads to avoid or minimize erosion.			√										

ROADS	DRILLING	PRODUCTION	FLOWLINES/PIPELINES	**Drilling and Production Operations Recommended Mitigation Measures**	RESOURCES PROTECTED	Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
	√	√		Use secondary containment (impermeable liner) around fuel, crude, and brine tanks, vessels, and under tank battery load-line connections to collect leaks, drips, and spills. Design secondary containment to eliminate or minimize collection of precipitation.			√		√		√						
	√	√		For drilling or workover operations, use a multi-layered or specialized impermeable liner system beneath the rig and associated equipment (including fuel and transfer areas). Use cellar as collection point for drilling fluid waste, rigwash, other fluids, etc.			√		√		√						
	√	√		Contain garbage in animal-proof containers for disposal at approved facilities.									√	√			
	√	√		Store sanitary wastes in approved, above ground septic tank or system for disposal at approved facilities.					√								√
	√	√		Use biodegradable, lead-free pipe dope whenever possible.			√		√								
	√	√		Use drip pans, drip basins, or other impervious secondary containment to collect leaks, drips, and spills. Empty contents of container for recycling or proper disposal and reuse container.			√		√		√						
	√	√		Collect and reuse rigwash or as make-up water in drilling and completion operations. Use high-pressure, low volume water supply for rigwash, to conserve water, and to minimize waste.			√		√		√						
	√	√		Segregate or avoid mixing hazardous and nonhazardous chemicals to reduce the amount of hazardous waste for management.			√		√								√
	√	√		Contour and/or ditch around chemical, fuel, lubricant, and waste storage areas to a collection point that is separate from other rig equipment and not into the cellar.			√		√								
	√	√		Improve work process and properly maintain facilities and equipment to minimize stormwater contamination. Note: "Contaminated stormwater runoff" includes, but is not limited to runoff which: (1) contains a hazardous substance in excess of reporting quantities defined at 40 C.F.R. § 117.3 or 40 C.F.R. § 302.4, (2) contains oil in excess of the reporting quantity defined at 40 C.F.R. § 110.3 (*e.g.*, causes a visible sheen), or (3) contributes to a violation of a water quality standard.			√		√		√						√
	√	√		Keep lighting to the minimum needed for safe operations. Use well-designed lighting to direct light where it is needed, such as using low pressure sodium light sources or downward directed lighting. Shield or design lights to prevent offsite glare, and use nighttime lighting only where necessary.									√	√		√	
	√	√		Design operations to use quieter equipment such as electric motors. Use appropriate sound-absorbing or sound-muffling equipment or materials, quiet design exhaust mufflers and acoustic covers, and acoustically insulated buildings. Direct noise away from visitor use areas, adjacent landowners, and developed areas.									√	√		√	
	√	√		Install, test, and maintain pressure control equipment in proper working condition. Perform weekly pressure tests of the blowout prevention system.													√

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	√	√		Construct and maintain firelane or firebreak along the perimeter of wellpads or production facilities. Use erosion control practices during firelane or firebreak construction and maintenance to mitigate the potential for erosion.			√		√		√						√
	√	√		Do not drill a water supply well deeper than the surface casing in areas where abnormal pressures might be encountered.					√								
	√	√		Divert stormwater from the wellsite and avoid riparian areas, waterways and wetlands by contouring, grading, berming, or trenching.			√		√		√						
	√	√		Protect usable quality aquifers by designing/implementing a surface casing and cementing program to place a properly designed cement slurry around a centered casing in a borehole of adequate size from which mud and mud cake has been removed. Specific measures include: -Cure any lost circulation problems prior to cementing. -Design hole size and casing size to provide a minimum of 1 inch clearance around pipe, but no more than 2 inches of clearance. -Implement a centralizer design (type and quantity) appropriate for hole conditions to achieve good casing centralization. When available, use borehole caliper information to place centralizers in locations where hole is in gauge. -Base mud circulation and conditioning on achieving hole stability rather than a specified volume. Condition mud to lower gel strength and viscosity. Proper hole conditioning is shown by a clean shaker, stable pump pressure and strokes at a constant throttle, and stable drag trends. -Reciprocate casing during hole conditioning and cementing. -Pump a preflush (water or engineered system depending on well conditions) in turbulent flow with enough volume to achieve 10 minutes contact time. Use fluid-loss additives as necessary to prevent preflush loss to high permeability zones. -Use lightweight or ultra-lightweight lead cement slurries if necessary to avoid lost circulation. -Design a large excess cement volume to account for uncertain annular volume and to improve mud removal efficiency. -Displace cement at maximum rate compatible with equipment and bottom-hole allowable pressure. -Prior to drilling out the surface casing shoe, verify surface casing integrity by pressure testing the surface casing as required by most state regulations and NPS standards as taken from Department of Interior Order No. 2, Section III. B.h. -After drilling between 10 and 20 feet of new formation, verify casing shoe integrity by testing the casing shoe to a minimum of the mud weight equivalent anticipated to control formation pressures at total depth.					√								
		√		Install surface controlled subsurface safety valves on wells capable of natural flow.			√		√		√						√

ROADS	DRILLING	PRODUCTION	FLOWLINES/PIPELINES	**Drilling and Production Operations Recommended Mitigation Measures**	RESOURCES PROTECTED	Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
		√		Use secondary containment under tank battery load-line connections.			√		√		√						
		√		Set storage tanks and other equipment on elevated and aerated base to prevent corrosion.			√		√		√						
		√		Design secondary containment to eliminate or minimize collection of precipitation.			√		√		√						
		√		Whenever possible, place workover wastes into production stream.			√		√		√						
		√		Use excess well completion, treatment, and stimulation fluids in other wells.			√		√		√						
		√		Reduce leakage from common points of friction and wear (*e.g.*, stuffing box packing rubbers, valve stems), by using magnetic ion coating technology.			√		√		√						
		√		Treat production streams with biocide or inhibitor to reduce sulfide formation.			√		√		√						
		√		Paint production equipment to blend with the surrounding environment. The NPS must approve the selection of colors prior to painting oil and gas production equipment and facilities.												√	
		√		Reduce and control paint overspray; use a brush for small jobs.					√								
		√		Replace mercury manometers or other instruments with mercury-free instruments.			√		√		√						√
		√		Use alternative methods to reduce sandblasting such as paint that does not require sandblast preparation, cathodic protection, or materials that do not need to be painted.			√		√		√						
		√		Design and maintain operation to reduce locations in the production system prone to NORM (Naturally Occurring Radioactive Materials) scale formation.			√		√		√						√
		√		Periodically monitor for accumulations of NORM or NORM-containing materials to minimize volume of NORM-contaminated waste requiring disposal.			√		√		√						√
		√		Store NORM-contaminated waste in above ground tanks for proper disposal.			√		√		√						√
		√		Provide NORM management training for appropriate personnel of NORM-affected production facilities.													√
		√		Replace electrical equipment containing PCBs (polychlorinated biphenyls) with non-PCB containing equipment.			√		√		√						√
		√		Cover the top of all open vent stacks with a screen or cage to prevent injury to birds and wildlife.									√	√			
		√		Empty storage tanks and fill with water in preparation for flooding or major storm events (*i.e.*, hurricanes).			√		√		√						√
		√	√	Provide for automatic shut-in of wells in response to pressure changes on the flowline to reduce spill volumes.			√		√		√						√
			√	Install flowlines and pipelines adjacent to access roads to minimize surface disturbance. This would also facilitate easy access to the pipeline for maintenance or spill response.			√		√		√					√	√
			√	Use only metal pipe for above-ground flowlines, gathering lines, and pipelines to prevent damage to flowlines, gathering lines, and pipelines where controlled burns or wildfires could damage non-metallic pipes.			√		√								

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			√	Minimize or avoid placing flowlines, gathering lines, and pipelines across waterways and in floodplains and wetlands. Where appropriate (based on site analysis), install flowlines, gathering lines, and pipelines via directional drilling underneath steep slopes, waterways, floodplains, and wetlands. Directionally drill underneath floodplains, waterways, and lakes to install new flowlines or to replace sections of existing pipelines.			√		√		√					√	√
			√	When possible, flowlines, gathering lines, and pipelines should parallel drainage divides and access roads.			√		√		√					√	√
			√	Pipeline crossings of perennial, intermittent, and ephemeral stream channels should be constructed to withstand floods of extreme magnitude to prevent breakage and subsequent accidental contamination of run-off during high flow events. Construct surface crossings to remain above the highest possible stream flows at each crossing, and construct subsurface crossings deep enough to remain undisturbed by scour throughout the passage of peak flows.			√		√		√					√	√
			√	During placement of flowlines, gathering lines, and pipelines, avoid blocking or filling natural drainages.					√									√
			√	Design, operate, and maintain leak detection monitoring and the capability for immediate remote shutdown of pipelines in the event of a leak or spill.			√		√		√							√
			√	Where pipelines are proposed to cross streams, assess the potential for site degradation (erosion) and stream migration and design and install pipeline to prevent exposure of the pipeline.			√		√		√					√	
			√	To minimize spills, use block and check valves on pipeline segments that cross waterways, floodplains, and wetlands. Ensure integrity of pipeline joints, especially pipelines crossing these areas.			√		√	√	√	√						
			√	Routinely maintain vegetation (trimming, cutting) along pipeline rights-of-way and routes to allow monitoring of pipelines and rapid access in the event of a leak or spill.					√		√					√	√
			√	Regularly empty drips along gathering lines, flowlines and pipelines. Flood-proof drips to prevent the release of oil and produced waters.			√		√								
			√	Use “smart pig” or other devices to test pipe wall thickness or integrity to determine the need for further pressure testing or pipeline replacement.			√		√		√						√
			√	Check thickness of pipeline to determine extent of internal corrosion at least annually.			√		√		√						√
			√	For above ground pipelines, partially rotate the lines to extend the life of the line from support contact wear and exposure of the upper half of the line.			√		√		√						√
			√	For above ground pipelines, provide supports that minimize contact of the pipeline with the ground. Supports should not restrict thermal expansion and contraction of the line, be close enough to eliminate sag, and designed for maximum loading conditions.			√		√		√						√
			√	Before placing a new pipeline in service or after replacing sections of an existing line, conduct hydrostatic test at a pressure 1.5 times the maximum designed working pressure for the system.			√		√		√						√
			√	“Pig” and pre-clean pipelines prior to hydrotesting to reduce the toxicity of hydrotest water.			√		√		√						√

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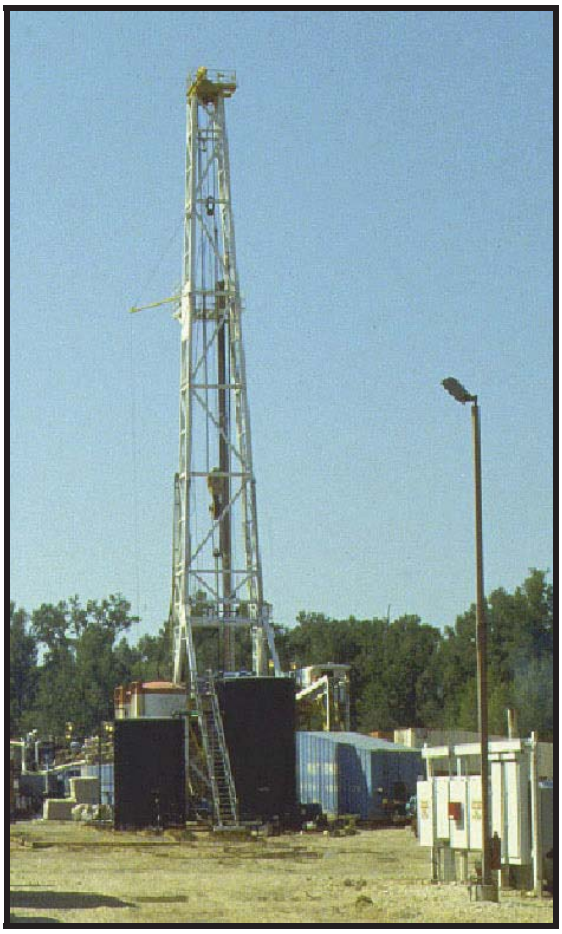
			√	Minimize internal corrosion by keeping both product and pipeline free of water.			√		√		√						√
			√	For underground pipelines, use resistivity testing of soils to forecast external corrosion problems.			√		√		√						√
			√	Maintain a good protective coating on pipe and joints at all times (both under- and above ground).			√		√		√		√				√
			√	Use cathodic protection for underground or submerged pipelines. Note: A typical cathodic protection system involves connecting the pipeline and a sacrificial anode to a direct current rectifier, thereby corroding the anode instead of the pipeline metal.			√		√		√						√
			√	Maintain a program of regular visual, electric, magnetic, and/or acoustic inspections on pipe to assess its integrity under worst case operating conditions of pressure and temperature. If warranted based on the inspection program, conduct mechanical integrity pressure tests in accordance with standard practices.			√		√		√						√
			√	Place and maintain warning signs at each public road crossing, railroad crossing, and trail; and in sufficient number along the remainder of each pipeline so that its location is accurately known. Post warning signs at intersections with roads and trails. If H_2S could be present in pipeline, place warning signs adjacent to pipeline.												√	√

DRILLING OPERATIONS – A PICTORIAL OVERVIEW

Similar to geophysical surveys, drilling operations are relatively short-term. However the intensity of impacts is much higher due to the equipment and materials needed to drill a well and the potential duration of the operation. The following resource issues are commonly associated with drilling activities:

- Pad construction results in soil removal (or compaction) and vegetation removal.
- Poorly constructed well sites may accelerate erosion and sedimentation further impacting soils, vegetation, water quality, fish, and wildlife.
- Uncontained oil, drilling muds, wastes, or other contaminants can degrade soils and surface and ground waters, harm vegetation, fish, and wildlife, and air quality.
- Poorly cased and cement wells (or improperly plugged wells) may lead to groundwater contamination.
- Wetlands may be damaged by construction of roads and pads or threatened by leaks and spills.
- Dark night skies can be impacted by night-time lighting on drilling rigs.
- Surface water quality may be degraded by leaks, spills, and stormwater discharges.
- Groundwater quality may be degraded by surface leaks and spills, casing leaks, and poorly plugged wells.
- Air quality may be degraded from flaring of gas, large spills, dust, and engine emissions.
- Natural sounds are interrupted by construction and drilling noises.
- Scenic quality disturbed by a tall drilling rigs, roads, pads, and miscellaneous equipment.
- Fish and wildlife may be injured by human presence, vehicles, exposure to contaminants, loss (degradation) of habitat, or unauthorized takings.
- Cultural resources may be threatened by increased human accessibility and fire.



STRATEGIES FOR REDUCING IMPACTS FROM DRILLING OPERATIONS

- Directionally drill the well from a surface location outside the park. Operators will benefit from less regulatory control by the National Park Service and the NPS will benefit by removing all direct impacts to park resources.
- Maximize the use of existing roads, wellpads, and other surface disturbances.
- Use directional drilling from a single pad to reduce the number of wellpads and access roads needed to develop a field. This strategy could also be used to avoid environmentally sensitive areas.
- Time the drilling operation to avoid critical wildlife migration, breeding, nesting, and birthing or high visitor use periods. Seasonal weather conditions may also factor into the proper timing of the operation.

Advances in directional drilling make it a powerful tool for avoiding environmental impacts. The extra costs to directionally drill a well are often offset by savings in road and wellpad construction in units of the NPS. This aerial photograph shows the extensive surface disturbance from roads and pads for a normal well spacing in an oilfield.

This two-acre wellpad in Big Cypress National Preserve provides surface locations for three directionally-drilled wells and production facilities. Three straight holes with the associated wellpad, roads, and flowlines may have disturbed up to six additional acres.

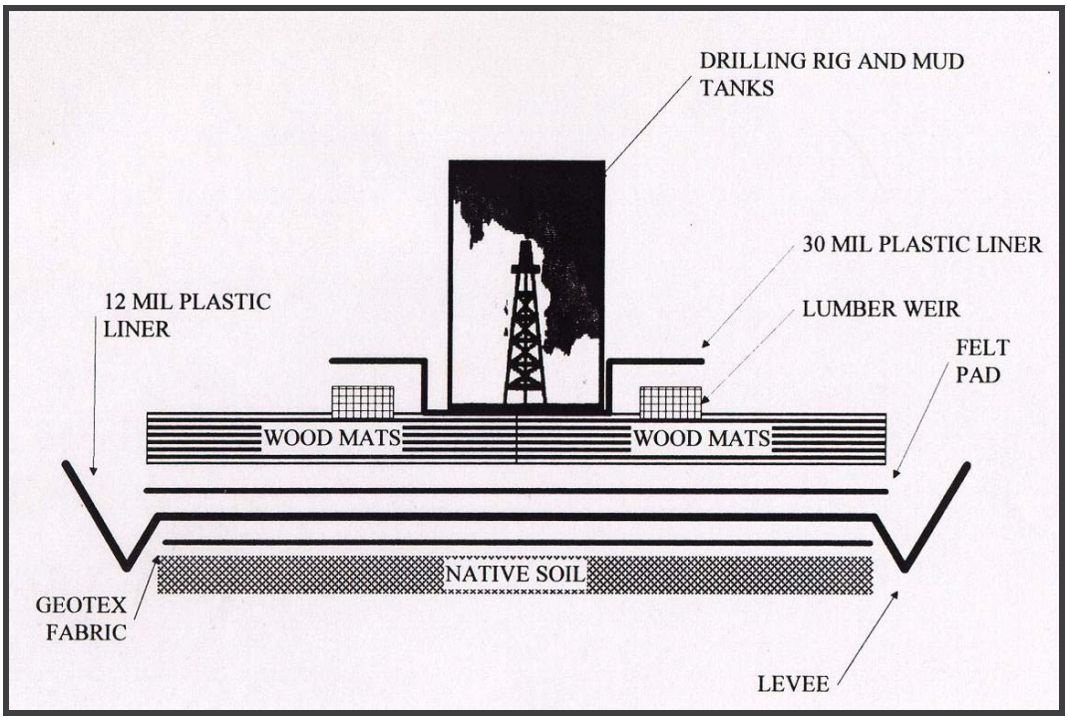
This drilling and production pad on the North Slope of Alaska is developing an entire field from one location designed for 20 initial wells. The footprint from drilling and production is much smaller than what it would have been using conventional development with straight holes, multiple roads, and the necessary gathering system.

DRILLING PAD DESIGN

Strategies to Reduce Environmental Risks

- Use impervious liners under all of the rig equipment, mud tanks, pipe racks, and other sources of spills to prevent soil contamination and to provide for effective stormwater management.
- Slope wellpad to the well cellar or other low point to collect spills and contaminated stormwater that collects within the lined area.
- Build a berm and/or ring levee around the entire location to provide backup should a spill escape from the lined area under the rig components. The fill for the pad should be relatively impermeable so not much seepage should occur if a spill escapes the lined areas.
- Line and berm areas for storing fuels, lubricants, chemicals, and waste. Contour and/or ditch the storage areas to a collection point separate from other rig equipment and not into the cellar (to prevent mixing of Resource Conservation and Recovery Act "exempt" and "nonexempt" wastes).
- Seal the cellar, mouse hole, and rathole by grouting with cement or other methods to prevent seepage of contaminants.

This drilling location in Padre Island National Seashore incorporated all of the above strategies when designing and constructing the location.



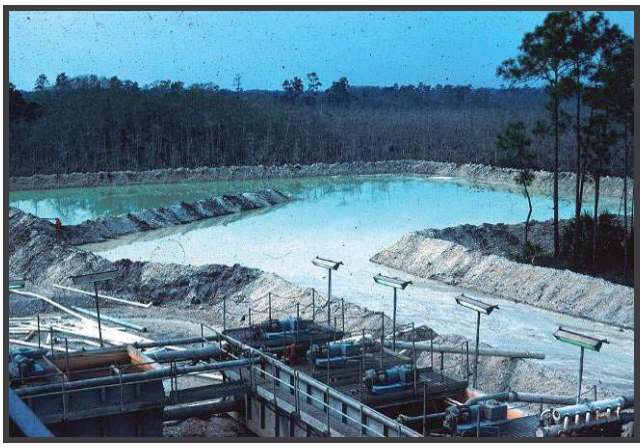
The operator of this drilling operation in Big Thicket National Preserve used a configuration of geotex fabric, synthetic liners, and board mats to construct a zero-discharge location. A 30-mil liner under the rig and associated equipment provided the primary protection against spills and discharge of stormwater that would likely come in contact with contaminants. An 18-mil liner under the entire location, and across the ring levee, provided backup for the primary liner. Stormwater that collected in the ring levee could be inspected prior to discharge or disposal. A vacuum pump and hose setup was kept on location to easily collect and manage liquids that accumulated in the lined areas.

Shown above, the ring levee and wellpad are covered with a plastic liner and board mats are placed on the liner. Equipment is placed on primary liner (below).

ENVIRONMENTAL PRECAUTIONS DURING DRILLING OPERATIONS

Earthen Reserve Pits Versus Steel Tanks

- The NPS no longer allows the use of earthen pits, even lined pits, inside a park. Depending on state requirements, wells drilled from surface locations outside the park may use earthen pits provided the operator constructs and maintains the pit to prevent migration of its contents. However, if damage occurs to park resources in the event of a spill, the operator will be liable for that damage.
- Inside a park unit an operator must use a fully containerized, closed-loop drilling fluid system in place of an earthen reserve pit system. This technique drastically reduces the potential for soil and water contamination. The closed-loop system usually needs less area than an average reserve pit so the operator can reduce the overall drill site area and area of potential impact.



This earthen reserve pit would no longer be appropriate for operations inside a park. Pits create more surface disturbance and are more likely to leak contaminants to the environment.

Steel tanks that hold water, reserve mud, and cuttings replace the need for traditional earthen reserve pits.

WELL CUTTINGS AND MUD DISPOSAL

- Use an efficient mud cleaning system and catch cuttings in steel tanks.
- Disposal of wastes will not be permitted inside a park.
- Dispose of mud and cuttings at an approved disposal site outside of the park.

Above, the well cuttings are loaded into a truck using a backhoe. To the left and below, the operator collected drill cuttings in 85-barrel steel boxes that were mounted on railroad tracks. The filled boxes were slid out and replaced by empty ones. After a box was filled, it was sealed and loaded on a truck and hauled to an approved disposal site outside of the park.

The closed loop containerized mud system was designed to efficiently remove drill cuttings from the mud, and included a Derrick Flo-Line Cleaner, a high-G mud cleaner, and a decanting centrifuge.

HANDLING OF FUELS, LUBRICANTS, CHEMICALS, AND WASTE

The operator could provide a shed to keep sacked mud additives out of the weather, thus reducing the chances of a spill. Mud additives may have to be handled as hazardous materials if they are spilled before becoming part of the mud system.

Stained soil under the bulk lube oil storage tank and the engines indicate sloppy handling procedures. No secondary containment is provided. Lube oils do not qualify for the RCRA (Resource Conservation and Recovery Act) hazardous waste exemption for E&P (exploration and production)

This operator provided a lined area for storage of chemicals and lube oil. Unused fracturing fluids are not exempt E & P wastes. This operator has taken the precaution of separating fracturing operations from other areas to avoid mixing RCRA hazardous and nonhazardous waste.

Fuels must also be kept in separate secondary containment areas from muds, rig wash, etc. With no secondary containment under the storage tank (right), the stained soils become a hazardous waste.

In the photo on the left the operator is aware that secondary containment is a good idea for fuel storage, but fails to plan until the last moment which results in poor execution.

In the example to the left and below, the operator plans for secondary containment under fuel storage. As a result, the chance of a fuel spill causing significant cleanup problems has been virtually eliminated.

PRODUCTION OPERATIONS – A PICTORIAL OVERVIEW

While production operations tend to cause less disruption to the natural environment than drilling operations, they carry their impacts over a much longer time frame. The following resource issues are commonly associated with production activities:

- Soil contamination from old production pits, leaks, and spills.
- Soil erosion and sedimentation associated with disturbed areas.
- Vegetation damage from leaks and spills, and fire.
- Wetlands damaged or threatened by leaks and spills.
- Surface water quality degraded by leaks, spills, and stormwater discharges.
- Groundwater quality degraded by surface leaks and spills, casing leaks, and poorly plugged wells.
- Air quality degradation from flaring of gas, large spills, pits, dust, and engine emissions.
- Natural sounds are interrupted from vehicles, pump jacks, pumps, compressors, etc.
- Scenic quality is broken up by permanent facilities, roads, pads, and miscellaneous equipment.
- Fish and wildlife are injured by human presence, vehicles, exposure to contaminants, loss (degradation) of habitat, or unauthorized takings.
- Cultural resources are threatened by increased human accessibility and fire.

Looking over the list above, one can readily see that leaks and spills of oil, brine, or other contaminants that may be used in operations are a key concern. Soils, vegetation, water quality, fish and wildlife, and air quality can all be adversely affected by the release of contaminants into the environment. Operators should strive to prevent releases by using good work practices and properly maintaining production equipment. Operators should also design secondary containment safeguards into their sites, and then respond quickly to clean up and remove spills that do occur.

WELL SERVICING AND WORKOVER OPERATIONS

Strategies for Clean Well Servicing and Workover Operations

- Maintain a sealed well cellar so that spills around the wellhead are easy to contain and remove. The cellar also helps in the production mode.
- Use a synthetic liner and board matting under rig components and construct berms/trenches to direct liquids to cellar.
- Use steel tanks to hold workover fluids and all liquids and solids returned from the well until they can be removed from the site.
- Contour and/or ditch around chemical, fuel, lubricant, and waste storage areas to a collection point separate from other rig equipment and not into the cellar (to prevent mixing RCRA "exempt" and "nonexempt" wastes).

Proper Site Preparation Leads to Cleaner Operations

A worker forms a small, inner berm just around the wellhead, the area most prone to spills. A synthetic liner is laid down over the larger bermed area. Board mats set on top of the liner will help maintain its integrity during operations.

- Any spills underneath the rig and associated equipment can be washed to the cellar for collection.
- A small pump can be used to move liquids that might accumulate in the cellar to appropriate tanks or containers for reuse or disposal.

PRACTICES TO AVOID DURING WELL SERVICING AND WORKOVER OPERATIONS

- The operator shown above did not consider spill control and containment during this operation. There are no berms or liner.
- Soils are soaked with oil within a 10-foot radius of the wellhead. Due to a general lack of good housekeeping, not only is the surrounding environment at risk but so are the health and safety of the workers.
- The location set-up has a strong likelihood for unlawful stormwater discharges. If stormwater comes into contact with any raw material, waste, or by-product, or an oil sheen is visible, the operator may not discharge the stormwater without a NPDES (National Pollutant Discharge Elimination System) permit issued by the Environmental Protection Agency.
- Though not clearly shown here, there is no well control equipment in place.

SECONDARY CONTAINMENT FOR STORAGE TANKS AND SITE SECURITY

Poor Operating Practices

- No diking is provided for the storage tank.
- In the event of a failure, tank contents will quickly move downhill and spread over a large area.
- There are no operator identification signs on the site.
- Tank valves are unlocked.
- There is no fencing in this public access area.

Better Operating Practices

- A berm is in place to contain spills.
- A sign identifies the site name, operator, and emergency contact information.
- A fence with a locked gate protects wildlife, visitors, and guards against vandalism.

Minimum Sign Information that is Required in a NPS Unit:

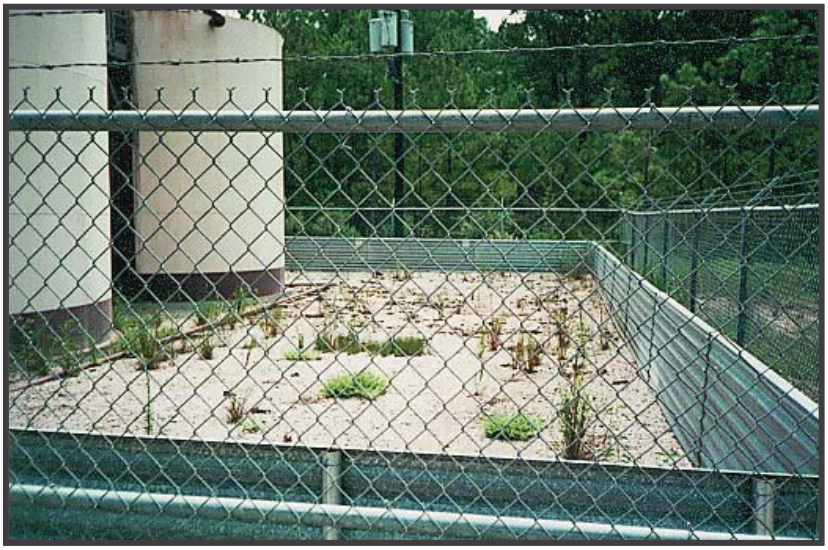
- Site Name
- Operator Name
- Emergency Contact Number

BERM DESIGN AND CONSTRUCTION

- Berms should be constructed with materials sufficiently impervious to contain spills.
- Berms should be designed and constructed with sufficient perimeter and height to hold 1.5 times the volume of the largest tank.

This operator placed the synthetic liner (from the drilling operation) beneath the tanks. The liner was folded into the berm, which was then reinforced with a cement mixture.

Containment systems constructed with corrugated galvanized steel are commercially available as an alternative to earthen dikes.



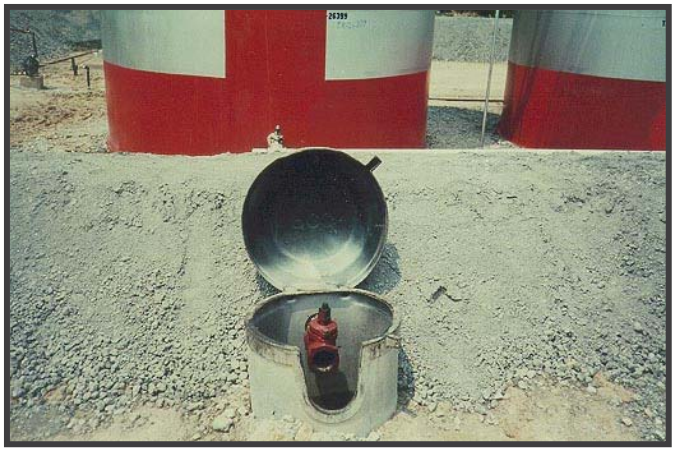
TANKER TRUCK LOADING

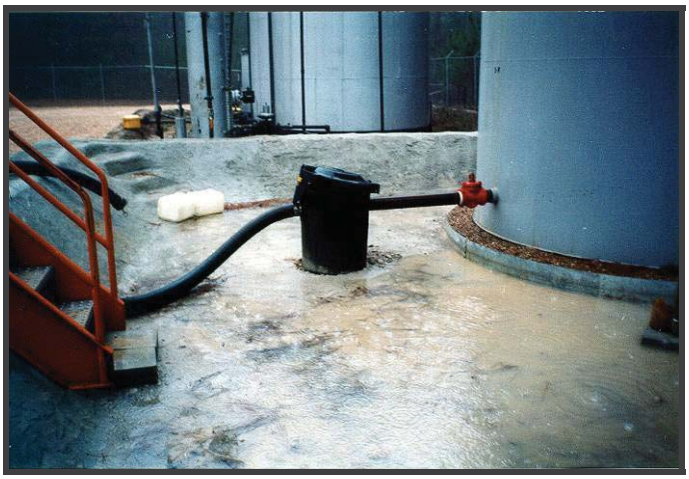
Poor Design and Practices

- Poor design and careless procedures yield undesirable results.
- No secondary containment is provided beneath loading line connection.
- Sloppy loading procedures lead to spills.
- There are no clean up efforts at this site.

Good Design and Practice

- Loading line connection over secondary container prevents and catches any drips or fluid loss when breaking the connection.
- Lid prevents rainwater from filling the container, which might displace oil. Oil should be removed as accumulation occurs.
- Clean site indicates careful loading procedures.





Better Design

- Loading box located inside the tank's bermed, lined area adds another level of protection.
- Design is exemplary, but note the extension hose coming from the loading box. Could the truck driver's loading procedure negate all of the designed safeguards?

STORMWATER MANAGEMENT

The Law: Operators must comply with Section 402(p) of the Clean Water Act regarding stormwater discharges. If stormwater comes into contact with any raw material, waste, or by-product, or an oil sheen is visible, the operator may not discharge the stormwater into waters of the United States without a NPDES (National Pollutant Discharge Elimination System) permit issued by the Environmental Protection Agency (EPA). "Waters" are very broadly defined and include any conveyance, including drystream channels, that lead to waterways. According to the EPA, the operator does not need a NPDES permit if discharged stormwater is not contaminated with, or comes in contact with, any raw material, intermediate product, finished product, by-product, or waste product. Permits for onshore discharges are issued by the states (which have been delegated primacy from the EPA), the EPA, or both.

Small leaks and drips around these separators indicate that the equipment is not adequately maintained or cleaned up. Stormwater comes in contact with oil and any other chemicals added to the production stream. Stormwater accumulates on the location until it flows through the unvalved, untended drainline shown below.

Oily absorbent material and sheen on the water below the drain indicate past discharges of contaminated stormwater. This is a violation of the Clean Water Act. Notice that the vegetation (lighter colored) has been damaged by the releases.

Strategies to Effectively Comply with the Law on Stormwater Discharges

- Repair and clean up small leaks and spills so that stormwater cannot come in contact with raw material, waste, or by-products and become contaminated.
- Use secondary containment around tanks, vessels, chemical storage, and other sources of leaks and spills so that stormwater that may become contaminated is not discharged.
- Any drain lines through dikes should be equipped with valves/blinds that are normally closed and locked. Supervise discharges once the stormwater is determined to be uncontaminated.
- Provide for collection of contaminated stormwater to tanks or vessels for recycling or disposal.
- To reduce the volume of stormwater, use the smallest practicable area for installation of tanks, vessels, chemical storage, etc. Also, prevent stormwater from running onto the location using diversion ditches and/or diking.

This operator designed the separation, storage, and chemical injection facilities all within a relatively small lined and bermed area.
The smaller area limits the volume of stormwater that must be managed.

The operator also installed a small diaphragm pump that is plumbed to either discharge uncontaminated stormwater or recycle contaminated stormwater to the separation facilities. The pump is operated manually so that any stormwater can be inspected, then tended during discharge.

CHEMICAL HANDLING

Strategies for Sound Chemical Handling

- Use secondary containment under chemical drums and bulk containers.
- Use bulk containers to remove the need for drum handling, drum storage, disposal or recycling of empty drums, all of which increase the chances for a spill.
- Inspect injection system (container, lines, and pump) regularly and perform maintenance as needed.
- Clean up and remove any chemicals that drip into secondary containers.
- Drain uncontaminated rainwater that collects in secondary containment or use a design that does not allow rainwater to collect in secondary containment.

Poor Chemical Handling

- The lack of secondary containment under drums is compounded by sloppy work habits.
- The chemical stained soils do not qualify for the RCRA Subtitle C exemption for oil and gas wastes and must be handled as hazardous waste.

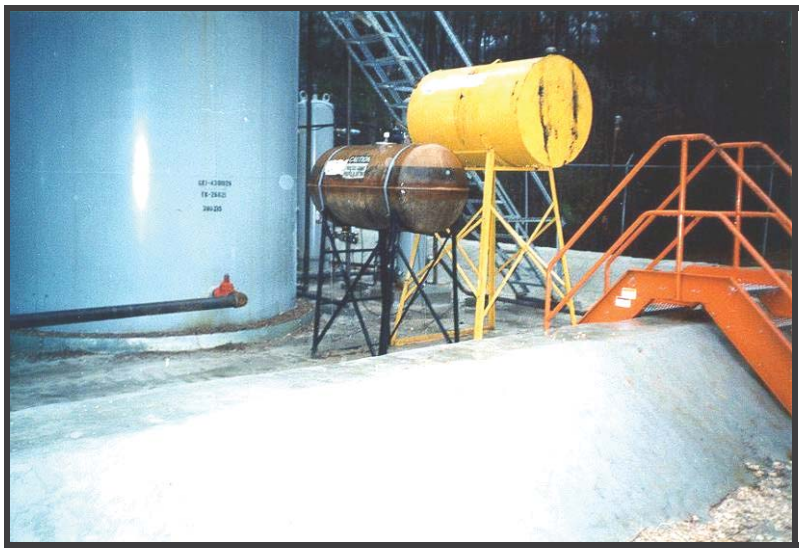
Better Chemical Handling

- A bulk storage tank and the chemical injection pump, a common source of leaks and drips, are mounted over secondary containment.
- Clean work habits are readily apparent.

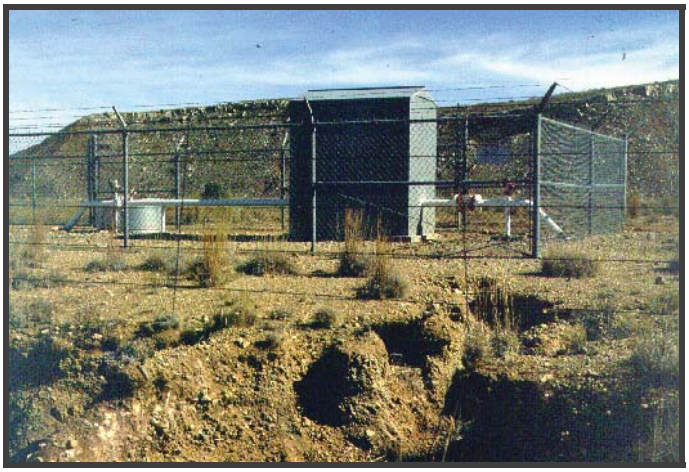
Other Good Chemical Handling Practices

- Dubbed the “coffin container” by this operator, the method removes the need to deal with stormwater that may collect in the secondary containment.
- A simple plastic storage tub is adapted to provide secondary containment for the chemical pump.

The operator in this photo uses bulk chemical storage and places them inside the storage tank’s lined and bermed area.



VEGETATION AND EROSION MANAGEMENT



Erosion Control

This gas well site is well maintained except for the erosion that is occurring. The operator could use drainage ditches combined with soil stabilization, such as grass seeding, to control erosion.

Manage Vegetation on Site

Manage vegetation by cutting, using approved herbicides, or use of pad materials that inhibit plant growth. This operator maintains low vegetation on the wellsite to reduce the potential for erosion. There is also a small berm around the wellhead to contain small leaks.

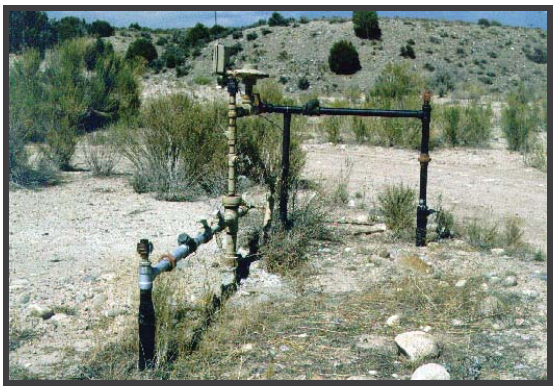
Vegetation should never be allowed to reach a point where it becomes a fire hazard.

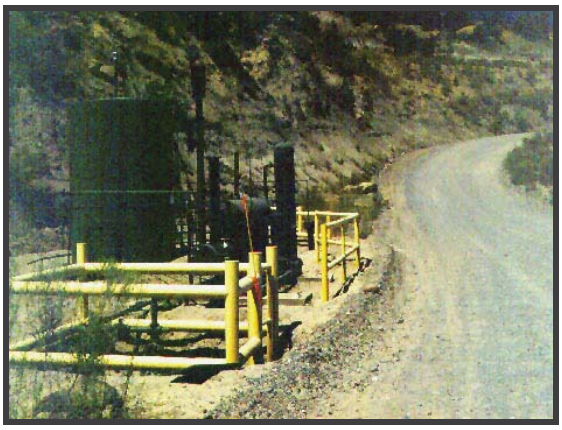
Operators should maintain an adequate fire break around their wells and storage facilities.

The operator of this well maintains an area free of vegetation around the clean, small pumpjack.

SITE SECURITY

This gas well is located just off a blind curve on a public use road. No protection around the wellhead increases the risks to both the environment and to visitor safety.





A strong steel barrier fence protects this facility from traffic accidents. The yellow safety paint also helps to alert motorists to the presence of the well.

Fencing in areas used by the public adds to visitor safety and helps protect the operator's facility from tampering.

Locked gates on access roads can also be an effective means of site security.

AESTHETICS

Noise Management

This compressor site is located near a visitor use area and noise from the facility was a primary visitor use issue.

To mitigate the noise problem, this operator maintained the standard muffling equipment, and also constructed an 8-foot corrugated metal wall to serve as an effective noise barrier.

Vegetative Screening

This well was sited in mature pine forest. This was done not only to move it away from the riparian corridor, but also to minimize its visibility from a primary use road.

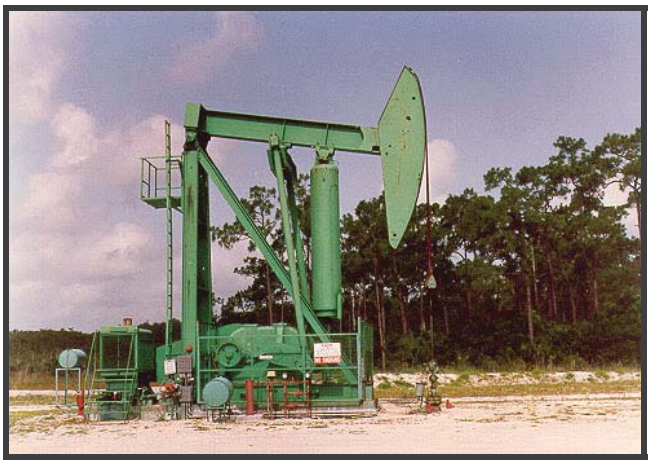
The location was selected to protect a more sensitive environment and maintain the aesthetics of the area.

GOOD HOUSEKEEPING OF THE OPERATIONS SITE

Good housekeeping of the site improves aesthetics, worker safety, and environmental protection.

- Remove trash, oilfield debris, and equipment that are no longer needed for the operation.
- Fence where appropriate to prevent access by the general public or wildlife.
- Post signs to warn of dangerous conditions such as flammable liquids or gases, high voltage, or hydrogen sulfide.
- Post signs with name of facility and operator along with emergency contact numbers.
- Control vegetation by cutting, mowing, or using approved herbicides to improve appearance and reduce fire hazard.
- Paint equipment (using colors compatible with the setting) to improve appearance and protect against external corrosion.
- Provide receptacles for trash and empty regularly or carry out trash as it is generated.

A well-maintained pump jack operation…



…versus a poorly-maintained pump jack operation.

This poorly-maintained tank battery lacks berm integrity, vegetation control, signing, fencing, paint, and secondary containment under the loading lines. A closer look would reveal trash, oilfield debris, and inoperable equipment.

…the opposite - a well maintained production facility.

Here are two similar flowing oil wells with obvious differences in site maintenance.

ACCESS ROADS – A PICTORIAL OVERVIEW

A single lane, mile long access road will disturb about the same area as a 1.5-acre drilling pad. Unlike a square drilling pad, a road's impacts stretch along its distance often through very diverse environments. The following resource and management issues are commonly associated with road construction and maintenance:

- Road construction results in removal of vegetation and removal or compaction of soils.
- Poorly constructed access roads may accelerate erosion and sedimentation downslope, further impacting soils, vegetation, water, fish, and wildlife.
- Roads may intrude upon the viewshed.
- Dust from construction and use of roads can degrade local air quality.
- Roads may alter authorized and unauthorized use of park areas by providing new means of access.

STRATEGIES TO REDUCE IMPACTS FROM OIL AND GASS ACESS ROADS

- Use existing roads as much as practicable. Sometimes trails, primitive roads, or light duty roads can be upgraded to handle the needs of a drilling access road.
- Plan the road route using topographic and soils maps and aerial photographs while considering problem soils, streams, and road grade. Archeological information may also be available from parks during the initial road planning steps. Ground truth and adjust route as needed to avoid sensitive resource areas.
- Get water off the road with water bars, dips, and culverts along with wing ditches.
- Empty water bars, dips, culverts and wing ditches gently onto non-erosive, stable areas.
- Avoid siting access roads along steep slopes to reduce the area of cut and fill.
- Avoid fragile and difficult to reclaim ecosystems such as wetlands.
- Stabilize and revegetate cut and fill areas, ditches, and outlets to minimize erosion.
- Minimize the number and size of stream crossings. If a crossing cannot be avoided, properly design and install roadway to prevent obstruction of stream flow.

Road planning is a balancing act - weighing the road's function and construction and maintenance costs against environmental concerns. This road was routed on the slope to avoid the sensitive wetland area.

Weed free straw bales were placed to temporarily prevent sedimentation into the wetland. If the exploration well had been successful, the operator planned to control erosion and sedimentation over the long term by vegetating the cut and fill areas.

ACCESS ROAD PROBLEMS

- Local soils may not be suitable road base material.
- No consideration was given to getting water off the road or to erosion and sedimentation problems.
- As a result, access is difficult at best during wet weather and maintenance issues are persistent. Erosion, sedimentation, and unnecessary new surface disturbance negatively effect the local environment.

Remedies

- Bring in good road base material, crown the road and build a side ditch along the existing slope.
- Gently discharge water across the road using water bars, dips, and culverts making sure that the discharge areas are stable.
- Recontour and revegetate the areas of disturbance since users will now be able to stay on the road.

No Access Road Problems

This road was built on soils similar to the photograph above. The key difference is the use of gravel to build a suitable road base. The road is crowned and discharges water into vegetated, stable areas. The operator controls vegetation on the roadway by mowing.

The two roads shown to the left and below are located near each other and are constructed in relatively level areas with similar soil types. In the photograph to the left, the operator built a compacted crowned road and placed ditches along the sides to keep water off the road. Below, the operator just bladed the road, and headed off cross country.

The bladed road collects rather than discharges water. Users trying to avoid getting stuck in the excessive ruts and potholes create more surface disturbance by driving off of the roadway in to undisturbed areas. Soon the 10-foot wide road has widened to 20 feet wide.

In the example to the left, the surface runoff on the bladed road concentrates the water flow down the roadway. This depletes water from some downslope areas, concentrates the flow in channels along the roadway, and dumps excessive water in other areas. Water erodes the road creating maintenance issues. The sediment-laden water is eventually discharged at some point along the road causing additional erosion and sedimentation.

Board roads are a viable alternative in some areas to provide temporary access for exploratory drilling. The road on the right, located in Big Cypress National Preserve provided suitable access to drill a well during the dry season.

The exploratory drilling was successful, and the road was upgraded using crushed limestone to provide all-weather access for the production phase of the operation. Installation of culverts has helped maintain the sheetflow that occurs during the wet season in the Preserve.

In the examples to the right, the operator upgraded a light duty road to handle the rigors of moving heavy drilling equipment. Commonly, road upgrades will have little, if any increased environmental impacts. In fact, some upgrades can improve environmental conditions by removing erosion problems and disruptions in the local drainage patterns.

GATES AND SIGNS

The entrance point to oilfield roads should be controlled with gates and signs as appropriate.

When a road is gated and locked or a sign is posted to limit use of the road to authorized personnel only, it is a good idea to construct a turnout so that vehicles can turn around.

During drilling operations, a watchman was stationed at the entrance to this access road. The watchman limited road use to authorized personnel and used radio communications to control traffic along the single lane road. A gate and lock was also available for use.

CHAPTER 5
DIRECTIONALLY DRILLING A WELL FROM OUTSIDE PARK BOUNDARIES TO INSIDE A PARK UNIT

This chapter includes the following information:

- NPS permitting process checklist for § 9.32(e) operations,
- Scope of NPS regulatory authority for directional drilling operations,
- Operator benefits from drilling outside the park under a § 9.32(e) exemption,
- 36 C.F.R. § 9.32(e) application process,
- List of mitigation measures to minimize potential threats to park resources and values,
- Information requirements for § 9.32(e) directional drilling applications, and
- Implementation issues for directional drilling operations.

NPS PERMITTING PROCESS CHECKLIST FOR § 9.32(E) OPERATIONS

The following checklist outlines the permitting process for directional drilling and production operations from surface locations outside park boundaries to nonfederal oil and gas inside NPS units. The items on the checklist are described throughout this handbook. This checklist can be used by an oil and gas operator to make sure that all of the required steps have been completed to prepare a § 9.32(e) application for NPS review.

- ☐ Operator contacts park regarding interest in conducting oil and gas operations from outside the boundaries of the park (for more information, see Ch. 2).
- ☐ Operator provides written documentation demonstrating property right to oil and gas inside the park (for more information, see Ch. 2).
- ☐ Operator meets with park staff to scope proposed project (for more information, see Ch. 2).
- ☐ Operator meets with affected federal, state, and local agencies to identify resource issues, permitting requirements, and impact mitigation strategies (for more information, see Ch. 2).
- ☐ Operator conducts necessary surveys (as applicable), and surveys / stakes the operations area (for more information, see Ch. 2).
- ☐ Operator prepares § 9.32(e) application and submits it to the National Park Service.

  The § 9.32(e) Application for directional drilling and production operations includes the following sections:
  - ☐ I. Ownership and Contact Information
  - ☐ II. Maps and Plats
  - ☐ III. Timeline for Operation
  - ☐ IV. Description of Well Geology
  - ☐ V. Description of Operations
  - ☐ VI. Spill Control and Emergency Preparedness Plan
  - ☐ VII. Well Plugging Plan
  - ☐ VIII. Affidavits and Statements
  - ☐ IX. Other Applicable Permits/Plans

- ☐ X. Background Environmental Information

- ☐ NPS performs a completeness and technical review of the § 9.32(e) application (for more information, see Chapter 2).
- ☐ Operator revises § 9.32(e) application, if necessary (for more information, see Chapter 2).
- ☐ Park staff prepares NEPA document (or adopts operator's or consultant's prepared NEPA document), incorporates other environmental compliance, and initiates mandated consultations with other agencies (for more information, see Chapter 2 and Appendix B).
- ☐ Park completes public review process, finalizes decision documents, and notifies the operator that the application has been approved, conditionally approved, or rejected (for more information, see Chapter 2).
- ☐ Operator agrees to conditions of approval (if any) and submits applicable state and federal permits (for more information, see Chapter 10).

SCOPE OF NPS REGULATORY AUTHORITY FOR DIRECTIONAL DRILLING OPERATIONS

The NPS controls nonfederal oil and gas development in parks through the 36 C.F.R. 9B regulations, which apply to all activities associated with bona fide nonfederally owned oil and gas rights within any unit of the National Park System where “access is on, across, or through federally owned or controlled lands or waters.” (36 C.F.R. § 9.30(a)). Section 9.32(e) of the 36 C.F.R. 9B regulations governs operators that propose to develop their nonfederal oil and gas rights in a park by directionally drilling a well from a surface location outside unit boundaries to a location under federally owned or controlled lands within park boundaries. It is limited in scope to those aspects of the directional drilling operation occurring within park boundaries. As promulgated, § 9.32(e) does not provide a means for the NPS to assert regulatory authority under the 9B regulations over surface and subsurface operations occurring outside park boundaries.

Per § 9.32(e), an operator may obtain an exemption from the 9B regulations if the regional director is able to determine from available data that a proposed drilling operation under the park poses “no significant threat of damage to park resources, both surface and subsurface, resulting from surface subsidence, fracture of geological formations with resultant fresh water acquifer [sic] contamination or natural gas escape or the like." The regulations define operations as "all functions, work and activities within a unit in connection with exploration for and development of oil and gas resources, the right to which is not owned by the United States..." (36 C.F.R. § 9.31(c)). The potential impacts considered in the § 9.32(e) exemption process relate only to effects on park resources from downhole activities occurring within the boundary of the park, not threats to park resources associated with the operation outside park boundaries.

NPS REGULATORY OPTIONS

Through the § 9.32(e) application process, the NPS may determine that 1) an operator qualifies for an exemption from the regulations with no needed mitigation to protect park resources from activities occurring within park boundaries, 2) an operator qualifies for an exemption from the regulations with needed mitigation to protect subsurface park resources from activities occurring within park boundaries, or 3) an operator must submit a proposed plan of operations and a bond to the NPS for approval. Each one of these options is briefly described below.

1. **Exemption with No Mitigation**: This option would occur when there is no potential for surface or subsurface impacts in the park from the downhole activities (*e.g.*, the wellbore does not intercept an aquifer within the park). Under this option, the NPS is not granting an approval or issuing a permit.

2. **Exemption With Mitigation**: This option would occur when the NPS determines there is no potential for surface impacts to park resources from downhole operations in the park and the operator adopts mitigation measures or conditions that reduce potential impacts on subsurface resources (*e.g.*, an aquifer) to "no measurable effect." As in option #1 above, the NPS is not granting an approval or issuing a permit.

3. **Plan of Operations**: This regulatory option would apply if NPS determines that it cannot make the requisite finding for a § 9.32(e) exemption because (1) impacts to surface

resources are involved, or (2) impacts to subsurface resources cannot be adequately mitigated to yield "no measurable effect." This option would also apply if an operator does not apply for an exemption and the NPS does not consider granting an exemption on its own initiative. In these cases a prospective operator must submit and obtain NPS approval of a proposed plan of operations and file a bond before commencing directional drilling activities inside a park. The required plan and bond will be limited in scope to those aspects of the directional drilling operation that occur within park boundaries. As a result, many of the general plan information requirements set forth under § 9.36 will not apply. Mitigation measures and/or conditions of approval would be integral to this option. Such mitigation could encompass the protection of cultural resources, cave/karst resources, aquifers, floodplains, wetlands and other surface resources from operations occurring inside the park. Under this option, an operator must have NPS approval of a proposed plan before commencing any activity in the boundaries of the park. The approved plan constitutes the operator's "permit."

OPERATOR BENEFITS FROM DRILLING OUTSIDE THE PARK UNDER A § 9.32(E) EXEMPTION

In addition to the obvious benefits of protecting park resources and values, there are other reasons why operators may consider moving their surface location outside of the park. Cost savings in other areas of the operation could significantly offset the increased costs and operational risks of drilling a directional well from outside a unit of the NPS to a bottomhole inside the unit.

An operator might consider these factors when deciding on a surface location:

- Reduced cost of the § 9.32(e) application compared to a plan of operations,
- Reduced time for preparation and approval of a § 9.32(e) application compared to a plan of operations,
- No performance bond would be required for operations under a § 9.32(e) exemption,
- Reduced operational costs due to no NPS environmental operating requirements outside of a park,
- Reduced reclamation costs due to no NPS reclamation requirements outside a park, and
- Improved public relations by removing potential environmental threats from a NPS unit.

36 C.F.R. § 9.32(E) APPLICATION PROCESS

Step 1: The operator decides if the well drilling objectives can be achieved using a surface location outside of the park.

Step 2: The operator scopes the project with the NPS and submits an application for a regulatory exemption from the plan of operations and performance bonding requirements. In the application, the operator provides the NPS with specific information that can be used to prepare the NEPA documentation (*e.g.*, environmental assessment). The information would include contact and legal ownership information, a description of the operation, methods that would be used to minimize or avoid impacts on park resources and values, and supporting data collected for other agency permits.

Step 3: The NPS performs a completeness and technical adequacy review and with the available information, prepares the required NEPA documentation.

Step 4: Based on the environmental analysis, the NPS regional director decides if the operation as proposed poses a significant threat of damage to park resources. The regional director also decides whether there would be an "impairment" under the NPS Organic Act. If not, the regional director grants a regulatory exemption from the plan of operations and bonding requirements and other 9B provisions, as appropriate.

In general, distance from the park will be the primary mitigation measure used by the operator to avoid or minimize adverse impacts on park resources and values. In most cases fewer mitigation measures will be necessary if the operation is moved farther away from the park. Siting the well operation away from rivers that flow into the park or siting the operation downslope from the park would also reduce the potential for impacts on park resources.

An operator's application needs to provide sufficient information to show the regional director that the downhole operations inside the park would not pose a significant threat of damage to park resources and values. The application should include a description of the mitigation measures that the operator proposes to use to reduce these threats below the "significant" threshold. Table 5.1 lists potential threats to park resources and values and describes strategies (mitigation measures) that the operator could use to avoid or reduce the potential impacts. The reader is also referred to Table 4.2 for a comprehensive list of recommended mitigation measures for drilling and production operations. Many of these measures may be required under state regulations.

Table 5.1. Suggested Mitigation Measures to Minimize Potential Threats to Park Resources and Values from Directional Drilling Operations Outside a NPS Unit.

THREAT TO PARK RESOURCES AND VALUES	MITIGATION MEASURE
All park resources and public health and safety	• The primary mitigation measure is siting the drilling operations outside of the park. In most cases, increasing the distance between surface operations and the park boundary will reduce potential threats to park resources and values.
Contamination of park soils and surface and ground waters (aquifers)	• Site operations downslope from the park if possible. • If only upslope locations are feasible, then try to site operations at least 500 feet from the banks of watercourses. • Construct dikes, berms, or ring levee/ditch around drilling location. • Prepare and implement a Spill Control & Emergency Preparedness Plan for drilling and production operations including identifying toxic or hazardous substances, spill prevention and containment actions, emergency contacts (including park staff contact), and type of response and clean-up materials and equipment available on site. • Use closed loop containerized mud system or lined reserve pits. • Use secondary containment around fuel, crude, and brine tanks and vessels. • Substitute less toxic materials where practicable. • Reduce and properly store wastes. • Run surface casing (or intermediate casing if appropriate) below fresh water aquifers and run cement to surface. • Control rig wash & stormwater. • Plug well in accordance with state and NPS standards to protect fresh water aquifers.
Alteration of water quantity/quality in the park	• Use good stormwater discharge practices to prevent release of contaminants into the park. • Design access road and wellpad to prevent soil erosion in the park. • Design access road and wellpad so that it does not impede surface water flow into the park. • Avoid siting the wellpad in a floodplain or wetland. If floodplains or wetlands cannot be avoided, use mitigation to prevent release of contaminants into floodplains and wetlands and subsequently into the park.
Nuisance or safety hazard from hydrogen sulfide (or other gases)	• Develop H_2S warning system and contingency plan if it may be encountered during drilling and production operations. • Use materials and equipment resistant to H_2S stress cracking where necessary. • Install and maintain appropriate well control and safety equipment.
Fire hazard	• Practice good site housekeeping. • Use proper well control equipment and practices for both drilling and production operations. • Do not have open fires.
Alteration of topography in the park	• Prevent erosion from surface runoff. • Implement reservoir pressure maintenance if subsidence is known to occur with reservoir depletion.
Alteration of vegetative community in the park	• Avoid clearing of vegetation immediately adjacent to park boundary. • Consult with NPS staff on site maintenance and restoration methods to prevent the introduction of exotic plant species in the park.
Harm to park wildlife	• Advise all oil and gas personnel of NPS regulations regarding illegal taking of wildlife on adjacent park lands. • Restrict public access to the well site to reduce potential for wildlife “poaching” in the park. • Fence and net open pits if they attract wildlife.
Harm to threatened or endangered species	• Comply with the Endangered Species Act. • Avoid siting surface operations near threatened or endangered species habitat, particularly during nesting/breeding periods.

THREAT TO PARK RESOURCES AND VALUES	MITIGATION MEASURE
Damage to park cultural resources	• Avoid siting surface operations in close proximity to park cultural resources. • Use construction and operation methods to keep all drilling and production impacts localized on the wellpad. • Apply methods to reduce visual and noise intrusion if traditional Native American cultural sites in the park are located near the operation area.
Degrade air quality in the park	• Maintain engines in good running condition. • Control dust during access road and wellpad construction. • Flare gas instead of venting gas.
Adverse impacts to park visitor experience and safety	• Site operations as far away from visitor use areas as feasible. • Maintain vegetation near park boundary to screen operations from park visitor use areas such as trails, waterways, picnic sites, swimming beaches, overlooks, etc. • Use engine mufflers, vegetation, or other sound barriers to minimize operation noise affecting park resources and values. • Erect fences, post warning signs, and place a gate on the access road (as appropriate) to restrict public access to the well site.

INFORMATION REQUIREMENTS FOR NPS TO PROCESS § 9.32(E) DIRECTIONAL DRILLING APPLICATIONS

Below is an explanatory list of requirements that nonfederal oil and gas operators need to include in a § 9.32(e) application. These requirements are applicable for directional drilling operations where the surface location is outside park boundaries and the drillhole crosses into the park. This information may be supplemented with resource information collected by other federal agencies responsible for compliance and permitting portions of the proposed operation.

The NPS uses the list of requirements to determine if a proposed application is complete and merits NPS review to determine if "such operations pose no significant threat of damage to park resources, both surface and subsurface, resulting from surface subsidence, fracture of geological formations with resultant freshwater aquifer contamination, or natural gas escape, or the like." (36 C.F.R. § 9.32(e)).

Most of the information listed below is required to make the § 9.32(e) determination. Other information as noted in sections VI, IX.B., and X.A. and B. can be provided at the operator's discretion to assist the NPS in its environmental analysis required under the National Environmental Policy Act and in making the 36 C.F.R. § 9.32(e) determination.

I. OWNERSHIP AND CONTACT INFORMATION

This information identifies who is responsible for the proposed operation, and provides a list of key contacts in case there is an accident that threatens park resources and values or public health and safety. It also documents that an oil and gas operator has a property right to explore for and develop nonfederal oil and gas located within a park.

A. The name, address and telephone number of the following:
   1. Surface owner at the drilling site,
   2. Operator,

3. Lessee,
4. Field representative, and
5. Contact person in case of spill or other emergency.

B. Copy of the legal instrument demonstrating ownership of or a legal right to oil and gas beneath the park. Examples include:
   1. Lease,
   2. Deed,
   3. Assignment of rights, or
   4. Designation of operator.

II. MAPS AND PLATS

This section of the application should graphically show the operator's mineral tract(s) and the proposed surface location in relation to the park, and illustrate the local topography so that the NPS can assess potential threats to park resources and values.

A. Tract/Lease Boundary Map - use 1:24,000 USGS quadrangle map(s) and show the following:
   1. NPS park unit boundary,
   2. Mineral tract/lease boundary, and
   3. Drilling unit boundary.

B. Operation Location Map - use 1:24,000 USGS quadrangle map(s) and show the following:
   1. Lease or mineral tract boundary and park boundary,
   2. Proposed surface location of oil/gas well(s) and production facilities,
   3. Proposed bottom-hole location of well(s),
   4. Access routes,
   5. Existing flowlines/pipelines for intended use in area, and
   6. Proposed new flowlines/pipelines intended for use in area.

III. TIMELINE FOR OPERATION

A. Provide an estimated timeline for the proposed operation, and include the following information:
   1. Date to begin site preparation and construction,
   2. Date to spud well,
   3. Time to drill to total depth, and
   4. Time to test/complete well and start production.

IV. DESCRIPTION OF WELL GEOLOGY

A. Provide the following information for the proposed well:
   1. Total depth of oil/gas well(s),
   2. Depth of anticipated producing zone(s) and formation name(s),
   3. Depth of useable quality water zone(s) (aquifers),
   4. Depth(s) of known brine zones, and other minerals (coal, oil shale, etc.),
   5. Depth(s) of abnormally high/low pressure or other geologic hazards (H2S, etc.) and methods to account for such conditions, and
   6. If applicable, the potential for encountering geothermal or cave/karst resources.

V. DESCRIPTION OF OPERATIONS

A. Drilling / Production Operations – Describe the following:
   1. Drilling program, including total depth, directional program, depth that the wellbore will cross into the park, and hole size for each casing string.
   2. Casing program, including setting depths of each string; casing size, grade and weight of each string; and placement of centralizers.
   3. Cementing program, including types and amounts of cement, additives, and cementing procedures.
   4. NOTE: If the surface hole will be drilled through useable quality water zone(s) (aquifers) beneath the park, include a description of methods to achieve proper mud and hole conditioning prior to cementing, pipe reciprocation during conditioning and cementing, proper preflush relative to adequate contact times and turbulent flow regime, proper slurry design for sufficient compressive strengths at critical zone isolation intervals, calculated slurry yield volumes, and pressure testing of surface casing.
   5. Mud program, including types, properties, weights, and additives for each well segment; handling and containment system; and liquid and solid disposal.
   6. Completion program, including type of completion (openhole, perforated, duel, etc.) and procedures to ensure well control.

VI. SPILL CONTROL AND EMERGENCY PREPAREDNESS PLAN

At the operator's discretion, a Spill Control and Emergency Preparedness Plan can be submitted to the NPS that describes all actions, equipment, procedures, training, etc. to control and effectively respond to releases of contaminating substances (oil, brine, drilling fluids, blow-out, or any other toxic or hazardous substance) to ensure protection of park resources and human health and safety. See *Chapter 11 – Spill Control and Emergency Preparedness Plan* in the Operator's Handbook for the recommended organization and content of a Spill Control and Emergency Preparedness Plan.

VII. WELL PLUGGING PLAN

Describe plugging program, including types of plugs, setting depths, casing removal, type and amount of cement, and cement placement techniques.

VIII. AFFIDAVITS AND STATEMENTS

A. Include a statement that operator is fully accountable for all contractor and subcontractor compliance with the § 9.32(e) application.
B. Include a statement that the superintendent (or designee) shall have access to the site to monitor and ensure compliance with the approved § 9.32(e) application for the downhole operations within the unit.

IX. OTHER APPLICABLE PERMITS/PLANS

A. Include a copy of state drilling permit including state requirements for protecting usable quality groundwater.
B. At the operator's discretion to help expedite the NPS fulfillment of its compliance responsibilities, include copies of, or application for, all other permits/approvals, including supporting information, required by other federal, state or local agencies. Examples of other permits and requirements may include:
    1. U.S. Army Corps of Engineers nationwide or individual permit for "dredge and fill" of wetlands under § 404 of the Clean Water Act,
    2. Federal Emergency Management Agency certificate for operations in floodplains, and
    3. EPA Spill Prevention Control and Countermeasure Plan for drilling, workover, and production operations.

X. BACKGROUND ENVIRONMENTAL INFORMATION

A. At the operator's discretion, list proposed mitigation measures that the operator will take to protect the park from potential adverse effects of the operation. These measures should be based on federal, state and local regulatory requirements and project scoping / site visit and discussions with NPS staff. This information will help the NPS prepare the environmental documentation required under the National Environmental Policy Act.

B. At the operator's discretion, the operator can provide other available environmental information to assist the NPS in assessing impacts on park resources and values and may include:
    1. Site specific resource surveys,
    2. Area topography,
    3. Surface waters and drainage patterns,
    4. Proximity to wetlands and floodplains and
    5. Other resource information gathered by the operator to comply with other agency's permitting requirements.

IMPLEMENTATION ISSUES FOR DIRECTIONAL DRILLING OPERATIONS

Park managers and staff most often apply the 9B regulations in the context of a nonfederal oil and gas operation occurring wholly within a park; that is, where both the surface and subsurface operation takes place within park boundaries. This is not the case when an operator directionally drills and produces a well inside a park from a surface location outside park boundaries. Because the Service's 9B regulatory authority is limited to those aspects of a directional drilling operation actually occurring within park boundaries, park managers and staff must make adjustments in the scope of regulatory actions they may take under such a scenario. For example, while the NPS typically limits the size and configuration of a wellpad inside a park, the NPS cannot do so where the well pad is located outside park boundaries.

COLLECTION OF RESOURCE INFORMATION BY PROSPECTIVE OPERATORS

The NPS may only require a prospective operator of a directional drilling operation to conduct resource surveys inside a park when there is a correlation between downhole operations within the park and potential impacts on park resources and values. Specific data collection requirements outside of the park are described below.

Cultural Resources Surveys: Cultural resources surveys would not be required for lands outside park units that could be affected by § 9.32(e) directional drilling proposals, unless required by the state (located on state surface) or through other permitting requirements (*e.g.*, Clean Water Act § 404) by other federal agencies, but may be required by the NPS for areas inside the park if the downhole operations could have an effect on cultural resources in the park.

Threatened and Endangered Species Surveys: The operator may be required to contract and pay for a qualified biologist(s) to conduct a threatened and endangered species survey of the operations area both inside and outside of the park unit, if this information is not available and is required as a result of the Endangered Species Act Section 7 consultation process.

Floodplains Delineations: A floodplain assessment would not be required by the NPS for surface operation's areas sited outside of a park unit. If there is another agency with floodplains jurisdiction, an operator may be required to contract with a qualified hydrologist to prepare a floodplain assessment within the proposed project area, which may include areas both inside and outside of the park unit.

Wetlands Delineations: A wetlands delineation would not be required by the NPS for the surface operation's area located outside of a park unit. The operator is responsible for consulting with the U.S. Army Corps of Engineers (COE) regarding the applicability of Clean Water Act § 404 permitting and the COE's requirements for wetlands delineations.

Coastal Zone Management Surveys: A survey of coastal natural resource areas would not be required by the NPS for the surface operation's area located outside of a park unit. If there is another federal agency with jurisdiction of coastal areas, an operator may be required to contract with a qualified professional to survey Coastal Natural Resource Areas within the operations area, which may include areas both inside and outside of the park unit. The operator is responsible for consulting with the U.S. Army Corps of Engineers (COE) regarding the applicability of Clean Water Act § 404 permitting.

Prior to completing its § 9.32(e) determination, the NPS has the discretion to wait for the outcome of the operator's compliance and permitting processes with other state and federal agencies in order to receive information on specific resources and mitigation measures applied by those agencies.

MITIGATION MEASURES

Operators are urged to adopt mitigation measures to protect park resources and values both within and outside of NPS units. Mitigation measures are defined by the National Park Service as modifications of the proposal that eliminate or reduce a proposal's potential impact on a particular resource or value. Mitigation measures would be required by the NPS and incorporated by a prospective operator in a § 9.32(e) application to ensure the downhole integrity of the wellbore and to avoid or minimize other potential impacts on park resources from the downhole operations within the park.

Where connected actions outside of the park could have potential indirect impacts on park resources and values, parks would also work cooperatively with operators to urge them to adopt mitigation measures to protect park resources from activities occurring outside park boundaries. The NPS would also work closely with other state and federal agencies during their environmental compliance or permitting processes and request that those entities attach mitigation measures or conditions of approval as part of their approval processes.

NOTE: The NPS may require mitigation measures on operations inside and/or outside park boundaries to protect federally threatened or endangered species and critical habitat under the authority of the Endangered Species Act (ESA), not the 9B regulations. The ability of the NPS to do so would arise only if the NPS is the lead federal agency responsible for ESA § 7 consultation and only if mitigation measures are necessary to protect threatened or endangered species and critical habitat from impacts associated with the directional drilling operation both inside and outside park boundaries.

If damages occur to park resources from external operations, an operator may be liable under 16 U.S.C. § 19jj and other appropriate statutes, and may need to compensate the government for the damages. As a result, operators have an additional incentive to minimize the potential for impacts to park resources from their operations.

CONDITIONS OF APPROVAL

Conditions of approval are mitigation measures that the NPS requires at the time it issues a § 9.32(e) determination. Conditions include mitigation measures that were not included in the operator's application or plan of operations, and are derived from NPS technical review, public involvement, and other-agency consultations. Conditions for a directional drilling operation would relate to mitigating potential impacts on park resources, both surface and subsurface, from the downhole operations within the park.

Other agencies often require "conditions of approval" under their permitting authority. To the extent that park protection concerns exist with activities occurring outside park boundaries, the NPS would urge other agencies to include mitigation measures as part of their conditions of approval.

TIMEFRAME FOR ACTING ON A REQUEST FOR AN EXEMPTION

The 9B regulations do not specify a timeframe for acting on an operator's application for exemption, however, parks are directed to not exceed the 60-day timeframe (with a permissible 30-day extension) specified in the regulations for acting on a proposed plan of operations.

NPS ACCESS TO SURFACE LOCATION OUTSIDE PARK BOUNDARIES

If the United States does not own the surface estate where operations are located outside the park, NPS access to these operations must be coordinated with the operator, including obtaining the operator's permission to be on location. NPS access also must relate to obtaining information to complete the needed compliance work or to ensuring compliance with mitigation measures related to downhole operations inside the park. The 9B regulations provide no authority for requiring an operator to grant the NPS access for the purpose of observing compliance with terms unrelated to the downhole activities in the park.

MONITORING

The National Park Service's ability to monitor and inspect directional drilling operations is limited to downhole operations within the park (*e.g.*, surface casing, cementing, plugging operations, etc.). As a practical matter, monitoring of downhole activities inside the park can only be accomplished from the surface location outside the park. As a result, the NPS may need to access the surface location and should make such access a condition of an exemption under option #2 or a condition of approval under option #3. The NPS would coordinate the timing of such access with the operator.

To ensure that directional drilling operations inside a park are being conducted in accordance with an exemption determination or an approved plan, the NPS has two monitoring options. The Service can have a qualified individual (NPS employee or a mutually agreed upon third-party contractor hired by the operator) on location to witness the well casing, cementing and well plugging programs within the park, or the NPS can require the operator to submit drilling records that demonstrate that the well casing, cementing program, and plugging program were completed as proposed. Selection of the appropriate option or combination of options should be worked out with the operator.

ENFORCEMENT

The Service's enforcement role for each of the regulatory options is as follows:

1. **Exemption with No Mitigation**: Since this option includes an exemption rather than an approval, and no mitigation measures/conditions are required to protect park resources and values, there would be no enforcement role for the NPS.

2. **Exemption with Mitigation**: If the operation is not in compliance with the mitigation/conditions required to protect subsurface resources in the park, the NPS would provide notice to the operator to cure the violation before the NPS invokes suspension or revocation authority.

3. **Plan of Operations**: If an operator is not in compliance with his/her approved plan, the NPS would provide notice to the operator to cure the violation as it relates to operations occurring within park boundaries before the NPS invokes suspension or revocation authority under § 9.51(c).

Under all 3 options, if the NPS is the lead federal agency for ESA § 7 consultation and requires mitigation to protect federally threatened or endangered species and critical habitat, the Service would have authority under the ESA (not the 9B regulations) to enforce that mitigation.

Where a state or federal agency, other than the NPS, has applied mitigation measures via their respective environmental compliance or permitting processes, that agency, not the NPS, has sole responsibility for monitoring and enforcing its mitigation measures. However, in the event the NPS becomes aware of a compliance concern related to another agency's jurisdiction, the Service should alert that agency in a constructive manner.

TRANSFERABILITY OF A DIRECTIONAL DRILLING OPERATION

A regulatory exemption for a directional drilling operation under 36 C.F.R. § 9.32(e) may be transferred to another operator in a manner comparable to that for an approved plan of operations under 36 C.F.R. § 9.34.

Table 5.2. Summary of Compliance Requirements for Directional Drilling Proposals from Surface Locations Outside a Park

OPTION	SCOPE OF NEPA ANALYSIS	ENDANGERED SPECIES ACT	NATIONAL HISTORIC PRESERVATION ACT	FLOODPLAINS EXECUTIVE ORDER	WETLANDS EXECUTIVE ORDER	MITIGATION MEASURES
Exemption with No Mitigation	The NEPA analysis (most likely an EA) would focus on environmental effects from the downhole operations in the park. The potential impacts of the connected actions on park resources and values would also be disclosed. Impacts outside the park would be qualitatively assessed.	Granting an exemption is non-discretionary under this option. ESA § 7 consultation for activities occurring in the park is not required because there would be no effect on federally listed threatened and endangered species and/or critical habitat. In the event that connected operations outside the park could affect a T&E species or critical habitat in or outside the park, consultation and mitigation under the ESA would be required. The NPS would be the lead federal agency carrying out the ESA consultations outside of the park if there is no other federal entity with broader regulatory involvement.	There is no potential for impact on cultural resources in the park from the downhole operations in the park. The NPS has no NHPA § 106 responsibility for wells that originate on non-federal lands located outside the park, where the wellbore crosses in to the park to extract non-federally-owned hydrocarbons from beneath the park. The Advisory Council on Historic Preservation concurred with this finding on September 13, 2004.	There is no potential for impact to federally-owned or controlled floodplains in the park from the downhole operations in the park. No action is required by the NPS under the Executive Order. Other federal agencies having broader permitting authority for the proposal would need to comply with the Executive Order if floodplains would be affected by the operation.	There is no potential for impact to federally-owned or controlled wetlands in the park from the downhole operations in the park. No action is required by the NPS under the Executive Order. Other federal agencies having broader permitting authority for the proposal would need to comply with the Executive Order if wetlands would be affected by the operation.	- NPS mitigation measures/ conditions would not be applied to the exemption. - The operator can voluntarily apply mitigation measures to reduce indirect impacts on park resources and values from connected actions outside the park. - The NPS will work cooperatively with other agencies during their permitting processes to identify potential impacts on park resources and values and recommend mitigation measures/conditions of approval. - If NPS is “lead” federal agency following ESA § 7 consultation, the Service may require mitigation measures/ conditions to protect threatened and endangered species and habitat both inside and outside the park.

Option	Scope of NEPA Analysis	Endangered Species Act	National Historic Preservation Act	Floodplains Executive Order	Wetlands Executive Order	Mitigation Measures
Exemption with Mitigation	Same as Option #1	Granting an exemption is discretionary under this option. NPS is required to determine if federally listed threatened and endangered species and/or critical habitat may be affected inside the park from in-park operations. The NPS would be the lead federal agency carrying out the consultations both inside and outside of the park if there is no other federal entity with broader regulatory involvement.	Same as Option #1	Mitigation/conditions applied to ensure the integrity of downhole operations in the park reduces the likelihood of impacts to floodplains in the park; no action is required by the NPS under the Floodplains Executive Order.	Mitigation/conditions applied to ensure the integrity of downhole operations in the park reduces the likelihood of impacts to wetlands in the park; no action is required by the NPS under the Wetlands Executive Order.	The compliance responsibilities are the same as Option #1, except: NPS may require mitigation measures/conditions to reduce impacts to subsurface park resources associated with downhole operations inside the park.
Plan of Operations	Same as Option #1	Same as Option #2.	If potential impacts to cultural resources could not be mitigated, the NPS would follow its standard procedures for conducting consultations with the SHPO/THPO but focus its consultation on the downhole operations inside the park.	Same as Option #2. If potential impacts to floodplains could not be mitigated, the NPS must follow its standard procedures in the NPS Director's Order/ Procedures Manual and prepare a *Floodplains Statement of Findings* pertaining to the downhole operations within the park.	Same as Option #2. If potential impacts to wetlands could not be mitigated, the NPS must follow its standard procedures in the NPS Director's Order/ Procedures Manual and prepare a *Wetlands Statement of Findings* pertaining to the downhole operations within the park.	Same as Option #2.

CHAPTER 6
EXISTING OIL AND GAS PRODUCTION OPERATIONS

(Operations that are grandfathered or have lost their grandfathered status)

This chapter includes the following information:

- NPS permitting process checklist for existing oil and gas operations that have lost their exempt status,
- Definition of an existing operation,
- Loss of "existing operations" status,
- Suspension of existing operations,
- Plugging and reclamation of existing operations,
- Plan of operations information requirements for existing production operations, and
- Third party monitoring.

NPS PERMITTING PROCESS CHECKLIST FOR OPERATIONS THAT HAVE LOST THEIR GRANDFATHERED STATUS

The following checklist outlines the permitting process for existing operations that have lost their grandfathered status. The items on the checklist are described throughout this handbook. This checklist can be used by an oil and gas operator to make sure that all of the required steps have been completed to prepare a plan of operations for NPS review.

- ☐ Operator notifies park superintendent that an oil and gas operation has lost its grandfathered status. In some cases, the NPS may notify the operator if the NPS determines that an operation has lost its exempt status.
- ☐ Operator meets with park staff to discuss 36 C.F.R. 9B requirements (for more information, see Ch. 1).
- ☐ Operator meets with affected federal, state, and local agencies to identify resource issues, permitting requirements, and impact mitigation strategies (for more information, see Ch. 2).
- ☐ Operator requests temporary access permit to gather information needed to complete the plan of operations. This would be necessary if the surveys cover an area larger than the existing operations area. The NPS must be notified of the techniques proposed for the surveys (for more information, see Ch. 2).
- ☐ Operator conducts necessary surveys, which may include natural and cultural surveys. The types of surveys would be determined during scoping with park staff (for more information, see Ch. 2).
- ☐ Operator prepares plan of operations and submits draft plan to the National Park Service (for more information, see Ch. 4 for drilling and production or Ch. 7 for well plugging and surface reclamation).

The Plan of Operations for existing production operations that have lost their grandfathered status must include the following sections:

- ☐ I. Ownership and Contact Information
- ☐ II. Maps and Plats
- ☐ III. Timeline for Operations
- ☐ IV. Description of Area Geology
- ☐ V. Description of Operations
- ☐ VI. Spill Control and Emergency Preparedness Plan
- ☐ VII. Well Plugging and Reclamation Plan
- ☐ VIII. Affidavits and Statements
- ☐ IX. Other Applicable Permits
- ☐ X. Background Environmental Information
- ☐ XI. Relationship to Park Planning Documents

- ☐ NPS performs a completeness and technical review of the plan of operations (for more information, see Ch. 2).
- ☐ Operator revises plan of operations, if necessary (for more information, see Ch. 2).
- ☐ Park staff prepares NEPA document (or adopts operator's or consultant prepared NEPA document), incorporates other environmental compliance, and initiates mandated consultations with other agencies (for more information, see Ch. 2 and Appendix B).
- ☐ Park completes public review process, finalizes decision documents, and notifies the operator that the plan has been approved, conditionally approved, or rejected (for more information, see Ch. 2).
- ☐ Operator agrees to conditions of approval (if any), submits applicable state and federal permits, and files performance bond with the NPS (for more information, see Ch. 10).

DEFINITION OF AN EXISTING OPERATION

In the 9B regulations, an operator conducting “existing operations” may continue without submitting a plan of operations or filing a performance bond or security deposit. These operations are "grandfathered" (36 C.F.R. § 9.33).

An "existing operation" uses federal access, but meets one of the following conditions:

1. The operator was conducting operations under a valid state or federal permit as of January 8, 1979 (the effective date of the regulations),
2. The operator was conducting operations under a valid state or federal permit when the area became a new park unit, or
3. The operator was conducting operations under a valid state or federal permit when the area came into the park system by expansion of an existing unit.

If an operator was not required to obtain a federal or state permit prior to January 8, 1979, prior to the establishment of a new park unit, or prior to the expansion of an existing unit, the operation must come into compliance with the 9B regulations in accordance with the provisions of 36 C.F.R. § 9.33(b).

A state or federal permit is considered valid if:

- the permit was issued to the current operator on or before January 8, 1979, prior to the establishment of a new park unit, or prior to the expansion of an existing unit,
- the term of the permit has not expired, and
- the operations have not undergone any change requiring the operator to acquire a new permit since January 8, 1979, prior to the establishment of a new park unit, or prior to the expansion of an existing unit.

LOSS OF “EXISTING OPERATIONS” STATUS

An existing operation can lose its exempt (grandfathered) status. If this happens, the operator must comply with the 9B regulations. This includes filing a plan of operations with the NPS and submitting a performance bond. An operator loses its "existing operation" status after its valid state or federal permit expires by its own terms.

The list below gives some examples of situations where a valid state or federal permit expires by its own terms:

- The operation has a change in operator.
- The operator proposes well work that requires new state approval. Examples include recompleting a well to a different producing zone (plug backs and deepenings), or plugging and abandonment.
- The operator proposes to use additional federally owned lands or waters. New use of federal land or water in a park unit requires a new permit from the NPS. Common examples include enlarging a wellpad to accommodate expanded production facilities or widening a road to improve access to the site.

SUSPENSION OF EXISTING OPERATIONS

While existing operations may be exempt from the plan of operations and bonding requirements, they may come under NPS suspension authority. If "[a]t any time when [existing] operations which are allowed to continue under § 9.33 (a) and (b) pose an immediate threat of significant injury to federally owned or controlled lands or waters, the superintendent shall require the operator to suspend operations immediately until the threat is removed or remedied." (36 C.F.R. § 9.33(c))

The superintendent will notify the operator in writing (within 5 days) with the reasons the operation was suspended, and what must be done to resume operations. The operator can appeal the suspension order under 36 C.F.R. § 9.49, Appeals.

Examples of an immediate threat of significant injury include, but are not limited to:

- escape of hydrogen sulfide or other toxic or noxious gas,
- vegetation clearing or earth moving outside the area currently approved (by regulation or plan) for operations,
- uncontained or chronic oil, brine, or hazardous material spills,
- well blow-out,
- leaching or release of an environmental contaminant (*e.g.*, contaminated stormwater runoff),
- fire or fire hazard,
- unmaintained oil or brine storage tanks that lack secondary containment such as berms,
- inadequate safeguard for controlling well pressures,
- inadequate safeguards for protecting visitors and wildlife from serious injury, or
- damage to cultural resources.

PLUGGING AND RECLAMATION OF EXISTING OPERATIONS

Existing operations often lose their exempt status from the plan of operations and performance bond requirements because well plugging requires a new state permit. Prior to well plugging, the operator needs to:

1. File a plan of operations covering the well plugging and surface reclamation,
2. Receive NPS approval, and
3. Submit a performance bond.

It is very important for grandfathered operators to understand this aspect of the regulations, both environmentally and financially. The manner in which operations are conducted will directly affect the cost of the surface reclamation. It will also have a bearing on the sales price of the property because today's buyers are more aware of environmental liabilities.

Chapter 7 of this handbook covers information requirements for well plugging and surface reclamation, includes a guide to NPS well plugging requirements, and lists required operating stipulations and recommended mitigation measures.

PLAN OF OPERATIONS INFORMATION REQUIREMENTS FOR EXISTING PRODUCTION OPERATIONS

Below is an explanatory list of requirements that nonfederal oil and gas operators need to include in a plan of operations for existing production operations that lose their grandfathered status. These requirements are based on the regulatory provisions under 36 C.F.R. § 9.36. These requirements are modified from the information requirements for drilling and production operations shown in Chapter 4 and do not include the drilling requirements for a proposed operation. This list is also used by the NPS to determine if a proposed plan of operations is complete and sufficiently detailed to merit "official acceptance" for review and analysis in accordance with the regulations at 36 C.F.R. § 9.36(c).

A plan of operations may not need to address all of the information requirements presented in this list. Information requirements should be tailored to the type of operation now subject to a plan of operations (*e.g.*, producing well, on-site treatment and temporary storage, well flowline, field gathering line system, well plugging etc.). The list should be used in conjunction with the 36 C.F.R. Part 9B regulations to determine which items are applicable to the proposed operation, and are therefore required in a plan of operations. The operator and NPS staff will focus the list of required information during project scoping. In some instances, the NPS may require additional information to effectively analyze the proposed operation (36 C.F.R. § 9.36(a)(18)). For additional information, contact the park for assistance in determining information requirements for particular types of proposed operations.

The operator will submit the plan of operations, tender the performance bond, and be the responsible party for compliance with the plan of operations.

I. OWNERSHIP AND CONTACT INFORMATION

The purpose of this section of a plan is to identify the “operator” as defined under the NPS regulations, to document the operator’s property right to oil and gas in the park, and to identify primary company contacts for planning, field operations, and emergencies.

A. Name(s) and address(es) of:
   1. Surface owner (if other than the NPS), and
   2. Lessor (mineral owner).

B. Name, address, and telephone number of:
   1. Operator,
   2. Lessee (if different than operator)
   3. Person accountable for operations,
   4. Field representative, and
   5. Emergency contact.

C. Copy of instrument(s) demonstrating the operator’s right to operate. Examples include:
   1. Lease,
   2. Deed,
   3. Assignment of rights, or
   4. Designation of operator (may include a unit agreement).

II. MAPS AND PLATS

The purpose of this section of a plan is to graphically show the operator's mineral tract(s) and the area of operations in relation to the park. The area of operations includes present and past surface disturbance associated with the operations including the access road(s), well(s), and facilities. The scaled location plats are intended to clearly and accurately define the area that the operator has available for conducting operations and to identify the area that the operator is responsible for reclaiming.

A. **Tract/Lease Boundary Map** - use 1:24,000 USGS quadrangle map(s) and show the following:
   1. NPS park unit boundary,
   2. Mineral tract/lease boundary, and
   3. Each mineral tract or lease should be cross-referenced to the property right information provided in Section I.C. and should include the tract's legal description: (quarter-quarter, section, township range, meridian, and distances from section lines; or land abstract name and number.)

B. **Operation Location Map** - use 1:24,000 USGS quadrangle map(s and show the following, as applicable:
   1. Lease or mineral tract boundary and park boundary,
   2. Existing oil and gas wells and facilities in the operations area,
   3. Proposed new oil and gas wells and facilities,
   4. Existing access road(s),
   5. Proposed new access road(s),
   6. Existing flowlines/pipelines in the area of operations,
   7. Proposed new flowlines/pipelines in the area of operations,
   8. Helicopter landing zone (if applicable),
   9. Location of any fill or borrow materials necessary for operations, and
   10. All existing wells within 1 mile radius of the area of operations (potable water, disposal, producing, shut-in, exploratory, and abandoned).

C. **Operation Plats** - Submit large-scaled plats showing the dimensions and equipment layout of the operations area. Show the following as applicable:
   1. Access road dimensions (including cross sections of cut and fill areas if required).
   2. Wellpad dimensions (including cross sections of cut and fill areas if required).
   3. Excavations for ditches, sumps, etc. on or around wellpad (show cross-sections).
   4. All areas to be protected with liners, including liner type and thickness.
   5. Temporary living quarters (*e.g.*, trailers).
   6. Location and type of sanitary facilities.
   7. Wellhead and all associated equipment, including:
   8. tanks, flowlines, meters, heater treaters, separators, etc.;
   9. flowline and pipeline control values, pressure and volume regulators, monitors and alarms, and cathodic protection (rectifiers) stations;
   10. electrical powerlines;

11. location and dimensions of berms constructed around the wellpad, tanks, and other production equipment;
12. produced water disposal well, associated equipment, and flowline;
13. enhanced recovery systems and equipment; and
14. all other equipment necessary for operations.

D. **Topographic Plats** - Include scaled plats prepared by registered surveyor/engineer showing:
Topographic map of the area of operations including access roads and pipeline routes. In addition to topography, the map needs to identify surface waters in relation to the area of operations.

III. TIMELINE FOR OPERATIONS

The purpose of this section of the plan is to identify when operations will be conducted and how long they will last. Any alteration of normal operations due to seasonal timing considerations for natural resources or visitor uses should also be noted in this section.

A. Estimated remaining life of operations,

B. Estimated date when reclamation will begin. (NOTE: Reclamation must begin as soon as possible after completion of approved operations, but no later than 6 months thereafter unless specifically approved by the regional director), and

C. Estimated time to complete reclamation.

IV. DESCRIPTION OF AREA GEOLOGY

The purpose of this section of a plan is to provide a general discussion on the geological conditions as they relate to continued well operation and eventual plugging operations. For existing operations, the operator needs to provide the following information to help the NPS determine a) that all usable quality freshwater zones are protected, b) that anticipated geological conditions are planned for with regards to well control, and c) well plugging requirements.

A. Total depth of well(s),

B. Depths of present and future producing zones,

C. Depth to which freshwater must be protected (*e.g.*, depths of known usable quality freshwater zones),

D. Depths of all known brine zones, and other minerals such as coal or oil shale,

E. Depths of zones with abnormally high or low pressures, or other geological hazards, and

F. A brief discussion of any drilling or production practices in the area that are used to account for geologic conditions (*e.g.*, heavy muds used for high pressures, oil or saltwater muds

used to drill expanding clays or shales, unusual casing/cementing programs, hydrogen sulfide safety plans, etc.).

V. DESCRIPTION OF OPERATIONS

The description of operations should provide enough detail on the proposed methods, sequence, and equipment for each component of the operation to allow the NPS to assess the impacts of the operation on the environment. The amount of information in this section will vary depending both on the type of operations and the environment where they will be conducted.

For descriptions of equipment and facilities, a brief discussion with photographs is easier and more effective than lengthy descriptions. Describe the following, as applicable:

A. Existing and Proposed Production Facilities
   1. Artificial lift surface equipment.
   2. Tank battery (number, type, size, volume, etc.) and berm or "firewall" construction and maintenance. NOTE: firewall dimensions must contain 1.5 times the volume of the largest tank. Discuss methods to protect soils and groundwater below storage tanks.
   3. Treating and separating process and equipment.
   4. Produced water storage and disposal.
   5. Removal/disposal of impounded precipitation within the tank firewall (if applicable).
   6. Flowlines and pipelines:
      a. size, type, length, depth, etc.;
      b. inspection and testing procedures and frequency;
      c. maximum and mean flow rate of product;
      d. maximum and mean operating pressure;
      e. cathodic protection methods;
      f. "pig" launching/retrieving station(s); and
      g. maintenance, including vegetation management.
   7. Pressure control equipment:
      a. description of pressure control equipment including minimum specifications and pressure ratings,
      b. schematic diagram of pressure control equipment; and
      c. description of testing procedures and frequencies.
   8. Metering points, including LACT units, orifice meters, and turbine meters.
   9. Sales point (if on lease).
   10. Tanker truck pick-up points (if on lease).
   11. Gas compression (if applicable).
   12. Enhanced oil recovery facilities including waterflooding, fireflooding, polymer flooding, and any other secondary or tertiary recovery facilities (if applicable).
   13. Maintenance of access road surface and vegetation encroachment.

B. Well Completions, Stimulations and Workovers
   1. Blowout preventer(s) and other pressure control equipment to be used during workover operations including pressure rating, testing procedures and frequencies.
   2. Workover and treating fluid types, properties and additives (be specific), weights, and rational for use.
   3. Precautions to prevent oil, brine, chemicals, and other materials from reaching the ground during well completion, workovers, and plugging operations. Precautions will include use of plastic liners beneath the workover rig, pipe racks, and other equipment as necessary. All fluids and solids returned to the surface from the wellbore shall be collected in metal tanks and disposed outside the park.
   4. Description of waste handling and disposal procedures.
   5. Anticipated frequency and park notification prior to conducting such operations.

C. Water Requirements, Amount, Source, Transportation, Storage, etc.

D. Well Casing and Cementing History and Completion Equipment
   1. Casing size, grade, and weight of each string;
   2. Setting depths of each string;
   3. Cementing history; and
   4. Completion equipment and setting depths.

E. Well Plugging Procedures
   1. Types of plugs and setting depths,
   2. Type and amount of cement required,
   3. Plugging fluid properties (NOTE: Each of the intervals between plugs must be filled with mud having sufficient density to exert hydrostatic pressure exceeding the greatest formation pressure encountered while drilling. In the absence of known data, the federal regulations require a minimum mud weight of 9.0 pounds per gallon, and
   4. Type of abandoned hole marker.

   (NOTE: For more information on well plugging and surface reclamation see *Chapter 7 - Well Plugging and Surface Reclamation*.)

F. Additional Ancillary Facilities

G. All Actions to be Taken to Comply with Regulatory Operating Standards. Describe how the operator will comply with the following operating standards at 36 C.F.R. §§ 9.41-9.46. Requests for variances should be accompanied with supporting information.

   1. Surface operations shall not be conducted within 500 feet of a watercourse, high pool shoreline, mean high tideline, or any structure or facility (excluding roads) used for unit interpretation or administration, unless specifically authorized.
   2. Protection of all survey monuments, witness corners, reference monuments and bearing trees.
   3. Shut-in of well when drilling or production operations are suspended for 24 hours or more, but less than 30 days.

4. Shut-in of well when production operations are suspended for 30 days or more.
5. Posting of a sign showing operator name and operation identification number.
6. Fencing around all wells, storage tanks, and high-pressure equipment as specified by the park superintendent.
7. Posting of warning signs acceptable to the superintendent if operations are located in or near visitor use areas.
8. Preventing accumulation of oil and other materials deemed to be fire and environmental hazards.
9. Prompt removal of all equipment and materials not in use.
10. Operator accountability for all contractors and subcontractors compliance with the requirements of an approved plan of operations.

H. All Security Measures to Ensure Public Health and Safety

VI. SPILL CONTROL AND EMERGENCY PREPAREDNESS PLAN

The NPS has combined informational requirements and operating standards from the 9B regulations to develop the format for a Spill Control and Emergency Preparedness Plan. This plan covers the substances or site conditions that pose risks to human health and safety and the environment. It also describes the actions the operator would take to minimize these risks in the event of a spill or natural disaster (*e.g.*, flood, fire, hurricane, or tornado). See *Chapter 11 – Spill Control and Emergency Preparedness Plan* in the Operator's Handbook for the organization and content of a Spill Control and Emergency Preparedness Plan.

A Spill Control Emergency Preparedness Plan should describe all actions, equipment, procedures, training, etc. to control and effectively respond to releases of contaminating substances (oil, brine, drilling fluids, blow-out, or any other toxic or hazardous substance) to ensure protection of park resources and human health and safety.

VII. WELL PLUGGING AND RECLAMATION PLAN

This section of the plan must describe all actions to be taken to achieve proper plugging of the well(s) and reclamation of surface estate disturbed by the operation. Final reclamation of the site must be initiated as soon as possible following completion of the operation, and shall not be later than six months unless the regional director authorizes a longer period of time. For more information see Chapter 7. The well plugging and surface reclamation plan must address the following:

A. Removal of all structures, equipment, supplies and debris from the site (*e.g.*, trailers, storage buildings, tanks, all drilling equipment, production equipment, pipe, powerlines, flowlines, liners, chemicals, barrels, trash, etc., except items required for continuation of approved operations.

B. Removal and disposal of all drilling muds and cuttings.

C. Plugging of the well(s) as specified in the plan and in accordance with Federal Onshore Oil and Gas Order No. 2 and applicable state regulations. For more information, see *Chapter 7 – Well Plugging and Surface Reclamation*.

D. Removal of all wellpad and road base material, including culverts and bridges.

E. Soil testing to determine if contaminating substances are present in concentrations that pose a threat to wildlife populations or human health, or will jeopardize re-establishment of native vegetation.

F. Actions necessary to remove or neutralize any contaminating substances.

G. Reestablishing topographic contours of the pad and access road, and replacing top soil to support revegetation.

H. Reestablishment of the native vegetation community in all disturbed areas, including:
   1. Surface preparation (*e.g.*, ripping, discing, scarifying, etc.);
   2. Seeding and/or transplanting of native species, including seed or transplant sources, seed or transplant collection methods if native species are not available from commercial sources, seed mixture, percent live seed, seeding rate and method (*e.g.*, broadcast, seed drill, hydroseed, etc.), and mulching methods;
   3. Watering methods, amounts, and frequency (if necessary);
   4. Target species composition and percent cover;
   5. Actions to prevent establishment of exotic plant species in the reclamation area; and
   6. Monitoring methods and frequency to determine success of revegetation efforts (*e.g.*, species survival, vegetation density, diversity, percent cover, etc.) and to identify problem areas which may require additional actions.

I. Itemize the estimated costs to accomplish the above reclamation actions. Cost estimates should address the following at a minimum:
   1. Rental cost of all equipment to be used in plugging, equipment removal, and surface reclamation actions, including equipment operator wage based on projected hours of work;
   2. All necessary supplies and materials, such as well plugs, cement, soil amendments; seed, plants, or tree purchase; mulch; erosion control material; etc.;
   3. Water and trucking fees; and
   4. All other personnel costs, including wages for seeding or transplanting vegetation, monitoring vegetation success, and controlling exotic species.

VIII. AFFIDAVITS AND STATEMENTS

Include an “Affidavit of Compliance” signed by an official that is authorized to legally bind the company as required by regulations at 36 C.F.R. § 9.36(a)(15). The affidavit should state that the proposed operations are in compliance with all applicable federal, state and local laws and regulations. An example Affidavit of Compliance is included in *Appendix C – Sample Letters for Nonfederal Oil and Gas Operations.*

IX. OTHER APPLICABLE PERMITS

At the superintendent's request, operators will need to provide the NPS with a copy of all applicable federal, state, and local permits. If the permits are still pending, operators may submit a copy of the application for such permits.

X. BACKGROUND ENVIRONMENTAL INFORMATION

The purpose of this section of the plan is to present information on existing natural and cultural resources in the project area, specify actions that will be taken to minimize adverse impacts to surface resources, assess the environmental impacts of the existing operation, and discuss any technologically feasible development alternatives. The park may have some of the required natural and cultural resource information for the operator's use in preparing this section of the plan.

A. Description of natural resources in the proposed operation area should include the following information:
   1. Written and/or photographic documentation that the soils, waters, vegetation, and wildlife outside the area of operations have not been directly impacted due to contaminants moving off location or contaminating substances left unconfined on location. If evidence exists to the contrary, corrective actions need to be addressed in Section V., Description of Operations, and Section VII., Well Plugging and Reclamation Plan.
   2. Soil type(s) and engineering properties such as permeability, porosity, erosion potential, etc.
   3. Area hydrology and water quality, including the following:
      a. drainage pattern of the project area;
      b. proximity to surface water (intermittent or permanent watercourses, streams, ponds, lakes, springs, etc.);
      c. depth to groundwater;
      d. proximity to any wetland boundary (defined by site-specific wetland delineation);
      e. proximity to the base floodplain, 100 year floodplain, and 500 year floodplain; and
      f. water quality in nearby surface water and/or shallow groundwater.
   4. Vegetation species composition in access road and well pad area, including predominant herbaceous, shrub, midstory and overstory species. (NOTE: This information is necessary to properly design a reclamation plan.)
   5. General wildlife species composition in the proposed operation area.
   6. Federal or state threatened / endangered plant or wildlife species that inhabit or frequent the proposed operation area.
   7. Air quality in the proposed operation area, including information on pollutant levels and existing point sources for pollutants in the area.
   8. General description of baseline noise levels in the proposed operation area, including local sources contributing to increased noise levels.

B. Description of cultural resources in the proposed operation area should include the following information:
   1. Background information on archeological and historic resources documented in the general area, including review of the National Register of Historic Places.
   2. If required, results of an archeological and historic resource field survey of project area performed by a qualified archeologist approved by the NPS.

C. Identification and proximity of park visitor use areas (*e.g.*, trails, campgrounds, public roads, picnic areas, etc.) near the proposed operation area.

D. Description of specific actions that the operator will take to avoid and/or minimize adverse impacts to park natural and cultural resources and visitor-related values (*e.g.*, the wellpad will be properly maintained to contain and collect all spilled contaminating substances, closed loop fluid system will be used during well workover to minimize soil and groundwater contamination, well-bore cuttings will be deposited in containers, all fluid and cuttings will be removed for off-site disposal, post-operation soil testing will be conducted to determine if any contamination has occurred, all contaminating substances will be removed or neutralized, a liner will be installed beneath all production tanks, production equipment will be painted a color that blends with the natural vegetation, existing vegetation will be used to screen the operation from park visitor use areas and park roads, flowlines will be located adjacent to access roads to minimize disturbance, chain link fence will be constructed around the production site to prevent visitor entry, mufflers will be installed on all combustion engines to reduce noise, etc.).

E. Description of the anticipated direct, indirect, and cumulative effects of the proposed operation on the park land features and uses, wildlife, vegetation, soils, water resources, air quality, noise, and social and economic environments.

XI. RELATIONSHIP TO PARK PLANNING DOCUMENTS

The plan of operations must discuss how the proposed operation relates to park planning documents (General Management Plan, Oil and Gas Management Plan, etc.) in terms of considering and integrating operational measures to achieve park management objectives. The park oil and gas contact where the operations are proposed will furnish a copy of all applicable park planning documents upon request.

THIRD PARTY MONITORING

The NPS may require an operator to hire a third party monitor to oversee certain aspects of the operation such as major workovers, well plugging, etc. The purpose of third party monitoring is to ensure operator compliance with the terms of the approved plan of operations and to protect park resources and values.

The company hired to do the third party monitoring must meet the following three requirements:

1. Third party monitors shall not include any representatives or employees of the operator, or any contractors or subcontractors of the operator working on any task related to this project, or any persons who would have a financial or other interest in the outcome of the production operation.

2. The persons hired to do the monitoring must meet the technical qualifications to monitor the specific resources in the NPS unit where the operations would occur (*e.g.*, wetlands scientist, wildlife biologist, archeologist etc.).
3. The scope of work must meet the objectives of monitoring in the park.

The operator and park staff will work together during project scoping and development of the plan of operations to come up with an effective plan for monitoring the operations. During project scoping, the operator and NPS will discuss the requirement for third party monitoring and the technical qualifications that would be needed by the monitor(s). The NPS will provide the operator with a list of roles and responsibilities and necessary qualifications of the third party monitor(s). In some cases this information may not be developed until after the NPS technical adequacy review of the plan of operations. The operator will include details in the plan of operations concerning the use of a third party monitor and disclose that there will be no conflict of interest between the operator and the company that will be hired to do the monitoring and that the monitor(s) will have the technical expertise to do the monitoring. Once the third party monitor(s) have been selected by the operator, a list of the persons and their qualifications must be provided to the NPS.

The NPS may develop stipulations that specify conditions of the third party monitoring (36 C.F.R. § 9.37(f)[16]. Examples of these stipulations include, but are not limited to:

- The third party monitor must be paid by the operator.
- The monitor must report directly to the park superintendent or his/her representative.
- The NPS will identify the frequency and type of compliance reports.
- If a violation of the terms of the monitoring contract occurs, the NPS would require immediate corrective actions from replacement of the monitor up to suspension of the approved plan of operations.
- The NPS may suspend the operations if the monitor demonstrates to the NPS that the operation poses an immediate threat of significant injury to federally owned or controlled lands or waters. (36 C.F.R. § 9.51(c)(2))

Third party monitors would be required to ensure operator compliance with the approved plan of operations. Monitoring may include making sure that:

- access in the unit is along designated routes and by approved means (*e.g.*, on foot or by vehicle),
- there is proper handling, transport, and storage of hazardous and other contaminating substances,
- major workovers comply with the approved plan of operations,
- the well is plugged in accordance with the approved plan of operations, and
- the operations area is cleaned up and reclaimed according to the approved plan of operations.

[16] Under this provision all approved plans are conditioned upon the superintendent's right to access an operation to monitor and ensure compliance with a plan of operations. Since under this scenario a third party will handle monitoring, the superintendent can exercise his or her right to access and monitor the operation through the third party via specific stipulations in its approval letter.

CHAPTER 7
WELL PLUGGING AND SURFACE RECLAMATION

This chapter includes the following information:

- NPS permitting process checklist for well plugging and surface reclamation,
- NPS well plugging guide for nonfederal oil and gas wells,
- Surface reclamation overview,
- Plan of operations information requirements for plugging and reclamation,
- Third party monitoring,
- Required operating stipulations and recommended mitigation measures, and
- Pictorial overview of reclamation activities.

NPS PERMITTING PROCESS CHECKLIST FOR WELL PLUGGING AND SURFACE RECLAMATION

The following checklist outlines the permitting process for well plugging and surface reclamation in units of the NPS. The items on the checklist are described throughout this handbook. This checklist can be used by an oil and gas operator to make sure that all of the required steps have been completed to prepare a plan of operations for NPS review.

☐ Operator contacts park superintendent of their intent to plug an oil and gas well and reclaim the operations area (for more information, see Ch. 2).

☐ Operator meets with park staff to discuss 36 C.F.R. 9B requirements (for more information, see Chs. 1 and 2).

☐ Operator meets with affected federal, state, and local agencies to identify resource issues, permitting requirements, and impact mitigation strategies (for more information, see Ch. 2).

☐ Operator requests temporary access permit to gather information needed to complete the plan of operations (for more information, see Ch. 2).

☐ Operator conducts necessary surveys, including natural and cultural resource surveys, as applicable and surveys / stakes the operations area (for more information, see Ch. 2).

☐ Operator prepares plan of operations and submits draft plan to the NPS (for more information, see Ch. 7 for well plugging and surface reclamation).

The plan of operations for well plugging and surface reclamation must include the following sections:

- ☐ I. Ownership and Contact Information
- ☐ II. Maps and Plats
- ☐ III. Timeline for Operations
- ☐ IV. Geologic Information
- ☐ V. Description of Well Plugging Operations
- ☐ VI. Spill Control and Emergency Preparedness Plan

- ☐ VII. Surface Reclamation Plan
- ☐ VIII. Affidavits and Statements
- ☐ IX. Other Applicable Permits
- ☐ X. Background Environmental Information

☐ NPS performs a completeness and technical review of the plan of operations (for more information, see Ch. 2).

☐ Operator revises plan of operations, if necessary (for more information, see Ch. 2).

☐ Park staff prepares NEPA document (or adopts operator's or consultant prepared NEPA document), incorporates other environmental compliance, and initiates mandated consultations with other agencies (for more information, see Ch. 2 and Appendix B).

☐ Park completes public review process, finalizes decision documents, and notifies the operator that the plan has been approved, conditionally approved, or rejected (for more information, see Ch. 2).

☐ Operator agrees to conditions of approval (if any), submits applicable state and federal permits, and files performance bond with the NPS (for more information, see Ch. 10).

NATIONAL PARK SERVICE WELL PLUGGING GUIDE FOR NONFEDERAL OIL AND GAS WELLS

This section is intended to help operators plan the downhole aspects of plugging operations so that they will meet NPS standards. The second part of this section provides examples of how wells might be plugged by NPS standards.

Though this section deals with well plugging, operators should keep in mind that plugging is just the first step in their reclamation responsibilities. Sloppy plugging operations can hinder surface reclamation. Precautions should be taken to prevent oil, brine, chemicals, cement, and other materials from further contaminating the area. The effective use of plastic liners beneath the workover rig, pipe racks, fuel storage, and other equipment should be used as necessary. All fluids and solids returned to the surface from the wellbore should be collected in metal tanks and disposed of at an approved disposal site outside of the park.

The NPS is not responsible for protecting private mineral interests. Where plugs are set solely to protect nonfederal mineral resources such as oil, gas, coal, potash, etc., the NPS will defer to the state requirements.

For operators that are used to working on federal onshore leases, it is useful to know that the NPS has adopted the minimum standards of the *Department of Interior's Onshore Oil and Gas Order Number 2, Section III.G., Drilling Abandonment* for plugging wells in parks. The plugging requirements of Onshore Order No. 2 were written specifically for plugging newly drilled wells. However, the NPS has applied the same standards to the permanent abandonment of exhausted producers or service wells.

WELL PLUGGING GOALS

The NPS goals in plugging a well are:

- to protect the zones of usable quality water;
- to prevent escape of oil, gas, or other fluids to the surface or zones of usable quality water; and
- leave the surface in a clean and safe condition that sets the stage for surface reclamation.

The following well plugging objectives have been developed to meet the NPS well plugging goals:

1. Set cement plug(s) to isolate all formations bearing oil, gas, geothermal resources, and other prospectively valuable minerals from zones of usable-quality water.
2. Set cement plug(s) to isolate all formations bearing usable-quality water.
3. Set a cement plug to isolate the surface casing (or intermediate casing) from open hole below the casing shoe.
4. Set a cement plug to seal the well at the surface.
5. Remove surface casing below grade and cap the well.

GENERAL CEMENTING REQUIREMENTS

The plugging operation needs to include the general NPS requirements that are explained below. When NPS standards differ from state requirements, the operator should use the stricter requirement to meet both state and federal standards. The NPS may approve variations from these standards if the operator can demonstrate that the intent of a standard will be achieved to the degree that mechanical conditions of the well will allow.

Cement Quality

All cement for plugging shall be an approved API oil well cement without volume extenders and shall be mixed in accordance with API standards. Slurry weights shall be reported on the cementing report. The NPS may require specified cementing compositions be used in special situations; for example, when high temperature, salt sections, or highly corrosive sections are present.

Cement Volumes

All cement plugs except the surface plug shall have sufficient slurry volume to fill at least 100 feet of hole, plus an additional 10 percent of slurry for each 1,000 feet of depth. No plug, except the surface plug, shall be less than 25 sacks of cement without prior approval. These requirements address the ability to mix and place uncontaminated cement at depth. The cement and workover fluids tend to mix at the lead and tail end of the cement slurry as it is pumped downhole. The clean cement in the middle provides the plug's integrity. An additional washout factor may be applied when plugging openhole sections.

Cement Placement

Cement plugs must be placed by the circulation or squeeze method through tubing or drill pipe. The dump bailer method may be used only to place cement caps above a bridge plug or retainer.

Plugging Fluid

Each of the intervals between plugs must be filled with mud having sufficient density to exert hydrostatic pressure exceeding the greatest formation pressure encountered while drilling.

In the absence of known data, the NPS requires a minimum mud weight of 9.0 pounds per gallon.

Static Hole and Testing Plugs

The hole shall be in a static condition while placing any plugs. Where the fluid level will not remain static, the plug that is set shall be tested by either tagging with the working pipe string, or pressuring to a minimum surface pressure of 1,000 pounds per square inch. A successful pressure test will have no more than a 10 per cent drop during a 15-minute period. The pressure test method can only be used in cased hole. The NPS has the option to require testing (by tagging or pressure) of any plug to ensure its integrity.

Uncemented Annular Space

Whenever a cement plug is required at a depth where the annular space is not cemented, the uncemented annular section must be cemented by perforating the casing and pumping cement into the annular space. At shallow depths, small diameter pipe can be run in the annular space and cement circulated in place.

REQUIRED PLUGS

The following sections summarize where cement plugs need to be placed in a well to meet the NPS goals.

Zones of Production

The NPS requires cement to be placed across the top perforated interval and extend at least 50 feet below the bottom of that perforated interval (except where limited by total depth) and 50 feet above the top perforations.

Instead of the cement plug, a bridge plug or retainer can be set above the perforations and capped with cement. The bridge plug method can be used if there is no exposed open hole below the perforations. The NPS requires the bridge plug to be place between 50 and 100 feet above the top perforation and capped with 50 feet of cement. If a bailer is used to place cement on top of the bridge plug, then 35 feet is enough.

As stated previously, the NPS will defer to state requirements for plugs set solely to isolate zones bearing nonfederal mineral resources such as oil, gas, coal, potash, etc. The NPS will require that a plug set to isolate the uppermost producing horizon meets NPS standards if the next plug scheduled is to protect the base of the deepest usable quality water zone.

Zones Containing Liquid or Gas with the Potential to Migrate

Any zone that contains liquid or gas with the potential to migrate requires a plug extending from at least 50 feet below its bottom to at least 50 feet above its top. This requirement pertains only to abandonment of an openhole section or an uncemented cased hole section where there are no cement plugs scheduled between the zone containing liquid or gas with the potential to migrate and the base of the deepest usable quality water zone.

Casing Removed from the Hole

If any casing is cut and recovered and removal of the casing exposes an openhole section, a cement plug shall be placed to extend at least 50 feet above and below the casing stub. This requirement pertains only to casing stubs where there are no cement plugs scheduled between the stub and the base of the deepest usable quality water zone.

Usable-Quality Water Zones

Plugs must be set to protect the zones of usable-quality water. Often, state agencies make the determination of the deepest usable water zone. In general, a 100-foot cement plug is to be centered at the base of the deepest usable-quality water zone. Whenever a cement plug is the only isolating medium for a zone of usable water quality, the NPS standard is to test that plug as described above. When designing the well plugging procedure, operators should plan for testing of plugs that are the only isolating medium for zones of usable quality water.

The Surface Casing Shoe

A plug must be set across the shoe of the surface casing (or intermediate casing shoe as appropriate) to extend a minimum of 50 feet above and below the shoe.

If an inner casing string(s) has been cemented across the shoe of the surface casing, then a minimum 100-foot plug is placed in the inner string with its center at the surface casing shoe depth.

If the inner casing string(s) are not cemented, the operator has one of two choices. The operator can choose to cut and recover casing so that a plug can be set directly across the surface casing shoe. The operator can also choose to perforate the casing and circulate cement behind the inner casing string across the surface casing shoe.

If casing is removed, the NPS may require a cement plug to be placed to extend at least 50 feet above and below the casing stub. It may be beneficial for operators to cut the casing at a depth so that one plug could be set to meet requirements for both the casing stub and the exposed casing shoe.

The Surface Plug

The NPS standard is a 50-foot surface plug. The plug is placed in the smallest casing and all uncemented annuli that extend to the surface. The top of the plug is placed as close to the eventual casing cutoff point as possible.

Surface Cap

The operator should discuss the surface cap and well marker with the park while they are preparing the plan of operations. In many cases, the park will not want a visible well marker.

In all instances, the casings need to be cut at the base of the cellar or 3 feet below final restored ground level, whichever is deeper. If there will be no surface marker, the well bore then needs to be covered with a metal plate at least ¼ inch thick and welded in place. The operator needs to leave a weep hole in the metal plate.

For a visible well marker, the park will approve an acceptable marker. The marker should be permanently affixed to the well. For example, in place of a metal plate, the operator may use a 4-inch pipe, 10 feet in length, embedded in cement with a 5-foot section left above the ground.

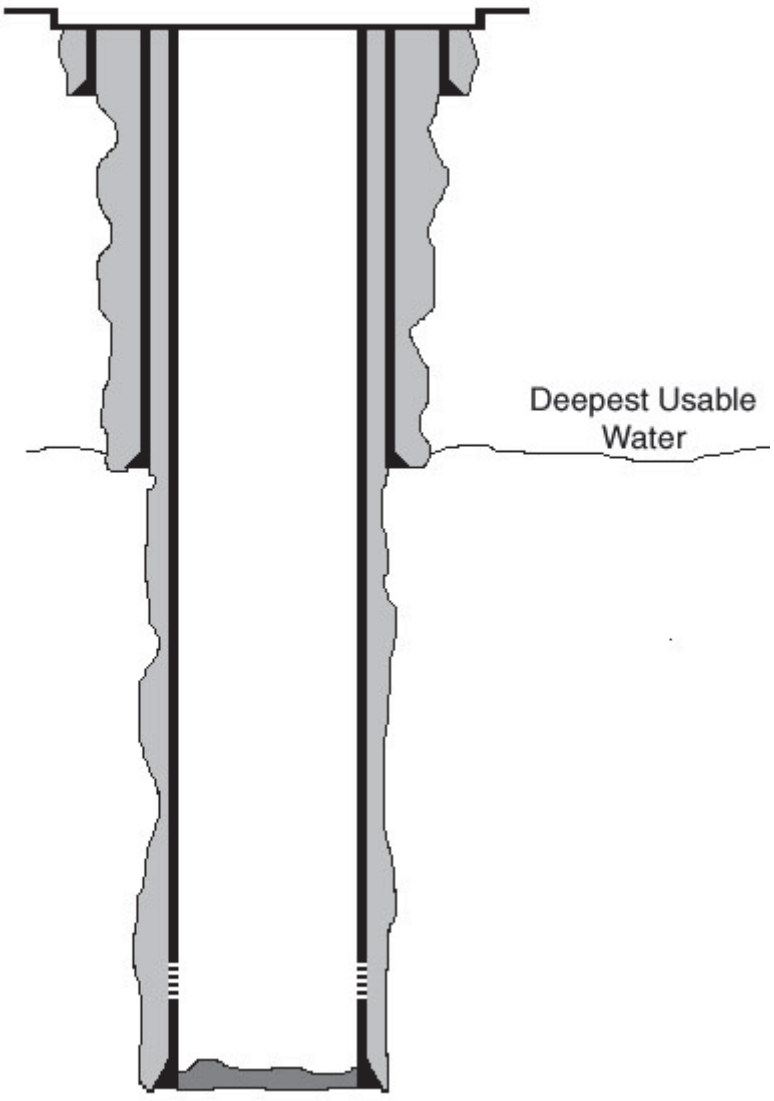
For either a visible marker or below grade marker, the well name, state permit and/or API number, and location and other pertinent well identification information should be permanently inscribed on the marker.

The operator would then fill in the cellar with material approved in their plan of operations and proceed to surface reclamation.

PLUGGING EXAMPLES

WELL EXAMPLE NO. 1 - SURFACE CASING JUST BELOW USABLE WATER DEPTH

- Production casing is set through producing zone and cemented to surface.
- Surface casing is set just below the deepest usable quality water.
- Surface casing is cemented to surface.

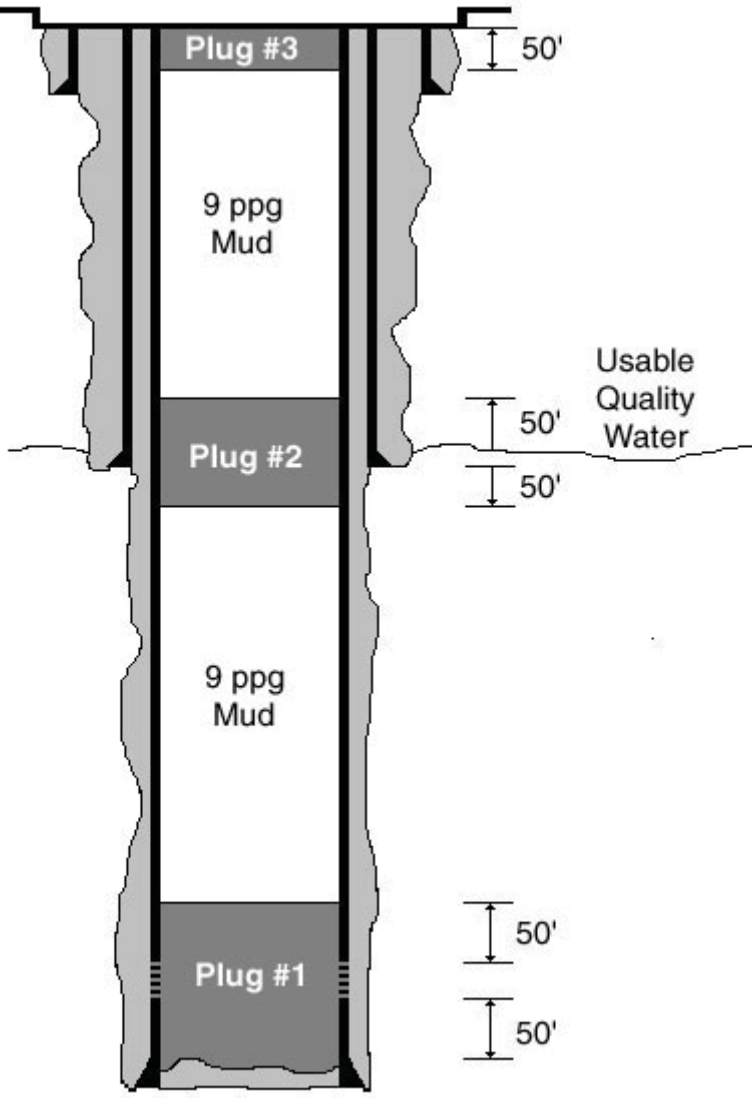


Plugging for Well Example No. 1

Plug #1 is set to isolate the top producing zone. Since Plug #2 will be set to isolate the base of the deepest usable water zone, then Plug #1 must meet NPS standards. In this example, the plugged back depth is about 50 feet below the bottom perforation, so Plug #1 is set to extend from plugged back depth to at least 50 feet above the top perforation. Had there been open producing zones below Plug #1 in this well, the NPS would defer to state requirements for plugging the deeper intervals.

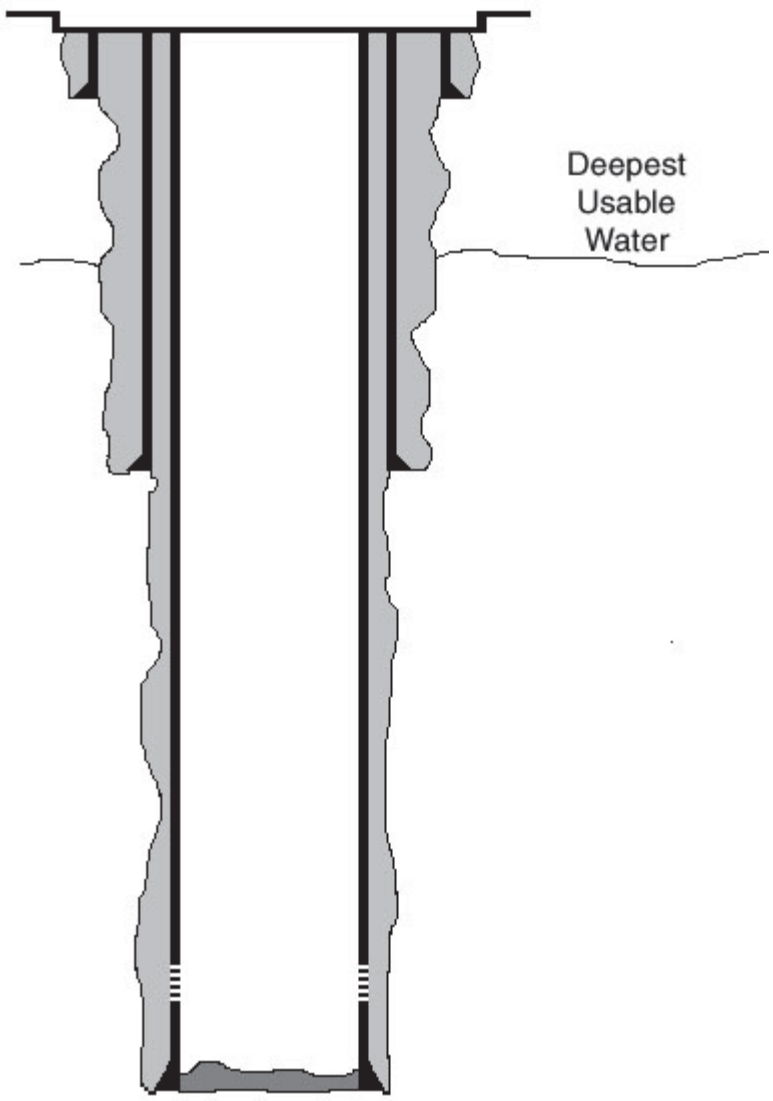
Plug #2 serves two purposes. Since the surface casing is set just below the base of the deepest usable quality water zone, a single plug can be set to isolate the surface casing shoe and the base of the deepest usable water zone. The plug would extend at least 50 feet below the casing shoe to at least 50 feet above the base of the usable water zone.

Plug #3 is the surface plug. The NPS standard is a 50-foot surface plug. Since the annular spaces are all cemented to surface, the surface plug only needs to be set inside the production casing and extend at least 50 feet below the anticipated casing removal point.



WELL EXAMPLE NO. 2 - FULLY CEMENTED PRODUCTION CASING

- Production casing is set through the producing zone and cemented to surface.
- Surface casing is set well below the deepest usable quality water.
- Surface casing is cemented to surface.



Plugging for Well Example No. 2

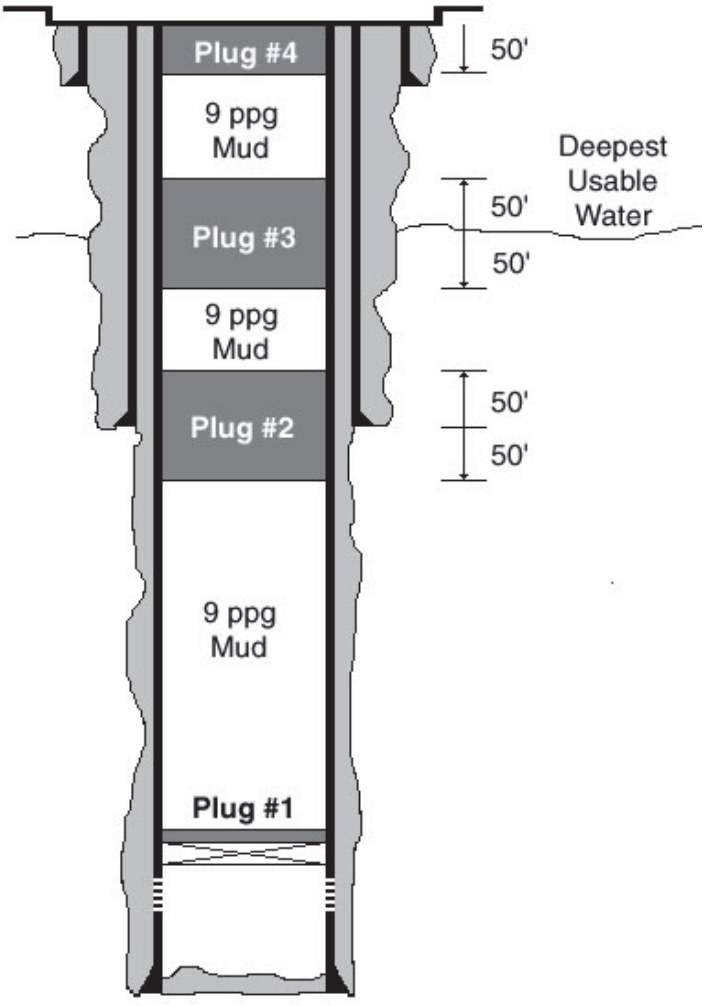
Plug #1 is set to isolate the top producing zone. Since the next plug scheduled is not set to protect the base of the deepest usable quality water zone, the NPS defers to a state plugging requirement. In this example, a cast iron bridge plug was set just above the perforated interval and capped with 20 feet of cement as allowed under State of Texas regulations.

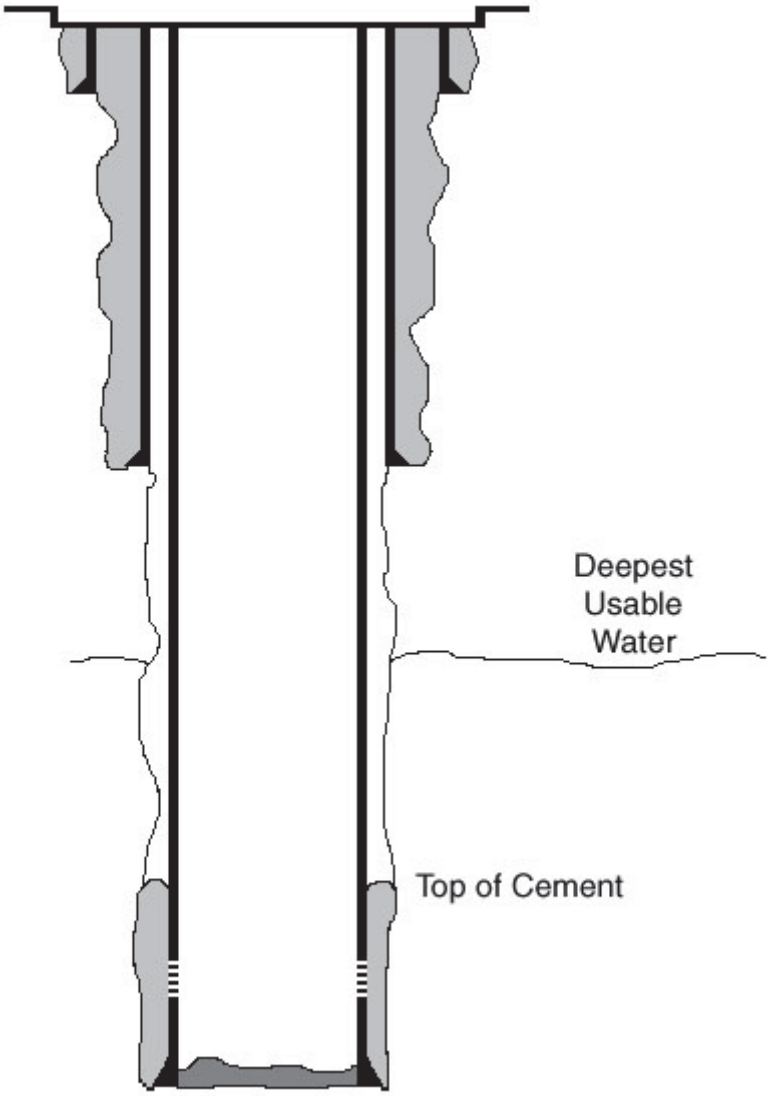
Note: The bridge plug method would have met the NPS standard if it were set between 50 and 100 feet above the top perforation and capped with 50 feet of cement (35 feet if cement is placed with a dump bailer).

Plug #2 is set to isolate the surface casing shoe and the base of the deepest usable water zone. The plug would extend at least 50 feet below and 50 feet above the casing shoe.

Plug #3 is set to isolate the base of the deepest usable quality water zone. The plug would extend at least 50 feet below and 50 feet above the base of the deepest usable quality water zone.

Plug #4 is the surface plug. The NPS standard is a 50-foot surface plug. Since the annular spaces are all cemented to surface, the surface plug only needs to be set inside the production casing and extend at least 50 feet below the anticipated casing removal point.





WELL EXAMPLE NO. 3 - PARTIALLY CEMENTED PRODUCTION CASING

- Production casing is set through producing zone but not cemented to surface.
- Surface casing is set well above the deepest usable quality water.
- Surface casing is cemented to surface.

Since the production casing is not cemented across the deepest usable water zone or the surface casing shoe, cement will need to be placed behind the production casing to achieve zone isolation. The operator could take three approaches:

1. The production casing could be perforated at appropriate depths, and the cement circulated behind the pipe. This option is demonstrated in Plugging Well Example No. 3A.
2. The production casing could be removed, thus exposing the intervals that require placement of cement plugs. This option is demonstrated in Plugging Well Example No. 3B.
3. The operator could also use a combination of the first two options.

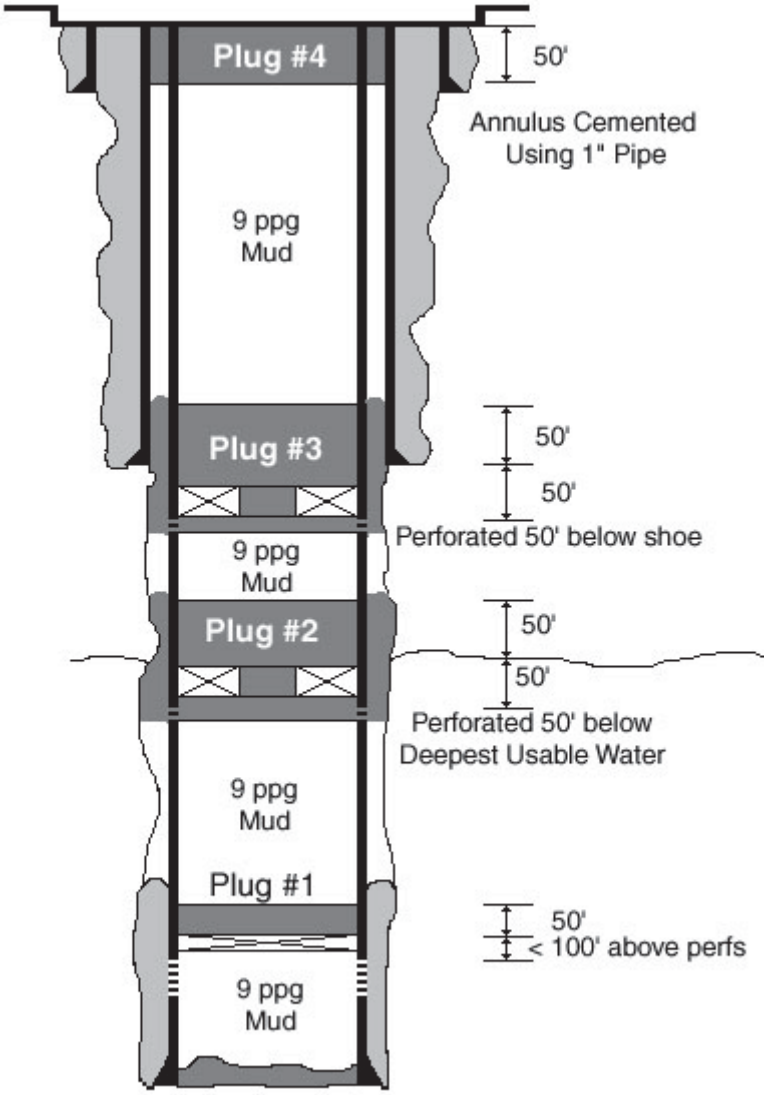
Plugging for Well Example No. 3A - Production Casing Left in Place

Plug #1 is set to isolate the top producing zone. Since the next plug scheduled is set to protect the base of the deepest usable quality water zone, it must meet NPS standards. In this example, a cast iron bridge plug was set between 50 and 100 feet above the top perforation and capped with 50 feet of cement. If the operator elected to place cement on top of the bridge plug using a bailer, then 35 feet of cement would have been sufficient.

Plug #2 is set to isolate the base of the deepest usable quality water zone. The operator will need to use an approved method to place cement behind the production casing across the base of the deepest usable quality water zone. In this example, cement is placed by perforating the production casing and cementing through a retainer. The operator could also use a retrievable cementing tool in place of the retainer. The perforations would be placed at least 50 feet below the base of the zone. The cement volume and pumping schedule is then designed to place cement from 50 feet below to 50 feet above the base of the usable water zone both inside and outside the production casing. The NPS would require testing of this plug since it is the only isolating medium for a usable quality water zone.

Plug #3 is set to isolate the surface casing shoe. Again, the annular space is not cement so the operator perforates the casing and places cement in the same manner as Plug #2.

Plug #4 is the surface plug. The NPS standard is a 50-foot surface plug. The annular space between the production and surface casing must also be cemented. In this example, the operator elected to cement the annulus by running 1” pipe (at least 50’ below the eventual casing removal point) and circulating cement in place.



Plugging for Well Example No. 3B - Production Casing Removed

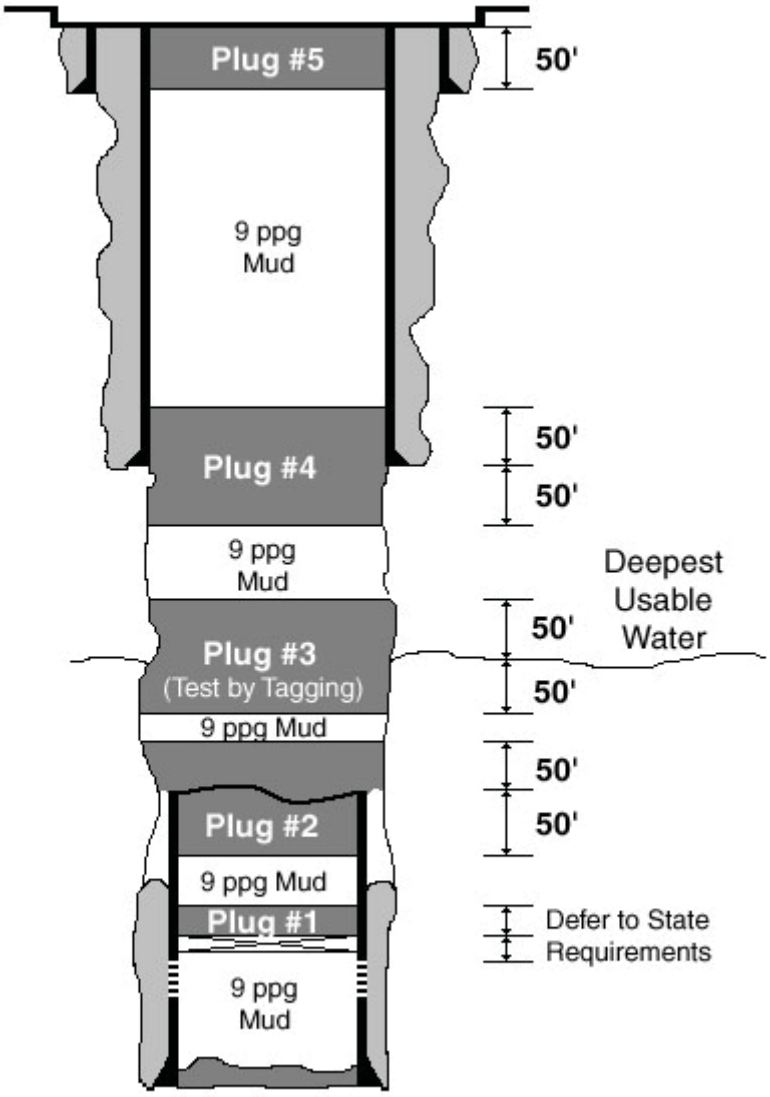
Plug #1 is set to isolate the top producing zone. Since the next plug scheduled is not set to protect the base of the deepest usable quality water zone, the NPS defers to a state plugging requirement. In this example, the operator elected to cut and recover the production casing at its freepoint, which was well below the deepest usable quality water zone.

Plug #2 is set to isolate the stub where the production casing was cut and removed. The NPS standard is to place a cement plug extending from 50 feet below to 50 feet above the casing stub.

Plug #3 is set to isolate the base of the deepest usable quality water zone. The plug would extend from at least 50 feet below to at least 50 feet above the base of the deepest usable quality water zone. The operator could have cut the casing closer to the deepest usable quality water zone and combine Plug #2 and Plug #3. Since this Plug #3 is the only isolating medium for a usable quality water zone, the operator must test the plug by tagging it with the drill string. Pressure test of the plug is not appropriate since the plug is set in an open hole.

Plug #4 is set to isolate the surface casing shoe. The plug would extend from at least 50 feet below to at least 50 feet above the casing shoe.

Plug #5 is the surface plug. The NPS standard is a 50-foot surface plug. Since the production casing was removed, there are no remaining uncemented annular spaces. The surface plug only needs to be set inside the surface casing and extend at least 50 feet below the anticipated casing removal point.

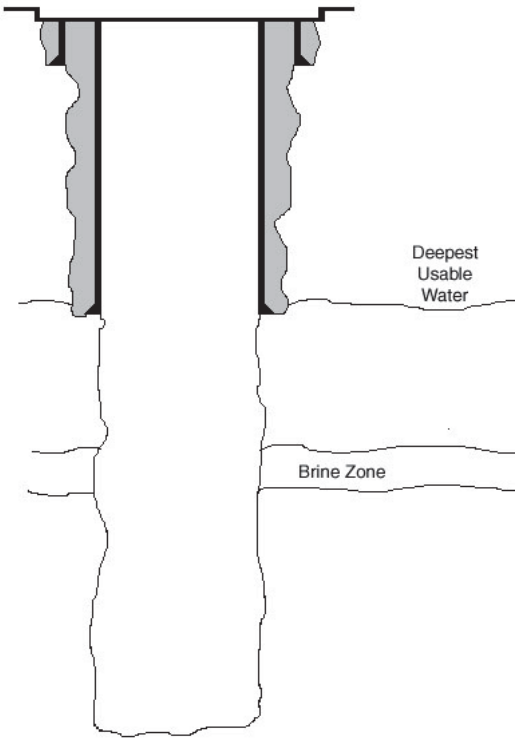


WELL EXAMPLE NO. 4 - NEWLY DRILLED DRY HOLE

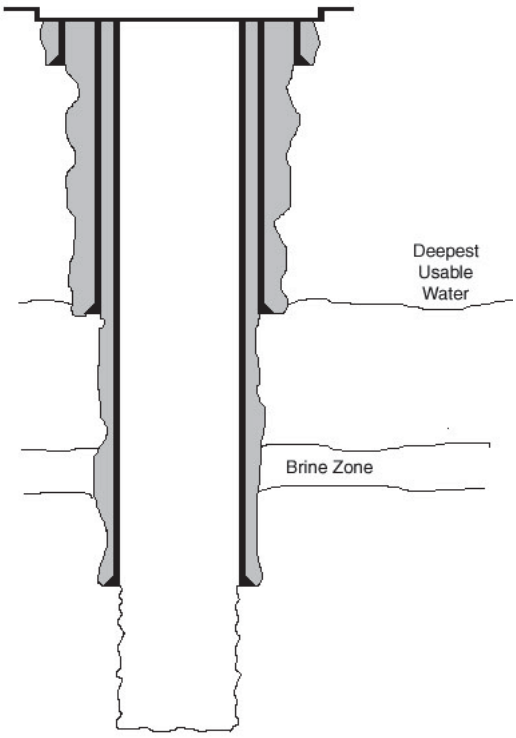
The two wellbore diagrams below show common examples of newly drilled dry holes. The first well has surface casing set just below the deepest usable quality water zone and cemented to surface. A permeable brine zone was encountered while drilling to the deeper hydrocarbon target zones.

The second well is the same, but with a string of intermediate casing, which is also cemented to surface. The brine zone is isolated behind the intermediate string.

Example 4A



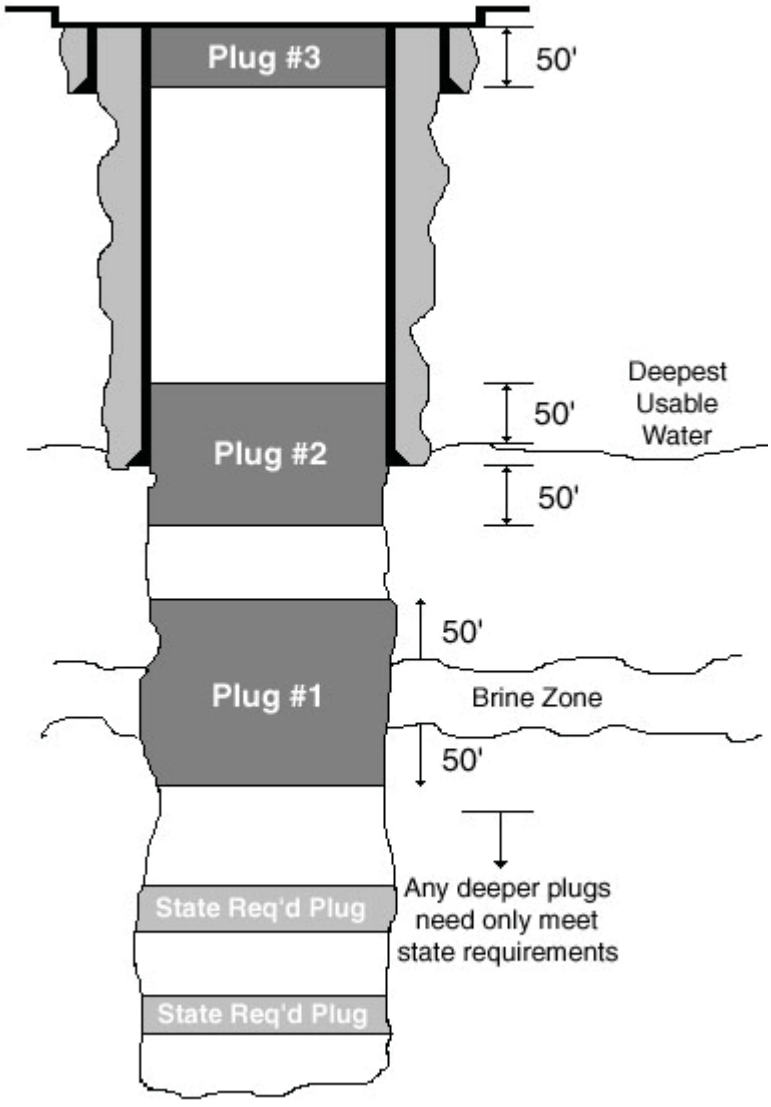
Example 4B



Plugging for Well Example No. 4A - Newly Drilled Dry Hole

Plug #1 is required by the NPS to isolate a "zone containing liquid or gas with the potential to migrate" in an openhole section where there are no cement plugs scheduled between it and the base of the deepest usable quality water zone. The plug extends from at least 50 feet below the brine zone's bottom to at least 50 feet above its top.

The NPS would defer to state requirements for any plugs set deeper than Plug #1. If the state had required a cement plug somewhere between Plug #1 and Plug #2, then the NPS could waive the requirement for Plug #1. The NPS would not require Plug #1 provided the state required plug met the general NPS requirements for cement quality, quantity, and placement technique.

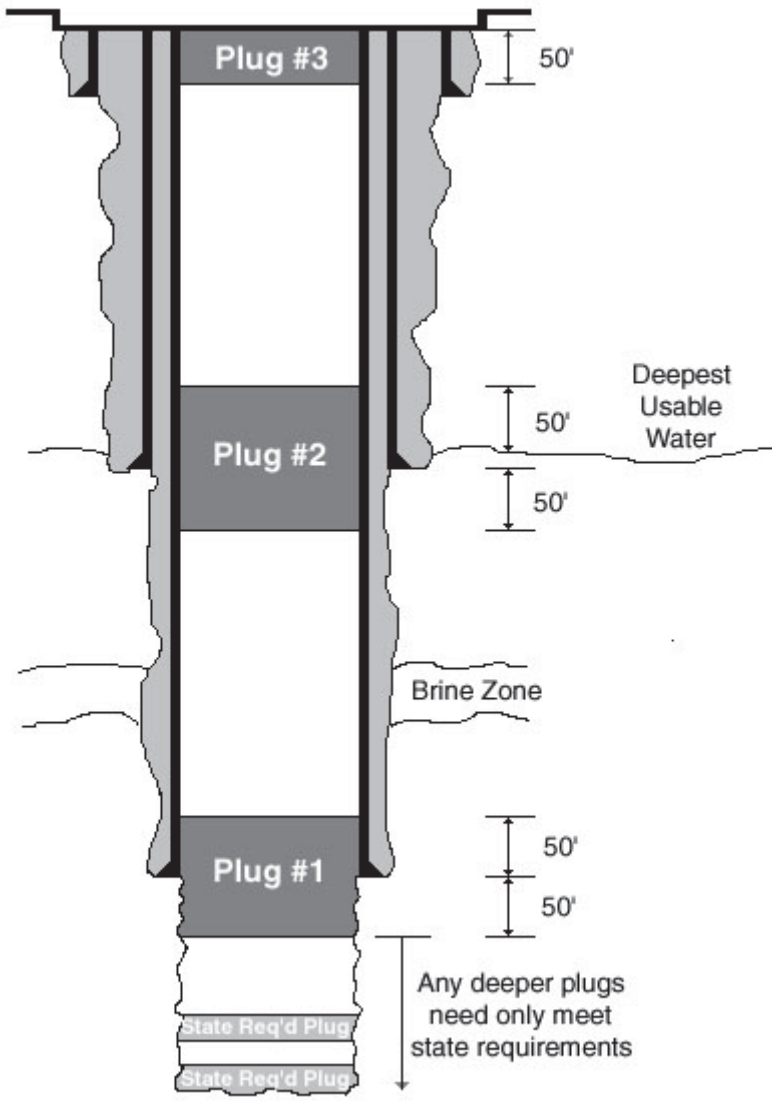


Plug #2 is set to isolate the surface casing shoe and also serves to isolate the deepest usable quality water zone. The plug is placed to extend from at least 50 feet below the casing shoe to at least 50 feet above the base of the deepest usable quality water zone.

Plug #3 is the surface plug. The NPS standard is a 50-foot surface plug. The surface plug only needs to be set inside the surface casing and extend at least 50 feet below the anticipated casing removal point.

Plugging for Well Example No. 4B - Newly Drilled Dry Hole with Intermediate Casing

Plug #1 is set to isolate the intermediate casing shoe. It is set to extend from at least 50 feet below to at least 50 feet above the casing shoe. Since Plug #1 is between the base of the deepest usable quality water zone and any deeper plugs, the NPS would defer to state requirements for any plugs set below Plug #1.
The brine zone does not require a cement plug to meet NPS standards since it is isolated behind a cemented section of casing.



Plug #2, as in the previous example, is set to isolate the surface casing shoe and also serves to isolate the deepest usable quality water zone. The plug is placed to extend from at least 50 feet below the casing shoe to at least 50 feet above the base of the deepest usable quality water zone.

Plug #3 is the surface plug. The NPS standard is a 50-foot surface plug. Since the all annuli have been cemented to surface, the surface plug only needs to be set inside the intermediate casing and extend at least 50 feet below the anticipated casing removal point.

SURFACE RECLAMATION

In NPS terms for oil and gas operations, reclamation means returning lands and waters that were disturbed by operations to a condition that meets the park's goals and the 9B requirements. Developing a good reclamation program for the plan of operations then becomes a two-step process:

1. Identify reclamation goals that are clear and measurable, and
2. Develop a step-by-step process to achieve the goals.

In most cases, reclamation will result in returning the disturbed areas to the natural conditions and processes that existed before the operations began. In some instances, however, the NPS may designate the disturbed area for a different use than it had prior to operations. For example, the NPS may want to keep a road and wellpad to provide for visitor use or administrative access. The reclamation program would be much different for these two situations. Also, reclamation requirements under the regulations are different depending on whether or not the operations are on federal property.

The operator cannot design a surface reclamation program until the goals of reclamation are clearly defined. The regulations provide the basis for Step 1 by setting the minimum standards or goals for reclamation (36 C.F.R. § 9.39). For Step 2, park resource managers will be an excellent source of information for specific reclamation strategies and methods that have been used successfully in their parks. Operators may also have firsthand experience with reclamation in environments similar to those covered by the subject plan of operations.

WHEN SURFACE RECLAMATION MUST BE STARTED

Section 9.39(a) requires that reclamation begin according to timeframes specified in an operator's approved plan of operations. If the plan of operations does not give a timeframe, then reclamation must begin within six (6) months from the time operations ended.

DIFFERENCES IN RECLAMATION REQUIREMENTS – FEDERAL AND PRIVATE SURFACE ESTATE

In the regulations, operations on federal lands have higher reclamation standards than operations on private lands. The majority of existing operations are located on federal surface estate, so most operators must meet the higher reclamation standard.

For federal lands, the main standard is for operators to “return the area to natural conditions and processes” (36 C.F.R. § 9.39(a)(2)). The regulations then provide seven steps that need to be completed at a minimum to satisfy the standard. These are:

1. Remove all above ground structures, equipment, and roads no longer needed for future operations.
2. Remove all other man-made debris that resulted from operations.
3. Remove or neutralize contaminating substances.
4. Plug and abandon all nonproductive wells and fill any excavations.
5. Restore the natural contour of the land.

6. Place the natural soils needed for vegetation.
7. Reestablish native vegetative communities.

These steps then provide an outline for an operator's reclamation program. For the reclamation section in the plan of operations, the operator can describe the methods and equipment that will be used to accomplish each of the seven steps.

For Step 3, the operator is responsible for removing soils or any other materials that become contaminated. If there is reason to suspect soils or groundwater have been contaminated, the operator will likely need to collect and test samples to verify that contaminating substances have been removed or neutralized. See *Appendix D, Guideline for the Detection and Quantification of Contamination at Oil and Gas Operations*. Neutralization of contamination means that contaminant concentrations will be reduced in soils (or groundwater) to a condition that will not adversely affect, injure, or damage federally-owned or controlled lands and waters, provides for the safe movement of native wildlife, and which does not jeopardize visitor health and safety.

For Step 5, wetland areas directly and indirectly affected by operations must be returned to their preexisting elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable after completion of the operation. Reclamation requirements in wetlands are very precise with regard to the elevation of the land surface with respect to the water table. This, more than anything else dictates the resulting plant communities that will be reestablished in the restored wetland. For more information, refer to the wetland Best Management Practices listed in *Appendix B, Part B* of this handbook (NPS Procedures Manual 77-1, Appendix B).

For Step 7, the reestablishment of native vegetative communities should include specific measures (*e.g.*, percent and composition of vegetative ground cover) and a schedule to monitor the success of the reclamation.

Finally, the regulations state that reclamation is unacceptable (for federal surface) unless it provides:

- safe use of the area by wildlife and park visitors,
- plant growth native to the area, and
- normal surface and subsurface water flow (36 C.F.R. § 9.39(b)).

For private surface estate, the regulations provide two standards (36 C.F.R. § 9.39(a)(1)). The operator shall, at a minimum:

1. Remove or neutralize any contaminating substances (36 C.F.R. § 9.39(a)(1)(i)), and
2. Rehabilitate the area to a condition that would not constitute a nuisance or would not adversely affect, injure, or damage federally owned or controlled lands or waters (36 C.F.R. § 9.39(a)(1)(ii)).

The first standard is the same as described above for reclamation on federal surface estate.

The second standard uses the terms "nuisance" and "adversely affect, injure, or damage," Important factors that an operator needs to consider when designing a reclamation program that satisfies this standard would include, but are not limited to:

- Proper plug and abandonment of wells,
- Prevention of erosion and downslope sedimentation on or towards federal property,

- Restoration of the natural surface drainage pattern(s),
- Maintenance of water quality,
- Prevention of influx of plant species not native to the area,
- Protection of wildlife, and
- Protection of public safety.

Section 9.39(a)(ii) includes a specific requirement to remove all “above ground structures and equipment” no longer needed for future operations. Roads and wellpads are structures that the NPS would probably require to be removed unless the surface owner expressly wanted them to stay.

PLAN OF OPERATIONS INFORMATION REQUIREMENTS FOR WELL PLUGGING AND SURFACE RECLAMATION

Below is an explanatory list of requirements that nonfederal oil and gas operators need to include in a plan of operations for permanent well plugging and surface reclamation. These requirements are based on the regulatory provisions under 36 C.F.R. § 9.36. This list is also used by the NPS to determine if a proposed plan of operations is complete and sufficiently detailed to merit "official acceptance" for review and analysis in accordance with the regulations at 36 C.F.R. § 9.36(c).

A plan of operations may not need to address all of the information requirements presented below. The operator and NPS staff may narrow the list during project scoping. In some instances, the NPS may require additional information so that it may effectively analyze the impacts of the proposed operation (36 C.F.R. § 9.36(a)(18)). This additional information also would be identified during project scoping.

The operator will submit the proposed plan of operations, tender the performance bond, and be the responsible party for compliance with the approved plan of operations.

I. OWNERSHIP AND CONTACT INFORMATION

The purpose of this section of the plan is to identify the “operator,” to document the operator’s property right to oil and gas in the park, and to identify primary company contacts for planning, field operations, and emergencies.

A. Name and address of:
   1. Surface owner (if other than the NPS), and
   2. Lessor (mineral owner).

B. Name, address, and telephone number of:
   1. Operator,
   2. Lessee (if different than operator),
   3. Person accountable for operations,
   4. Field representative, and
   5. Emergency contact.

C. Copy of the instrument(s) demonstrating the legal responsibility for well plugging and reclamation. Examples include:
   1. Lease,
   2. Deed,
   3. Assignment of rights, or
   4. Designation of operator.

II. MAPS AND PLATS

The purpose of this section of the plan is to graphically show the operator's mineral tracts and the area of operations. The area of operations includes present and past surface disturbance associated with the operations, including wells, facilities, and access roads. It is very important to clearly and accurately define the area of operations. The operations plat provides the basis for defining the operator's area of responsibility for reclamation.

A. Tract/Lease Boundary Map - use 1:24,000 USGS quadrangle map(s) and show the following:
   1. NPS park unit boundary, and
   2. Each mineral tract/lease cross-referenced to the "right to operate" information provided in Section I. C.

B. Location Map - use 1:24,000 USGS quadrangle map(s) and show the following:
   1. Lease or mineral tract boundary and park boundary,
   2. Existing access road(s) to be reclaimed,
   3. Disturbed areas associated with well(s) and/or facilities locations, and
   4. Location of all existing flowlines and pipelines in the area of operations.

C. Area of Operations - Define the area of operations using maps, plats, and photographs (supplement with discussion if necessary). Show and/or describe the following, as applicable:
   1. Access road dimensions;
   2. Plat of disturbed areas associated with wells and other surface facilities, pad dimensions (including all excavations for ditches, sumps, pits, etc. on and around the sites); and
   3. Supplement plats with an inventory of existing surface equipment and photographs documenting existing conditions.

III. TIMELINE FOR OPERATIONS

The purpose of this section of the plan is assist the NPS in scheduling plugging operations to minimize or avoid conflicts with park operations and visitor use, and impacts on park resources. Any alteration of normal operations due to seasonal timing considerations to protect natural resources or visitor uses should also be noted in this section.

A. Estimated time to mobilize, plug well, and demobilize.

B. Estimated date when reclamation will begin.
   NOTE: Reclamation must begin as soon as possible after completion of the approved operations, but no later than 6 months thereafter unless specifically approved by the regional director (36 C.F.R. § 9.39(a)).

C. Estimated time to complete reclamation.

IV. GEOLOGIC INFORMATION

The purpose of this section of the plan is to provide the geological information needed to determine setting depths of cement plugs. The operator needs to provide the following information to help the NPS determine a) that all usable quality freshwater zones are protected, b) that anticipated geological conditions are planned for with regard to well control, and c) anticipated well plugging requirements.

A. Total depth of well(s);

B. Depths of producing zones;

C. Depth to which freshwater must be protected (*i.e.*, depths of known usable quality freshwater zones);

D. Depths of all known brine zones, and other minerals such as coal or oil shale;

E. Depths of zones with abnormally high or low pressures, or other geological hazards; and

F. A brief discussion of any drilling or production practices in the area that are used to account for geologic conditions (*e.g.*, heavy muds used for high pressures, oil or saltwater muds used to drill expanding clays or shales, unusual casing/cementing programs, hydrogen sulfide safety plans, etc.).

V. DESCRIPTION OF WELL PLUGGING OPERATIONS

The description of plugging operations in the plan should provide enough detail on the proposed methods, sequence, and equipment to demonstrate that the plugging design complies with NPS plugging procedures covered in this chapter of the handbook. It should also demonstrate that operations will not further degrade the area of operations or surrounding area.

Provide a description of the proposed methods, sequence, and equipment for the topics listed in this section. Describe the specific actions that the operator will implement to minimize or eliminate adverse impacts on park resources and visitor related values. Table 7.2 includes a list of mitigation measures to protect these resources and values.

NOTE: Operators cannot use sources of water inside the park without written permission of the regional director. The regional director can only approve a plan of operations that uses a source of water from inside the park if one of two conditions exist: 1) the operator owns a superior water right to that of the U.S. Government, or 2) if the water right is subordinate to the U.S. government's, the operator shows that removal of the water would not damage park resources (36 C.F.R. § 9.35).

A. **Well Information** - Detail existing wellbore information including:
   1. Total depth and plugged back depth;
   2. All casing sizes, grades, weights, and setting depths;
   3. Casing cementing history including calculated or measured tops of cement behind casing strings; and
   4. Downhole production equipment.

B. **Access** - Describe actions needed to clear or improve the access route and operation site to enable plugging and surface reclamation.

C. **Well Plugging Design**
   1. Types of plugs and setting depths;
   2. Casing removal, perforation depths, and cement placement technique;
   3. Type and amount of cement required;
   4. Plugging fluid properties; and
   5. NOTE: each of the intervals between plugs must be filled with mud having sufficient density to exert hydrostatic pressure exceeding the greatest formation pressure encountered while drilling. In the absence of know data, the NPS requires a minimum mud weight of 9.0 pounds per gallon.
   6. Type of abandoned hole marker.

D. **Well Plugging Considerations**
   1. Considerations for well control (*e.g.*, well blowdown and/or fluid loading, blowout prevention equipment, etc.):
   2. Considerations for preventing oil, brine, chemicals, and other materials from reaching the ground (*e.g.*, use of plastic liners beneath the plugging rig, pipe racks, and other equipment as necessary; collection of all fluids and solids returned to the surface from the wellbore in metal tanks; waste disposal outside park, etc.) and surrounding area (stormwater management); and
   3. Identify potential threats to public health and safety from conduct of the proposed operations and provide a discussion of all measures to remove or minimize these threats.

VI. SPILL CONTROL AND EMERGENCY PREPAREDNESS PLAN

The NPS has combined informational requirements and operating standards from the 9B regulations to develop the format for a Spill Control and Emergency Preparedness Plan. This plan covers the substances or site conditions that pose risks to human health and safety and the environment. It also describes the actions the operator would take to minimize these risks in the event of a spill or natural disaster (*e.g.*, flood, fire, hurricane, or tornado). See *Chapter 11 – Spill Control and Emergency Preparedness Plan* in the Operator's Handbook for the organization and content of a Spill Control and Emergency Preparedness Plan.

A Spill Control and Emergency Preparedness Plan should describe all actions, equipment, procedures, training, etc. to control and effectively respond to releases of contaminating substances (oil, brine, drilling fluids, blow-out, or any other toxic or hazardous substance) to ensure protection of park resources and human health and safety.

VII. SURFACE RECLAMATION PLAN

The reclamation plan will describe the actions needed to meet the general regulatory reclamation standards as well as site-specific reclamation goals (36 C.F.R. § 9.39). The procedures of the reclamation plan then will be based on the disturbance anticipated from the proposed operations (as described in Section II C.), and reclamation expectations of the NPS as identified during project scoping. The operator should organize the reclamation plan by the following sections.

A. Reclamation Goals

1. Summarize the site-specific reclamation goals developed during project scoping. Site-specific goals might include a desired percent of vegetative ground cover as well as the type of plants, soil stabilization, surface drainage characteristics, etc.; and
2. State the timeframes for reclamation. Describe when reclamation activities will begin, duration of reclamation activities, and the schedule for monitoring the results of the reclamation effort.

B. Reclamation Procedures

The 9B regulations provide steps that need to be completed to satisfy reclamation standards for operations on federally owned surface. In addition to well plugging, the following list may be used as an outline for developing the plan's surface reclamation procedures. The operator can describe the methods and equipment that will be used to accomplish each of these steps.

1. Remove all above ground structures, equipment, roads (and pad material) no longer needed for future operations.
2. Remove all other man-made debris that resulted from operations.
3. Remove or neutralize contaminating substances. For this step, the operator is responsible for removing soils or any other material that becomes contaminated. If there is reason to suspect soils or groundwater have been contaminated, the operator will likely need to collect and test samples[17] to verify that contaminating substances have been removed or neutralized. Neutralization or removal of contamination means that

[17] For more information, see *Appendix D - The Guideline for the Detection and Quantification of Contamination at Oil and Gas Operations*

contaminant concentrations will be reduced in soils (or groundwater) to a condition that will not adversely affect, injure, or damage federally-owned or controlled lands and waters, provides for the safe movement of native wildlife, and which does not jeopardize visitor health and safety.

4. Restore the natural contour of the land.
5. Place and prepare the natural soils needed for vegetation.
6. Reestablish native vegetative communities. In addition to the revegetation procedure, this section should include steps for monitoring progress of the reclamation effort.

C. **Reclamation Cost Estimate**

The cost of reclamation in part determines the amount of the performance bond (36 C.F.R. § 9.48(d)(1)). Provide an estimate of costs for a third party to complete the reclamation procedures in Item B above. At a minimum, provide enough detail to support subtotals for each of the following subcategories:

1. Well plugging;
2. Removal of structures, equipment, roads, pads, debris, etc. (Items B. 1 and 2 above);
3. Removal or neutralization of contaminating substances (Item B. 3 above) including soil and water sampling and testing, soil and water remediation, disposal of contaminated soils or water, etc.;
4. Site and soil preparation (Items B. 4 and 5 above); and
5. Vegetation and monitoring (Item B. 6 above).

The NPS will verify and use the cost estimates to set the reclamation portion of the performance bond. The subtotals may be used to determine amounts by which to reduce the operator's performance bond if reclamation is to be performed in phases.

If the operator chooses not to provide the cost estimates for reclamation, the performance bond may be set at the maximum amount allowed by regulation, which is $50,000 per well (36 C.F.R. § 9.48(d)(2)) or $200,000 per operator per park unit (36 C.F.R. § 9.48(d)(3)). If the operator already holds a $200,000 bond for other operations in the same park, it is unnecessary for the operator to provide the cost estimate information required by this section. The operator, nonetheless, will be legally and financially responsible for fully reclaiming the site. The NPS can seek up to treble damages for any unauthorized impacts to park resources under 16 USC § 19jj.

VIII. AFFIDAVITS AND STATEMENTS

Include an "Affidavit of Compliance" signed by an official that is authorized to legally bind the company as required by regulations at 36 C.F.R. § 9.36(a)(15). The affidavit should state that the proposed operations are in compliance with all applicable federal, state and local laws and regulations. An example Affidavit of Compliance is included in *Appendix C – Sample Letters for Nonfederal Oil and Gas Operations.*

IX. OTHER APPLICABLE PERMITS

At the superintendent's request, operators will need to provide the NPS with a copy of all applicable federal, state, and local permits. If the permits are still pending, operators may submit a copy of the application for such permits.

X. BACKGROUND ENVIRONMENTAL INFORMATION

This section of the plan of operations presents information on existing natural and cultural resources in the project area, specify actions that will be taken to minimize adverse impacts on surface resources, assess the environmental impacts of the proposed operation, and discuss any technologically feasible abandonment and reclamation alternatives. Information that should be presented in this section will be determined during project scoping with park staff. The park may have some of the required natural and cultural resource information for the operator's use in preparing this section of the plan.

A. Description of natural resources in the proposed operation area should include the following information:
   1. Soil types and properties such as permeability, porosity, erosion potential.
   2. Vegetation species composition in access road and wellpad area, including predominant herbaceous, shrub, midstory, and overstory species. (NOTE: This information is necessary to properly design a reclamation plan).
   3. Federal or state threatened / endangered plant or wildlife species that inhabit or frequent the proposed operation area.
   4. Written and/or photographic documentation that the soil, water (surface and groundwater), wetlands, vegetation, and wildlife outside the area of operations have not been directly impacted due to contaminants moving off location or contaminating substances left unconfined on location. If evidence exists to the contrary, those impacted areas are considered part of the area of operations and must be included in the reclamation plan.

B. Identification and proximity of park visitor use areas (*e.g.*, trails, campgrounds, public roads, picnic areas, overlooks etc.) near the proposed operation area.

C. Description of the expected results of reclamation on the park land features and uses, wildlife, vegetation, soils, water resources, air quality, noise, and social and economic environments.

THIRD PARTY MONITORING

The NPS may require an operator to hire a third party monitor to oversee certain aspects of well plugging and surface reclamation. The purpose of third party monitoring is to ensure operator compliance with the terms of the approved plan of operations and to protect park resources and values.

The company hired to do the third party monitoring must meet the following three requirements:

1. Third party monitors shall not include any representatives or employees of the operator, or any contractors or subcontractors to the operator working on any task related to this project, or any persons who would have a financial or other interest in the outcome of the production operation.
2. The persons hired to do the monitoring must meet the technical qualifications to monitor the specific resources in the NPS unit where the operations would occur (*e.g.*, wetlands scientist, wildlife biologist, archeologist etc.).
3. The scope of work must meet the objectives of monitoring in the park.

The operator and park staff will work together during project scoping and development of the plan of operations to come up with an effective plan for monitoring the operations. During project scoping, the operator and NPS will discuss the requirement for third party monitoring and the technical qualifications that would be needed by the monitor(s). The NPS will provide the operator with a list of roles and responsibilities and necessary qualifications of the third party monitor(s). In some cases this information may not be developed until after the NPS technical adequacy review of the plan of operations. The operator will include details in the plan of operations concerning the use of a third party monitor and disclose that there will be no conflict of interest between the operator and the company that will be hired to do the monitoring and that the monitor(s) will have the technical expertise to do the monitoring. Once the third party monitor(s) have been selected by the operator, a list of the persons and their qualifications must be provided to the NPS.

The NPS may develop stipulations that specify conditions of the third party monitoring (36 C.F.R. § 9.37(f)[18]. Examples of these stipulations include, but are not limited to:

- The third party monitor must be paid by the operator.
- The monitor must report directly to the park superintendent or his/her representative.
- The NPS will identify the frequency and type of compliance reports.
- If a violation of the terms of the monitoring contract occurs, the NPS would require immediate corrective actions from replacement of the monitor up to suspension of the approved plan of operations.
- The NPS may suspend the operations if the monitor demonstrates to the NPS that the operation poses an immediate threat of significant injury to federally owned or controlled lands or waters (36 C.F.R. § 9.51(c)(2)).

Third party monitors would be required to ensure operator compliance with the approved plan of operations. Monitoring may include making sure that:

- access in the unit is along designated routes and by approved means (*e.g.*, on foot or by vehicle);
- there is proper handling, transport, and storage of hazardous and other contaminating substances;
- the well is plugged in accordance with the approved plan of operations; and
- the operations area is cleaned up and reclaimed according to the approved plan of operations.

[18] Under this provision all approved plans are conditioned upon the superintendent's right to access an operation to monitor and ensure compliance with a plan of operations. Since under this scenario a third party will handle monitoring, the superintendent can exercise his or her right to access and monitor the operation through the third party via specific stipulations in its approval letter.

REQUIRED OPERATING STIPULATIONS AND RECOMMENDED MITIGATION MEASURES FOR WELL PLUGGING AND SURFACE RECLAMATION

The tables in the following section list operating stipulations (Table 7.1) required by the NPS and suggested mitigation measures (Table 7.2) for well plugging and surface reclamation on NPS lands. The primary resource(s) that would be protected by the operating stipulations and mitigation measures listed in the tables are denoted by a √ symbol. Other resources that would benefit from the protective measures are marked with a + symbol.

Table 7.1 focuses on the NPS 36 C.F.R. 9 B regulations but also includes operating stipulations required under other federal laws and regulations. The appropriate citation is shown in parentheses after each requirement. To ensure compliance with all applicable legal and policy mandates, it is the operator's responsibility to consult with the appropriate federal, state, and local agencies prior to beginning operations in a unit of the National Park System, and determine which statutory and regulatory requirements would apply to each operation.

Table 7.2 lists mitigation measures for well plugging and surface reclamation. Use of mitigation measures shown in the table are recommended by the NPS to ensure compliance with the NPS approval standard to utilize "…technologically feasible methods least damaging to the federally-owned or controlled lands, waters and resources of the unit while assuring the protection of public health and safety" (36 C.F.R. § 9.37(a)(1)). Many of the mitigation measures are derived from environmental guidelines and publications developed by the oil and gas industry and environmental professionals and may not address every environmental topic or risk that may be encountered during oil and gas operations. These tables are intended to be a tool to be used during project planning. An operator can look through the tables to see which measures would apply to an operation and select the most appropriate measures to include in his/her plan. An operator has the discretion to select the most appropriate mitigation to meet the NPS least damaging approval standard.

Table 7.1. Required Operating Stipulations for Well Plugging and Surface Reclamation of Oil and Gas Wells on NPS Lands

Well Plugging and Surface Reclamation Required Operating Stipulations The applicable legal citation is noted in [parenthesis] after the stipulation.	**RESOURCES PROTECTED**	**Air Quality**	**Geology and Soils**	**Paleontological Resources**	**Water (Surface and G.W.)**	**Floodplains**	**Vegetation**	**Wetlands**	**Fish and Wildlife**	**T & E Species**	**Cultural Resources**	**Visitor Use and Experience**	**Human Health and Safety**
The operator is required to submit a detailed description of reclamation activities as a part of the Plan of Operations to comply with the requirements of 36 C.F.R. § 9.39 – Reclamation Requirements. [36 C.F.R. § 9.36(a)(12)]		+	+	+	+	+	+	+	+	+	+	+	+
Reclamation actions must begin as soon as possible, and no later than 6 months following completion of operations, unless a longer period of time is authorized in writing by the regional director. [36 C.F.R. § 9.39(a)]		+	√	+	√	√	√	√	√	√	+	√	√
Plug wells to meet the minimum requirements of the NPS. [Chapter 7 of this handbook]			√		√	+	√	√	+	+		+	√
Remove from the unit all above ground structures, equipment, and roads used for operations, except for structures, equipment and roads that are to be used for continuing operations which are the subject of another approved Plan of Operations or of a plan which has been submitted for approval, or unless otherwise authorized by the regional director. [36 C.F.R. § 9.39(a)(2)(i)]			+		+	+	+	+	+	+		√	√
Remove all debris resulting from the operations. [36 C.F.R. § 9.39(a)(2)(ii)]									+			√	
Remove or neutralize any contaminating substances. [36 C.F.R. § 9.39(a)(2)(iii)]			√		√	+	+	+	+	+		+	√
Plug and cap all nonproductive wells and fill dump holes, ditches and other excavations. [36 C.F.R. § 9.39(a)(2)(iv)]												√	√
Restore topographic contours to reasonably conform to the contours that existed prior to initiation of operations. [36 C.F.R. § 9.39(a)(2)(v)]			√		+	+	+	+	+	+		√	
Replace natural topsoil necessary for vegetative restoration. [36 C.F.R. § 9.39(a)(2)(vi)]			+		+	+	√	+	+	+		+	
Re-establish native vegetative communities. [36 C.F.R. § 9.39(a)(2)(vii)]			+		+	+	√	+	+	+		+	
Reclamation must provide for the safe movement of native wildlife, must re-establish native vegetative communities, the normal flow of surface and reasonable flow of subsurface waters, and must return the area to a condition that does not jeopardize visitor safety or public use of the unit. [36 C.F.R. § 9.39(b)]			+		√	+	√	+	√	√		√	
Return wetland areas directly and indirectly affected by operations to their preexisting elevations, and restore soil, hydrology, and native vegetation communities as soon as practicable. [NPS Procedures Manual 77-1, Appendix 2]			+		+	+	+	√	+	+		+	
When proposed operations cannot avoid direct and/or indirect adverse impacts on wetlands, the operator shall compensate for direct and indirect impacts on wetlands by restoring degraded or former wetland habitats. Compensation will be at a minimum 1:1 ratio. In other words, at least one acre of wetlands must be restored for each acre destroyed or degraded. The focus will be on the replacement of comparable wetland types and functions, not just wetland acreage. Compensation shall be performed prior to or at the same time impacts associated that approved oil and gas operations occur. [NPS Director's Order 77-1 and NPS Procedures Manual 77-1 § 5.2(C)]			+		+	+	+	√	+	+		+	

Table 7.2. Recommended Mitigation Measures for Well Plugging and Surface Reclamation of Oil and Gas Wells on NPS Lands

Well Plugging and Surface Reclamation Recommended Mitigation Measures RESOURCES PROTECTED	Air Quality	Geology and Soils	Paleontological Resources	Water (Surface and G.W.)	Floodplains	Vegetation	Wetlands	Fish and Wildlife	T & E Species	Cultural Resources	Visitor Use and Experience	Human Health and Safety
Set adequate surface plugs and cut casing below the expected lateral migration and water level changes of the stream channel to avoid future exposure when plugging wells within geomorphically active zones (*e.g.*, the active meander belt of a river),.				+	+				+	+	+	√
Take necessary precautions to prevent oil, brine, chemicals, and other materials from reaching the ground during well plugging operations. Precautions include the use of plastic liners beneath the workover rig, pipe racks, and other equipment as necessary.		√		√	+	√	+	+	+		+	+
Collect all fluids and solids returned to the surface from the wellbore in metal tanks and dispose of them in an approved disposal facility outside of the park.		√		√	+	+	+	+	+			+
Remove all fill material down to the original predisturbance level. Soil surveys for the area can assure that the soil profile is re-established after the excavation is completed.		√		+	+	√	+	+	+	+	+	
Repair compacted soils by disking.		√		+	+	+	+	+	+		+	
Revegetate cut-and-fill slopes and use good civil engineering practices to maintain disturbed areas in a stable condition to avoid erosion and sedimentation.		√		√	+	√	+	+	+	+	+	
Assure that topsoil brought in from outside sources is “clean” of non-native weed seed and plant materials.		√			+	√	+				+	
Use seed, mulch, or other authorized materials or structures to mitigate the potential for erosion. Use certified weed-free mulch, native seed, or sterile cover crops that are not sources of undesirable nonnative plant species.		√		√		√						
Provide for natural succession of vegetative species (herbaceous species, then woody species) and to reduce chance of introduction of exotic plant species by seeding areas with native seed materials.					+	√	+	+	+			
Consider active revegetation and erosion control measures (*i.e.*, reestablishing contours, seedbed preparation, planting seeds, planting or transplanting seedlings, adding mulch or other authorized materials to reduce the potential for erosion etc.) if natural growth is unacceptable.		√		√	+	√	+	+	+		+	
Optimize survival of vegetation by planting during wet seasons (usually spring or fall).		+		+	+	√	+	+	+			
Determine target composition and percent cover for vegetation based on site (pre-operational) analysis. Determine criteria for successful reclamation. For example, reclamation of vegetation may be acceptable if new growth includes similar species composition and the cover approximates a defined percentage of the pre-operations vegetative cover over a defined time period.		+		+	+	√	+	+	+		+	

SURFACE RECLAMATION - A PICTORIAL OVERVIEW

If the operator considers reclamation requirements from the very beginning of project planning, it will pay off during reclamation operations.

The reclamation goals of a project should be established during project planning, then a step-by-step procedure that will accomplish these goals should be designed and implemented. Throughout the planning and operational stages, the operator should consider what can be done to make any of the reclamation steps easier.

Prepare for reclamation from the beginning of the project. Drilling is not yet completed on this well, but the reclamation plan was set in motion before the rig ever reached the location. In this case, the goal for reclamation was to return the site to the natural conditions and processes that existed prior to disturbance.

To ensure successful reclamation of the site, an operator should:

- Consider site restoration requirements as part of the initial site selection. In this example, site selection included a fairly level upland site with little disruption of natural drainage, minimal cut/fill requirements, and vegetation clearing limited to grasses and shrubs.
- Take photos of the site prior to disturbance. Test representative soil samples for select metals (*e.g.*, barium, lead), pH, oil & grease, conductivity, sodium absorption ratio, exchangeable sodium percent, and chlorides.
- Stockpile topsoil and larger rocks for use in site reclamation.
- Properly design and construct berms and liners to guard against contamination of the site. In a park, the mud system would have been a closed loop containerized mud system instead of earthen pits.

Site Reclamation

- Remove all equipment and materials.
- Dewater pit contents (this would only apply to operations outside of a park).
- Conduct post-operations soil sampling and testing for comparison with pre-operational conditions.

- Restore the natural contours once the site is determined to be free of significant contamination.

- Spread the topsoil that was stockpiled over the site.

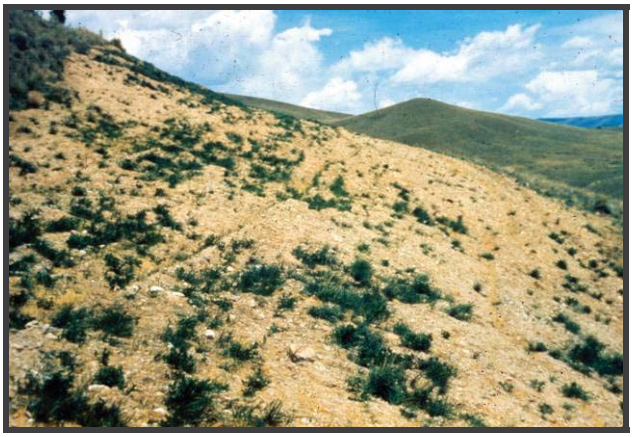
- Seed the site with native grasses and other vegetation.
- Operators can often optimize revegetation efforts by properly timing reseeding.
- Spreading mulch over the site is often an effective means of preventing erosion until plants take hold.

After seeding, the operator monitored and documented the progress of vegetative growth. This successful restoration did not happen by chance, but through careful planning and execution.

Road Reclamation

Road reclamation follows the same steps as are shown in the previous example.

Restore the natural topographic contours.



Replace the soil and distribute seed mixture. Note the small furrows perpendicular to the grade to help minimize erosion.

Monitor and document the progress of the reclamation activities.

CHAPTER 8
TRANSPARK PIPELINES

This chapter includes the following information:

- NPS permitting process checklist for transpark pipelines,
- NPS regulation of transpark pipelines,
- Rights-of-way for new oil and gas transpark pipelines in NPS units,
- National Park Service special use permits,
- Special Use Permit information requirements for transpark pipelines,
- Third party monitoring, and
- Other agencies responsible for regulating oil and gas pipelines.

NPS PERMITTING PROCESS CHECKLIST FOR TRANSPARK PIPELINES

The following checklist outlines the permitting process for constructing, operating, and maintaining transpark pipelines in units of the NPS. This checklist can be used by a pipeline operator to prepare a Special Use Permit (SUP) for NPS review.

☐ Applicant contacts park regarding interest in constructing a pipeline through the park.
☐ Applicant provides written documentation demonstrating property right to conduct operations through the park.
☐ Applicant meets with park staff to scope proposed project (for more information, see Ch. 2).
☐ Applicant meets with affected federal, state, and local agencies to identify resource issues, permitting requirements, and impact mitigation strategies (for more information, see Ch. 2).
☐ Applicant requests temporary access permit to gather information needed to complete the application for a special use permit (for more information, see Ch. 2).
☐ Applicant conducts necessary surveys, including natural and cultural surveys, as applicable and surveys / stakes the pipeline route (for more information, see Ch. 2).
☐ Applicant prepares special use permit application and submits it to the NPS.

The special use permit application for constructing and operating a transpark pipeline must include the following sections:

☐ I. Ownership and Contact Information
☐ II. Maps and Plats
☐ III. Timeline for Operations
☐ IV. Description of Operations
☐ V. Spill Control and Emergency Preparedness Plan
☐ VI. Reclamation Plan
☐ VII. Affidavits and Statements
☐ VIII Other Applicable Permits
☐ IX. Environmental Information to Comply with NEPA and NHPA

- ☐ NPS performs a completeness and technical review of the SUP application (for more information, see Ch. 2).
- ☐ Applicant revises SUP application, if necessary.
- ☐ Applicant (or contractor hired by the applicant) prepares NEPA document, submits it to the NPS for approval to release for public review, and initiates mandated consultations with other agencies (for more information, see Ch. 2 and Appendix B).
- ☐ Park releases NEPA document for public review, completes public review process, finalizes decision documents, and notifies the applicant that the SUP has been approved, conditionally approved, or rejected.
- ☐ Applicant agrees to conditions of approval (if any), submits applicable state and federal permits, and files performance bond with the NPS.

NPS REGULATION OF TRANSPARK PIPELINES

Construction, operation, and maintenance of transpark oil and gas pipelines and their associated rights-of-ways lie outside the scope of the 9B regulations. They are owned and operated by persons exercising rights not tied to the oil and gas ownership beneath the park. Generally, transpark pipelines begin and end outside the park, are associated with a right-of-way, and do not support 9B operations in the park.

Activities associated with transpark pipelines will be subject to special use permits as discussed in this chapter. Where pipeline operators accept delivery of oil or gas from a 9B operation via a gathering system, the line is either regulated by the 9B regulations or a special use permit, depending on who owns and operates the gathering system and/or who owns the product inside it. Generally, 9B operations end at the point of product sale, which is usually the same location as the change in pipeline system ownership. Thus, a transpark pipeline operation includes lines from the point of product sale to the main pipeline and includes the segment of pipeline from its entry and exit across park land. For more information on gathering lines and flowlines, see *Chapter 9 - Gathering Lines and Flowlines* in this handbook.

Transpark pipeline operators should note that if park system resources are damaged from pipeline operation in a park unit, the NPS can exercise its authority under the Park System Resource Protection Act (Public Law No. 101-337, 104 Stat. 379), codified as amended at 16 U.S.C. §§ 19jj through 19jj-4 (2000), to undertake all necessary actions to protect park system resources. Operators may be held liable to the United States for the government's response costs as well as for any damages to park system resources. For more information on an operator's liability, see *Chapter 12 – Liability of Operators, Their Contractors and Subcontractors*.

RIGHTS-OF-WAY FOR NEW OIL AND GAS TRANSPARK PIPELINES IN NPS UNITS

The general NPS rights-of-way statute contained at 16 U.S.C. § 5 does not authorize the NPS to issue oil and gas pipeline rights-of-way across lands in the National Park System. Thus, the NPS may not issue rights-of-way under the regulations at 36 C.F.R. Part 14 in any NPS unit.

The enabling acts for a few NPS units give the NPS discretionary authority to issue rights-of-way for oil and gas pipelines. Prior to proposing a transpark pipeline through a NPS unit, the applicant must contact the park superintendent to determine if such authority exists in the park for a new rights-of-way.

In most parks there is no statutory authority for granting new rights-of-way for oil and gas pipelines. New pipelines may be constructed within existing rights-of-way in any park in conformance with the terms of the legal document creating the rights-of-way. When an entity seeks to construct a new pipeline carrying natural gas, it must first obtain a *certificate of public convenience and necessity* from the Federal Energy Regulatory Commission (FERC) (see 18 C.F.R. § 157.7).

NATIONAL PARK SERVICE SPECIAL USE PERMITS

The NPS has regulatory authority to control activities within rights-of-way associated with transpark oil and gas pipelines in regulations at 36 C.F.R. Parts 1-5. To the extent that a proposed activity in a right-of-way triggers the general regulations, a Special Use Permit must be obtained from the NPS before the activity can proceed. Mowing and trimming vegetation, inspection or testing pipelines, removal of fluids from oil and gas pipelines and installing, shutting down or replacing pipelines, are common activities in pipeline rights-of-way requiring a NPS Special Use Permit (SUP). 36 C.F.R. § 5.3 *Business Activities* covers maintenance activities along a pipeline corridor. 36 C.F.R. § 5.7 *Construction of Buildings or Other Facilities* covers pipeline construction on NPS lands. The park superintendent has the approval authority for Special Use Permits (36 C.F.R. § 1.6).

Pursuant to NPS *Reference Manual 53: Special Park Uses*, which became effective in April 2000, Special Use Permits may only be issued if the proposed activity will not:

- cause injury or damage to park resources;
- be contrary to the purposes for which the park was established;
- unreasonably impair the atmosphere or peace and tranquility maintained in wilderness, natural, historic or commemorative locations within the park;
- unreasonably interfere with the interpretive visitor service or other program activities, or with the administrative activities of the NPS;
- substantially impair the operation of public facilities or services of NPS concessionaires or contractors;
- present a clear and present danger to public health and safety; or
- result in significant conflict with other existing uses.

If issued, the Special Use Permit must contain:

- an adequate performance bond, that will cover the cost of restoration, repair, rehabilitation and clean-up of the area; and
- any other terms and conditions that the park deems necessary to protect park resources or public safety (s*ee* 36 C.F.R. § 1.6(e)).

Performance bonds are the permitee's guarantee of compliance with permit conditions and reimbursement to the park for damage to resources and/or facilities as a result of the permitee's activities. In lieu of a surety bond, a permitee may elect to deposit U.S. bonds or notes, a certified or cashier's check, bank draft, money order, or cash equal to the amount of the required performance bond. A listing of bonding companies authorized to issue bonds to the United States may be found in U.S. Treasury Circular 570. Circular 570 is available on the web at: http://www.fms.treas.gov/c570/c570.html.

Pursuant to 16 U.S.C. § 3a, the NPS is authorized to "recover all costs of providing necessary services associated with special use permits…." Such costs include preparation of National Environmental Policy Act (NEPA) documentation, as well as other NPS costs incurred in managing, facilitating, or supporting the special park use (*e.g.*, meetings, travel, and clerical work) from the time the inquiry is first received until the permit is signed and issued. Pursuant to 31 U.S.C. § 9701, the NPS may also charge permittees fees for the value of the benefits received by the permittee arising from the use of NPS lands and facilities.

In interpreting these statutes, the NPS has stated that it will not recover costs or charge fees when the requested special park use involves the exercise of a right pertaining to water, property, minerals, access, Native American religious practices, or the rights guaranteed by the First Amendment of the U.S. Constitution (*see* NPS Director's Order 53 at page C10-2).

Further cost recovery authority is found at Section 110(g) of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470h-2(g), which authorizes Federal agencies, including the NPS, to charge "reasonable costs" of the agencies' historic resource preservation responsibilities to federal licensees and permittees as a condition to the issuance of the license or permit. This statutory authority is supported by Department of the Interior guidance, case law, and secondary legal sources. The NPS retains the discretion to recover reasonable archeological resource mitigation costs from licensees or permittees, including those possessing property rights in the NPS unit.

The SUP permit will either be short-term (not to exceed 1 year) or long-term (not to exceed 5 years). If the SUP is issued as a long-term permit, the park will conduct an annual administrative and operational review to determine the continued appropriateness of the operation and to ensure that that there is no impairment or derogation of park resources and values. Special Use Permits can be renewed if the specified use continues to meet the conditions of the permit. SUPs may be revoked upon the operator's violation of applicable law or any conditions in the permit.

SPECIAL USE PERMIT INFORMATION REQUIREMENTS FOR TRANSPARK PIPELINES

Below is an explanatory list of information requirements that pipeline permitees need to include in a Special Use Permit application for a transpark pipeline. These information requirements have been adapted from the provisions outlined in NPS Reference Manual 53 (Chapter 6, Exhibit 1). The park will also use this information to evaluate the application and determine the appropriate environmental and cultural documents required under the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), and other regulatory requirements.

An application for a Special Use Permit should be brief but complete. Maps, site plans and cross-sections must be provided where applicable.

The permitee will submit the application for a special use permit, prepare the NEPA documentation for NPS review, tender the performance bond, and be the responsible party for compliance with the special use permit.

I. OWNERSHIP AND CONTACT INFORMATION

A. Name(s), address(es), and phone number of:
   1. Pipeline company

B. Name, address and telephone number of the permitee including:
   1. Person accountable for operations,

2. Field representative, and
3. Contact person in case of spill or other emergency.

C. Copy of the instrument(s) demonstrating the permitee's right to construct and operate a transpark pipeline within the rights-of-way (ROW).
   1. Affidavit of ownership, and
   2. Documentation establishing the ROW.

II. MAPS AND PLATS

The purpose of this section of a SUP application is to graphically show the permitee's area of proposed activities in relation to the park, and the locations of man-made or environmental hazards, park facilities, and visitor use areas that may affect the methods of operations.

A. Provide map(s) showing the proposed pipeline route. Use 1:24,000 scale USGS quadrangle map(s) and show the following:
   1. NPS park unit boundary;
   2. Locations of pipeline(s). Mark the entire area of surface disturbance on the map, including the dimensions of the pipeline(s);
   3. Locations of wells, or any other potential hazards within a one-mile radius of the proposed pipeline(s); and
   4. Locations of environmentally sensitive areas that might require avoidance or other mitigation measures.

III. TIMELINE FOR OPERATIONS

The purpose of this section of a SUP application is to identify when the transpark pipeline operations will be conducted and how long they are expected to last. Any proposals to modify construction operations due to seasonal timing restrictions should also be noted in this section.

A. Provide an estimated timeline for the proposed pipeline, including the following information (as applicable):
   1. Estimated date to begin equipment transportation to the staging area,
   2. Estimated date to begin construction of the pipeline,
   3. Anticipated longevity of pipeline operations,
   4. Estimated date when reclamation will begin, and
   5. Estimated time to complete reclamation.

IV. DESCRIPTION OF OPERATIONS

The description of operations should provide enough detail on the proposed methods, sequence, and equipment to assess the proposal's affects on the environment. Thus the amount of information in this section of a SUP application will vary depending on both the planned activities and the environment where they will be conducted. Address the following

requirements as applicable, providing enough detail for the NPS to have a clear understanding of the proposal.

A. Methods, sequence of work, and all equipment to be used in pipeline construction, operation, and maintenance:
   1. Specific location and dimensions of the proposal (written description; engineering drawings; site plan; pre-disturbance and post-disturbance cross-sections; photos; and other descriptive information).
   2. Description of construction and operation of the pipeline:
      a. list all major equipment / structures to be constructed;
      b. type and size of equipment, frequency of use;
      c. size, type, length, depth, of pipeline(s);
      d. inspection and testing procedures and frequency;
      e. type of product to be transported in the pipeline (*e.g.*, oil, gas);
      f. maximum and mean flow rate of product;
      g. maximum and mean operating pressure;
      h. cathodic protection methods; and
      i. “pig" launching/retrieving station(s).
   3. Description of routine and periodic maintenance activities (testing, cleaning, mowing, trimming etc.):
      a. frequency,
      b. mode and location of access,
      c. types of equipment to be used, and
      d. vegetation management along line routes (*e.g.*, mowing, trimming etc.).

B. Description of all actions to control, minimize, or prevent damage to the recreational, biological, scientific, cultural, and scenic resources of the park. These include those mitigation measures (methods and equipment) that the permitee and NPS identified during project scoping and the onsite meeting to improve operations with respect to park resources and visitor safety as well as any other measures developed by the permitee during the preparation of their SUP application. This also includes all actions to be taken to comply with regulatory operating standards and state and federal permit requirements, as applicable.

C. Description of all security measures that will be used to ensure public health and safety.

V. SPILL CONTROL AND EMERGENCY PREPAREDNESS PLAN

The NPS has combined informational requirements and operating standards from the 9B regulations to develop the format for a Spill Control and Emergency Preparedness Plan. This plan covers the substances or site conditions that pose risks to human health and safety and the environment. It also describes the actions the operator would take to minimize these risks in the event of a spill or natural disaster (*e.g.*, flood, fire, hurricane, or tornado). See *Chapter 11 – Spill Control and Emergency Preparedness Plan* in the Operator’s Handbook for the organization and content of a Spill Control and Emergency Preparedness Plan.

A Spill Control Emergency Preparedness Plan should describe all actions, equipment, procedures, training, etc. to control and effectively respond to releases of contaminating substances (oil, gas, or any other toxic or hazardous substance) to ensure protection of park resources and human health and safety.

VI. RECLAMATION PLAN

A. Reclamation Goals

1. Summarize the site-specific reclamation goals developed during project scoping. Site-specific goals might include a desired percent of vegetative ground cover, plant species, soil stabilization, rutting repair, etc.
2. State the timeframes for reclamation. Describe when the reclamation activities would begin, how long they would last, and the schedule for monitoring the results of the reclamation.

B. Reclamation Procedures

The following steps need to be completed at a minimum to reclaim the operations site. The permitee can describe the methods and equipment that will be used to accomplish each of these steps.

1. Remove pipeline(s) or abandon pipeline in-place (this is up to discretion of the park superintendent) and fill in any excavations.
2. Remove all above ground structures, equipment, and roads.
3. Remove all other man-made debris that resulted from operations.
4. Remove or neutralize contaminating substances. For this step, the permitee is responsible for removing soils or any other material that becomes contaminated. If there is reason to suspect soils or groundwater have been contaminated, the permitee will likely need to collect and test samples to verify that contaminating substances have been removed or neutralized. For information on NPS sampling protocols, see *Appendix D – Guideline for the Detection and Quantification of Contamination as Oil and Gas Operations*. Neutralization or removal of contamination means that contaminant concentrations will be reduced in soils (or groundwater) to a condition that will not adversely affect, injure, or damage federally-owned or controlled lands and waters, provides for the safe movement of native wildlife, and which does not jeopardize visitor health and safety.
5. Restore the natural contour of the land.
6. Place and prepare the natural soils needed for vegetation.
7. Re-establish native vegetative communities (describe seed mix and rates of application, exotic species control methods, water control or diversion structures, and erosion control measures). In addition to the revegetation procedure, this section should include the steps for monitoring progress of the reclamation effort.

C. Cost Estimate

Include a cost estimate for removing pipelines(s) and reclaiming the area to conform with the natural topography and vegetation types native to the area of operations.

VII. AFFIDAVITS AND STATEMENTS

A. Include an "Affidavit of Compliance" signed by an authorized official of the company. The affidavit should state that the proposed operations are in compliance with all applicable federal, state and local laws and regulations.

B. Include a statement that the applicant is fully accountable for all contractor and subcontractor compliance with the requirements of the approved special use permit.

C. Include a statement that the superintendent, or his/her representative, shall have reasonable access to the site as is necessary to monitor and ensure compliance with the special use permit.

VIII. OTHER APPLICABLE PERMITS

At the superintendent's request, operators will need to provide the NPS with a copy of all applicable federal, state, and local permits. If the permits are still pending, operators may submit a copy of the application for such permits.

IX. ENVIRONMENTAL INFORMATION TO COMPLY WITH NEPA AND NHPA

Compliance with the National Environmental Policy Act and the National Historic Preservation Act is the responsibility of the applicant for the special use permit. The content and format of the NEPA document must comply with NPS Director's Order 12 and Handbook (Conservation Planning, Environmental Impact Analysis, and Decision Making). For more information on NEPA compliance see *Appendix B, Part B.*

THIRD PARTY MONITORING

Depending on the geographic extent of a transpark pipeline, the NPS may require a permitee to hire a third party monitor to oversee pipeline construction. The purpose of third party monitoring is to ensure compliance with the terms of the approved special use permit and protection of park resources and values. The NPS may develop stipulations that specify conditions of the third party monitoring. Examples of additional stipulations include, but are not limited to:

- The NPS must approve the selection of the monitor and the terms of the permitee's contract with the third party monitor;
- The third party monitor would be paid by the permitee;
- The contract must include a provision requiring the monitor to report directly to the NPS, and not to the company, and identify the frequency of reports (daily, weekly, monthly); and
- The NPS may suspend the special use permit if the quality of the monitoring performed is unsatisfactory to the NPS.

OTHER AGENCIES RESPONSIBLE FOR REGULATING OIL AND GAS PIPELINES

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

The federal Department of Transportation is responsible for safety and environmental protection for pipelines. This agency regulates the design, construction, operation, maintenance, and emergency response pertaining to both oil and gas pipelines under the Pipeline Safety Act of 1992. The act covers both interstate and intrastate pipelines.

- The DOT regulations cover testing, reporting, inspection, maintenance, corrosion control, and spill contingency plans of these pipelines. State regulations often mirror the federal requirements that govern intrastate pipelines.
- Regulations at 49 C.F.R. Parts 191 and 192 govern gas. Regulations at 49 C.F.R. Part 195 govern oil. Under the regulations oil is considered a hazardous liquid.
- The regulations contain a number of exceptions, including grandfathering. The regulations do not cover flowlines.
- The DOT has jurisdiction over the operation and maintenance of pipelines.
- Both criminal and civil penalties can be invoked under these regulations.

FEDERAL ENERGY REGULATORY COMMISSION (FERC)

The Federal Energy Regulatory Commission is responsible for establishing just and reasonable pricing for moving both natural gas and oil through pipelines in interstate commerce throughout the country. FERC has no jurisdiction over the construction of oil pipelines but does play a substantive role in granting permission for building new pipelines that carry gas. Under the Natural Gas Act of 1938, FERC must issue a company a certificate of public conveyance and necessity before the company can construct an interstate gas pipeline (see 18 C.F.R. § 157.7). Essentially, FERC determines “where” new gas pipelines can be built while DOT regulates the “hows” from a public safety and resource protection perspective. FERC does not oversee the construction of oil and gas pipelines or regulate the supply and price of oil or oil products. In addition to authorizing the siting of natural gas lines, FERC also is responsible for establishing just and reasonable pricing rates for moving both natural gas and oil through pipelines in interstate commerce throughout the country.

STATE AGENCIES

State agencies (*e.g.*, Railroad Commission of Texas) are responsible for the regulation of intrastate pipelines if they have been approved by the DOT. States can impose more rigorous requirements on intrastate pipelines than are required under federal law. The operator must check with the requirements in the state where the operation is occurring for specific information on these requirements.

CHAPTER 9
36 C.F.R. 9B FLOWLINES AND GATHERING LINES

This chapter includes the following information:

- NPS regulation of existing flowlines and gathering lines,
- NPS regulation of new flowlines and gathering lines, and
- NPS permitting process checklist for flowlines and gathering lines.

NPS REGULATION OF EXISTING FLOWLINES AND GATHERING LINES

An approved plan of operations is not required for an existing flowline or gathering line that transports nonfederal oil and gas on, across, or through a NPS unit provided the operation meets all criteria for an existing operation pursuant to 36 C.F.R. § 9.33 (for more information, see *Chapter 6 – Existing Oil and Gas Production Operations*).

However, an operator authorized to conduct operations pursuant to this exemption will lose its exempt status and will be subject to the requirement to have an approved plan of operations and must also comply with other 9B requirements, if one of the following occurs:

- The operator proposes any construction, alteration, modification, or change in pipeline (flowline and gathering lines) requiring the issuance of a new state or federal permit;
- The operator proposes any construction, alteration, modification, maintenance, or change in pipeline (flowline and gathering lines) requiring the use or occupancy of additional federally controlled lands or waters; or
- The operator transfers the interest in the pipeline to a new owner/operator.

Note that the superintendent has the authority to suspend any existing operation, including the transport of oil and gas via flowlines and gathering lines if the operation poses and immediate threat of significant injury to federally owned or controlled lands or waters pursuant to 36 C.F.R. 9.33(c).

NPS REGULATION OF NEW FLOWLINES AND GATHERING LINES

The 9B regulations govern all operations within a NPS unit in connection with nonfederally owned oil and gas. The regulations at 36 C.F.R. § 9.31(c) define operations to include "construction or use of …pipelines" to transport nonfederal oil and gas. Thus, operators proposing to construct a flowline or gathering line in connection with nonfederal oil and gas within a unit, or on a pipeline rights-of-way that predates the unit, must obtain NPS approval of a plan of operations prior to such construction providing the proposed pipeline is on, across or through federally owned or controlled lands or waters in the unit. If a nonfederal oil and gas operation in a park connects to a transpark pipeline via a flowline or a gathering line then that portion of the flowline or gathering crossing the park, up to the point of product sale and change

in pipeline system ownership, is subject to the 9B regulations, including the plan of operations requirement.

New flowlines and gathering lines that are proposed in connection with a nonfederal oil and gas operation, (oil and gas in a pipeline prior to the point of sale of the oil and gas) must be under a plan or operations. Typically, the installation, operation, and maintenance of these lines are covered in an operator's plan of operations for the production phase of the oil and gas operation. Operations that have lost their exempt status under 36 C.F.R. § 9.33 must also be under a plan of operations that includes the flowlines and gathering lines associated with the operation.

NPS PERMITTING PROCESS CHECKLIST FOR FLOWLINES AND GATHERING LINES

The transport of oil and gas associated with a nonfederal operation must be included in the plan of operation that covers the proposed production phase of the operation. The information requirements would be the same as are presented in Chapter 4 – Drilling and Production Operations. The major steps in completing a plan of operations for flowlines and gathering lines would include the following:

- ☐ Operator contacts park regarding interest in conducting oil and gas operations (for more information, see Ch. 2).
- ☐ Operator provides written documentation demonstrating right to conduct operations in the park (for more information, see Ch. 2).
- ☐ Operator meets with park staff to scope proposed project (for more information, see Ch. 2).
- ☐ Operator meets with affected federal, state, and local agencies to identify resource issues, permitting requirements, and impact mitigation strategies (for more information, see Ch. 2).
- ☐ Operator requests temporary access permit to gather information needed to complete the plan of operations (for more information, see Ch. 2).
- ☐ Operator conducts necessary surveys, including natural and cultural surveys, as applicable and surveys / stakes the operations area (for more information, see Ch. 2).
- ☐ Operator prepares the plan of operations and submits the draft plan to the National Park Service (for more information, see Ch. 4).
- ☐ The Plan of Operations for flowlines and gathering lines must include the following sections:
  - ☐ I. Lease and Ownership Information
  - ☐ II. Maps and Plats
  - ☐ III. Timeline for Operations
  - ☐ IV. Description of Operations
  - ☐ V. Spill Control and Emergency Preparedness Plan
  - ☐ VI. Reclamation Plan
  - ☐ VII. Affidavits and Statements
  - ☐ VIII. Other Applicable Permits
  - ☐ IX. Background Environmental Information
  - ☐ X. Relationship to Park Planning Documents
- ☐ NPS performs a completeness and technical review of the plan of operations (for more information, see Ch. 2).
- ☐ Operator revises plan of operations, if necessary (for more information, see Ch. 2).

- ☐ Park staff prepares NEPA document (or adopts operator's or consultant prepared NEPA document), incorporates other environmental compliance, and initiates mandated consultations with other agencies (for more information, see Ch. 2 and Appendix B).
- ☐ Park completes public review process, finalizes decision documents, and notifies the operator that the plan has been approved, conditionally approved, or rejected.
- ☐ Operator agrees to conditions of approval (if any), submits applicable state and federal permits, and files performance bond with the NPS (for more information, see Ch. 10).

CHAPTER 10
PERFORMANCE BONDS

PERFORMANCE BOND REQUIREMENT

The National Park Service's 9B regulations require that an operator file a performance bond for all types of nonfederal oil and gas operations and all phases of the operation(s). The bond is in addition to any other bonds the operator may have to provide to the state or other federal agencies. A performance bond is a measure of insurance (currently up to $200,000) for the NPS so that the operator will comply with the terms and conditions of the approved plan. The bond amount is not, however, the limit of liability for damage to park resources. Under the 9B regulations the operator is responsible for all damages to park resources for failure to comply with the approved plan of operations; temporary approval permit; or where existing operations are allowed to continue, failure to comply with the applicable permit. Depending upon the type of damage, an operator may also be held liable under other statutes including the Park System Resource Protection Act, 16 (U.S.C. § 19jj), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), and the Oil Pollution Act (OPA). For additional information on these laws, see *Appendix B, Part A - Federal Laws, Regulations, and Policies That May Be Applicable to Nonfederal Oil and Gas Operations in NPS Units*.

Either the NPS or the operator can petition to amend the amount of the performance bond. The regional director of the NPS is responsible for determining the proper bond amount. Below is some key information regarding performance bonds, including: the types of performance bonds that are acceptable to the NPS, basic information that should be included in the bond, and how the regional director will determine an appropriate bond amount for a particular operation.

ACCEPTABLE TYPES OF SECURITIES

- Corporate Surety Bond (most common type of surety used),
- Irrevocable Letter of Credit,
- Cash,
- Cashier's Check,
- Certified Check,
- U.S. Postal Money Order,
- U.S. Treasury Bond,
- U.S. Treasury Bill, or
- U.S. Treasury Note.

REQUIREMENTS FOR CORPORATE SURETY BONDS AND IRREVOCABLE LETTERS OF CREDIT

CORPORATE SURETY BONDS

Corporate surety bonds must:

- be issued by an acceptable surety company,
- be in an acceptable bond format,
- adequately cover the total bond amount,
- include authorized signatures, and
- be issued by a surety company that consents to liability and waives notice for revisions, amendments, or other modifications to the plan of operations covered by the bond.

A sample *Form for a Performance Bond* is included at the end of this chapter.

CRITERIA FOR ACCEPTABLE SURETY COMPANIES

Surety companies must:

- be listed in the most recent Department of the Treasury Circular 570 (circular lists companies holding certificates of authority as acceptable sureties on bonds payable to the federal government). Circular 570 is available on the web at: http://www.fms.treas.gov/c570/c570.html,
- be licensed to transact business in the state in which the company or its agent executes the bond. (license information is in Circular 570),
- appoint an agent to accept federal service of process on behalf of the company in the federal judicial district where the principal resides, where the obligation is to be performed, and in Washington D.C. (process agent information is included in Circular 570), and
- have an underwriting limitation sufficient to cover the penal sum of the bond, or furnish a coinsurance or reinsurance agreement with another company identified in Circular 570.

IRREVOCABLE LETTER OF CREDIT

An irrevocable letter of credit must:

- be issued by a bank that is a member of the Federal Reserve System, or insured by the FDIC,
- include one and only one letter of credit number,
- carry a Standard and Poors “A” rating,
- be clearly irrevocable,
- include the name of the principal,
- state the maximum limit of credit extended,
- include a credit limit that equals or exceeds bond amount,

- include an authorization to draw sight drafts upon the issuing institution in favor the National Park Service,
- clearly state that the letter of credit number appearing on a sight draft is sufficient for honoring that sight draft, and
- include an expiration date for presentation of drafts for payment.

A sample *Model Letter of Credit* that can be used by an operator is included at the end of this chapter.

BOND AMOUNTS AND LIMITATIONS

The regional director is responsible for determining the proper amount of the operator's performance bond. The operator's bond amount is determined as follows:

estimated cost of reclamation + liability amount = total bond amount

COST OF RECLAMATION

The cost of reclamation includes the following:

- plugging the well(s) (if applicable),
- removing all equipment and debris,
- restoring topographic grade,
- replacing topsoil,
- vegetation planting/seeding,
- exotic species control, and
- monitoring the success of the reclamation.

LIABILITY AMOUNT

The liability amount includes the following:

- potential amount of oil that may be spilled, in a worse case scenario, and the estimated cost to contain and clean up such a spill and restore damaged resources;
- potential amount of hazardous substances and waste that may be spilled, in a worst case scenario, and the estimated cost to contain and clean up such a spill and restore damaged resources;
- potential extent of damage to park resources resulting from a fire, and the cost to contain and extinguish a fire and restore damaged resources; and
- potential for release of harmful or toxic gas, and the cost to secure the area and restore damaged resources.

REGULATORY LIMITATIONS ON TOTAL BOND AMOUNTS

LIABILITY CAP

- $5,000 for a single party geophysical operation;
- $25,000 for a multiple party geophysical operation (*e.g.*, most 3D seismic operations); or
- $50,000 for each exploratory well, production, or pipeline operation.

CAP ON TOTAL BOND AMOUNT

- For a single operation or multiple operations the total bond amount may not exceed $200,000.
- For a production operation, the maximum the NPS could require is $200,000 ($150,000 for reclamation + $50,000 for liability).
- If one operator is conducting multiple operations in a single park, the total bond amount the NPS can require of the operator for **all** of its operations is $200,000.
- Bonds are for each specific park, and are not for a NPS system-wide or government blanket bond.

GETTING A PERFORMANCE BOND RELEASED

TRANSFER OF OPERATIONS

If an operator transfers a production operation to another operator, the transferring operator remains liable under the bond until the superintendent is given notice of the transfer (within 60 days of the transfer) and the superintendent determines that the transferring operator is in compliance with plan of operations at the time of the transfer.

A *Model Form for a Performance Bond* and *Model Letter of Credit* are shown on the next page to assist operators in securing a performance bond for their operation(s).

MODEL FORM FOR A PERFORMANCE BOND (CORPORATE SURETY BOND)

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WE, **(operator)**, as Principal, and **(surety)**, a corporation duly incorporated under the laws of the State of **(state)**, and authorized to do business in the State of **(state in which park is located)**, as Surety, are held and firmly bound unto the U.S. Department of the Interior, National Park Service ("NPS"), Director, **(NPS region)** Region ("regional director") in the sum of **(spell out dollar amount) ($000,000.00)** for the payment of which we hereby bind ourselves, our heirs, executors and administrators, jointly and severally by these presents.

THE CONDITIONS OF THIS BOND ARE SUCH that the Principal has submitted to the NPS a plan of operations to conduct **(type of operation)** in **(park name)**, **(state)**, in accordance with the requirements of 36 C.F.R. Part 9, Subpart B. Upon NPS approval of the plan of operations, the Principal shall faithfully comply with all terms and conditions of the plan, or any revision, amendments, or modifications thereto [hereinafter "approved plan of operations"], including all applicable federal, state, and local laws. The Principal and Surety shall be held jointly and severally liable for any and all damages to federally owned or controlled lands, waters, or resources resulting from the Principal's failure to comply with the terms and conditions of the approved plan of operations. If, at any time during operations, reasonable efforts to secure the Principal's compliance with any provision of the approved plan of operations fail, the regional director may attach any or all of the bond amount necessary to remediate or reclaim federally owned or controlled lands, waters, or resources damaged by the Principal's failure to comply with the terms and conditions of the approved plan of operations. The regional director may also require that the Surety perform reclamation in accordance with the approved plan of operations. Surety hereby waives notice for revisions, amendments or other modifications to the approved plan of operations covered by the bond. The Principal and Surety agree to hold the United States and its departments, agencies, and employees harmless from any damages or liabilities incurred by reason of his/her engaging in said business.

NOW, THEREFORE, notwithstanding any other provision of law or regulations, until such time as the regional director has notified the Principal that it has successfully reclaimed the area of operations and has performed all other duties and responsibilities as described in the approved plan of operations, for a **(type of operation)** at **(park name)** in, **(state)** according to the requirements of 36 C.F.R. Part 9, Subpart B, and has protected the United States and its departments, agencies, and employees from any damage or liability claim as herein before stated, this obligation shall remain in full force and effect.

This bond may be terminated as to future acts of the Principal upon written notice by the Surety. Written notice shall be given at least sixty (60) days prior to termination. Said notice shall be sent to superintendent, Attention: **(full name and address of resource manager in charge of park's nonfederal oil and gas operations)** by certified mail.

This agreement supplements, and is not in lieu of, the terms, conditions, duties and responsibilities contained in 36 C.F.R. Part 9, Subpart B, or in any other federal, state, or local law or regulation. This agreement shall not limit any claims or causes of action against the Principal or Surety otherwise available to the United States under any other federal law or regulation to protect, reclaim, or remediate federally owned or controlled lands, waters, or resources in **(park name)**, **(state)**. This bond becomes effective on the ___ day of _____, 20___, and is continuous in nature until terminated.

SIGNED:

Principal Date

Surety Date

MODEL LETTER OF CREDIT

NOTE: This letter is optional. Operators may elect to convey its interest to undertake nonfederal oil and gas operations in the park to the park's nonfederal oil and gas program contact by telephone. However, the park's receipt of a copy of the operator's legal instrument is required to begin the 36 C.F.R. 9B permitting process.

To: United States Department of the Interior
National Park Service
(insert name of park)
(insert mailing address for park)

IRREVOCABLE LETTER OF CREDIT

Issuing Financial Institution: **(insert name)**
Telephone No: **(insert 10-digit number)**
Address: **(insert full mailing address)**
O&G Lease No. **(insert name and any assigned name/title)**
Date Issued: **(insert date)**
Letter of Credit No. **(insert number)**
Amount: **(insert dollar amount)**

On behalf of **(insert name of operator and full mailing address)**, as Obligor, we **(insert name of issuing financial institution)** hereby establish an irrevocable Letter of Credit (LOC) in favor of the United States Department of the Interior, National Park Service, **(insert name of park)** (NPS) and agree to immediately pay upon demand by and to the NPS the full amount of **(spell-out dollar amount)** **($000,000.00)** upon receipt of written demand by the NPS.

This LOC is effective the date issued and will expire exactly one year from the date issued. In the absence of a notice from the bank to the NPS at least 30 days prior to the stated or any extended expiration date not to renew the LOC, the LOC will be automatically renewed in full force and effect for an additional one year period.

Upon receipt by the NPS of a non-renewal notice from us, the NPS may draw on us by sight draft identified by Letter of Credit No. **(insert number)** for up to the amount of this LOC, prior to the expiration thereof, provided that such draft is accompanied by a statement signed by the Regional Director of the **(insert name of NPS region)** Region or his designee to the effect that no satisfactory replacement bond has been provided by the Obligor. It is also understood that, at any time this LOC is in effect the NPS may draw on us by sight draft identified by Letter of Credit No. **(insert number)** for any amount, up to the full amount, to cover any default by Obligor with respect to its obligations under the Plan of Operations for the above referenced lease. Such drawings shall be accompanied by a statement signed by the Regional Director of the **(insert name of NPS region)** Region or his designee to the effect that the obligor has been determined to be in default and the amount drawn represents the reasonable amount as determined by NPS of such default.

It shall not be required for the NPS in order to draw on this LOC to furnish the original letter; however, it is understood as a condition of any payment thereunder that the face amount of the letter shall automatically be reduced by any payment made by the bank and that the NPS will promptly surrender the original letter when and if the bank shall tender to the NPS the full amount of funds represented by this letter; such surrender to occur as soon as reasonably practical after full payment is made. The original letter shall also be surrendered promptly following its expiration provided that no drawing on such letter was made prior to such expiration.

We assure that the amount of credit herein established will not be reduced for any reason during the effectiveness of this letter without the prior written approval of the NPS.

Letter of Credit No. **(insert number)**

We certify that the deposits of this bank are Federally Insured by the Federal Deposit Insurance Corporation and that this bank is a member of the Federal Reserve System.

(insert name of issuing financial institution)

by:

Vice President

ATTEST:

Senior Vice President

CHAPTER 11
SPILL CONTROL AND EMERGENCY PREPAREDNESS PLAN

Based on authority in several sections of the 9B regulations, the NPS requires operators to submit a Spill Control and Emergency Preparedness Plan with the plan of operations.[19]

The NPS asks operators to answer the following questions in the Spill Control and Emergency Preparedness Plan:

1. What substances or conditions are present on the location or may be encountered during operations that pose risks to human health and safety or the environment?
2. How does the operator plan to manage such substances or conditions to minimize the risks to human health and safety and the environment?
3. What actions will the operator take should an emergency or spill event occur?

In developing a Spill Control and Emergency Preparedness Plan, operators should obtain copies of park emergency response plans (*e.g.*, hurricane preparedness plans, fire management plans) that are relevant to the proposed operations. Applicable emergency response procedures from the park's plans must be incorporated into the proposed plan of operations and Spill Control and Emergency Preparedness Plan.

SPILL CONTROL AND EMERGENCY PREPAREDNESS PLAN ELEMENTS

The Spill Control and Emergency Preparedness Plan should follow the format described below. An example Spill Control and Emergency Preparedness Plan is included at the end of this chapter.

Sections A and B should answer the first question: What substances or conditions are present on location or may be encountered during operations that pose risks to human health and safety or the environment?

SECTION A – IDENTIFICATION OF CONTAMINATING OR TOXIC SUBSTANCES USED ON SITE OR EXPECTED TO BE ENCOUNTERED DURING OPERATIONS

Identify substances on the location or expected to be encountered during operations, which if released, pose a threat to human health and safety or the surrounding environment.

This information is best presented by using a table that lists all of the fuels, chemicals, materials, and additives to be used or encountered during the conduct of operations. The table should list the product name, its hazardous content, and its hazardous effect (*e.g.*, flammable, corrosive, irritant, etc.). Most materials and chemicals have Material Safety Data Sheets (MSDS) that can be provided by the suppliers. The MSDS will identify the product's hazardous ingredients, physical/chemical properties, fire and explosion hazards, reactivity, health effects

[19] See 36 C.F.R. §§ 9.36(a)(10)(vi), 9.36(a)(14), § 9.36(a)(18), 9.36(d), 9.39(a)(1)(i), 9.39(a)(1)(ii), 9.39(a)(2)(iii), 9.41(e), 9.41(f), 9.43, 9.44, 9.45, and 9.46.

and first aid procedures, environmental concerns, and necessary protective control measures. The operator should attach a MSDS for each item listed in the table. Table 11.1 is an example of the type of information that should be included in the Spill Control and Emergency Preparedness Plan.

SECTION B – IDENTIFICATION OF ABNORMAL PRESSURE, TEMPERATURE, OR OTHER HAZARDOUS CONDITIONS ON SITE OR EXPECTED TO BE ENCOUNTERED DURING OPERATIONS

Identify pressure or temperature conditions that will require special precautions to ensure protection of human health and safety and the environment.

This section normally applies to drilling operations, but may also be a factor for naturally flowing wells, heated process systems, or gas compression operations.

For drilling operations, the operator would identify any overpressured or lost circulation zones that may be encountered while drilling. The operator would then describe measures that will be taken to control formation pressure or lost circulation.

The operator should also note any production processes that involve very high pressures or temperatures.

In addition to hazardous conditions that may emanate from the conduct of operations, this section also needs to identify hazards external to operations that could reasonably be expected to occur over the life of the project. For example, a drilling operation conducted in a hurricane zone during hurricane season would need to identify hurricanes as an expected hazardous condition. This section needs to include those hazardous conditions identified in the park's Emergency Response Plans or otherwise known to exist in the area of operations.

SECTION C – MANAGEMENT MEASURES TO MINIMIZE THE RISKS TO HUMAN HEALTH AND SAFETY AND THE ENVIRONMENT

Section C should answer the second question: How does the operator plan to manage such substances or conditions to minimize the risks to human health and safety and the environment?

The operator should describe:

- The direction, rate of flow, and total quantity of oil, brine, or drilling mud which could be discharged as a result of each major type of failure (*e.g.*, tank failure, flowline failure, loss of well control),
- Design and use of secondary containment (*e.g.*, berms, dikes, ring levees, liners, drip pans, curbing),
- Sumps and collection systems,
- Facility drainage and practices for inspecting, and then discharging, recycling, or disposing of stormwater,
- Frequency of flowline, tank, equipment, and general site inspections by personnel,

- Chemicals and other additives handling and storage practices,
- Fuel and/or crude oil storage and transfer operations,
- Any automatic sensing, alarm, or automatic control systems (including automatic surface or subsurface shut-in valves for flowing wells),
- Personnel training and spill prevention procedures,
- Site security (*e.g.*, fencing, gates, security guards or other personnel), and
- When applicable, special equipment, facility design, or day-to-day measures that serve to mitigate the potential for spills or accidents that might occur due to external hazards such as hurricanes, electrical storms, floods, fires, etc.

In Section C, the operator should also describe practices for managing wastes.

Section 9.45 of the 9B regulations, Handling of Wastes provides the standard for handling wastes:

> "Oilfield brine, and all other waste and contaminating substances must be kept in the smallest practicable area, must be confined so as to prevent escape as a result of percolation, rain, high water or other causes, and such wastes must be stored and disposed of or removed from the area as quickly as practicable in such a manner as to prevent contamination, pollution, damage or injury to the lands, water (surface and subsurface), facilities, cultural resources, wildlife, and vegetation or visitors of the unit."

Although § 9.45 was written to apply to waste, the same standards apply to handling oil, drilling muds and cuttings, produced fluids, and chemicals, or other substances described in Section A. The example Spill Control and Emergency Preparedness Plan in this chapter illustrates a good way to present this information.

Readily available emergency and spill response equipment reduces the risks to human health and safety and the environment. This section should include a description of personnel, equipment, and materials needed to quickly control and remove spills. The response equipment and materials should be categorized by what will be maintained;

- At the operation's site,
- On the pumper's (or other personnel's) vehicle, and
- Off-site.

The NPS does not require emergency response equipment to be maintained on location if the threat of a spill is low, secondary containment is adequate, the pumper's vehicle carries a spill kit capable of handling small incidents, and the emergency response times for larger incidents are reasonable.

The steps that an operator might take to minimize risks of high pressure or temperature include use of properly designed equipment and good operating / maintenance practices, and use of site security measures such as warning signs, fences, and locked gates. Fencing is required where wells and associated facilities are in areas frequented by visitors or wildlife (36 C.F.R. § 9.41(e)).

Tables 4.1 and 4.2 in Chapter 4 list operating stipulations and recommended mitigation measures that can also be used to design drilling and production operations that adequately considers spill prevention and control.

Section D and E answer the last question: What actions will the operator take should an undesirable event occur? In other words, what is the operator's contingency plan for spills, releases, fires, or other undesirable events?

SECTION D – CONTINGENCY ACTIONS FOR SPILLS

In this section the operator outlines the contingency actions that would be taken in consultation with the park in the event of a release of contaminating or toxic substances. Operators need to make sure that their emergency response actions do not conflict with NPS emergency response procedures. Although contingency actions may vary based on individual company policies, operators need to outline detailed procedures to:

1. Control the source,
2. Secure the site (if necessary),
3. Contain the release (include steps to be taken and list onsite containment equipment such as booms, sandbags, etc.),
4. Clean up the release of contaminating or toxic substances (include steps to be taken and list clean-up equipment such as simmers, heavy equipment, vacuum trucks, etc.), and
5. Report the incident.

Note: Even though the verbal report of a spill event is listed as number 5, the operator should call the superintendent at the earliest practical time. The operator must also notify the National Response Center to obtain a case number for the incident and identify the state and local reporting requirements, if applicable.

Spill Reporting

State and federal regulations require formal notification for certain types of spill or release events. This section of the Spill Control and Emergency Preparedness Plan should list the reporting requirements that apply to the facilities covered in the plan of operations. In addition to the reporting requirements of other federal, state, or local authorities, operators in units of the National Park System are required to report spill incidents to the park superintendent or the designated park official. The following statement needs to be included in this section of the plan:

"For all releases to the ground of contaminating or toxic substances, [operator] will promptly report the following initial information to [park superintendent]: the time the spill was discovered; the type of product released; the location; estimated spill volume; cause of spill; area covered; estimated rate of release if spill is ongoing; direction of oil movement; description of contaminated area; proximity to surface waters, roads, or trails; weather conditions; what steps are being taken to remedy the situation; and initial response equipment required. For releases in excess of five barrels in the aggregate, [operator] will provide a written report to [park superintendent] within 10 working days of the incident. In addition to the information reported in the initial notification, the written report will include steps that will be or have been taken to prevent recurrence of the incident."

Emergency Response

Emergency response to spill events will focus on the safety of company personnel and the public as a first priority and then spill control and containment of the release. Once the spill is controlled and the safety of personnel and the public is ensured, the emergency response shifts to containment and minimization of environmental impacts. Cleanup and repair work are typically performed as projects and not as an emergency response. The National Park Service's role during the initial emergency phase is to receive notification from the operator, evaluate information, and lend appropriate assistance.

When the spill response shifts to containment, the NPS role changes to one of active review and approval. In the case of a spill, the intent of the NPS is to minimize the area affected by the release. At the same time, containment efforts should not cause more environmental damage than the spill itself. Therefore, immediate involvement of the NPS in the containment decision-making process is critical if the spilled contaminants have or threaten to move beyond the operation's area.

To clarify the NPS role in emergency response actions, the operator should include the following statement in the Spill Control and Emergency Preparedness Plan:

> "[Operator] will consult with the [park superintendent] and obtain the [park superintendent's] consent prior to performing ground and vegetative disturbing activities outside of the approved the area of operations."

Clean up and Removal of Contaminating or Toxic Substances

For spills that are contained within the approved area of operations, the NPS does not expect initial clean up to meet the same standards that will eventually apply to reclamation of the site. 36 C.F.R. § 9.45, Handling of Waste sets the standard for clean up and removal of the spills within the approved area of operations.

The clean up standards based on Section 9.45, Handling of Waste are summarized below:

- The spilled materials must be kept in the smallest practical area. This means mixing of contaminated soils with clean soils to achieve lower contaminant concentrations is not an option.
- The spilled materials must be confined to prevent migration of contaminants via percolation, rain, high water, or other means.
- The spilled materials (as well as soils or water contaminated by them) that cannot be recycled to the operations processes are a waste and must be stored and disposed of or removed from the area as quickly as practicable.
- The clean up and removal of contaminants may not cause additional damage to park resources or threaten human health and safety.

A well-developed and implemented spill control strategy will ease the clean up of the leaks, spills, and other releases that could occur. Spills will usually be controlled by the secondary containment used in operations. Again, refer to the example Spill Control and Emergency Preparedness Plan at the end of this chapter for an understanding of how to document the procedures for clean up and removal of contaminating or toxic substances.

An operator may use bioremediation or other on site clean up options, after consultation and agreement with the park superintendent, the regional response team, and state and local regulatory agencies overseeing the clean up operations. The superintendent would only allow onsite remediation efforts to disturb additional surface area if there is a clear benefit to park resources over other alternatives. In other words, use of additional surface area to remediate spills onsite is not a likely option.

Should a spill reach beyond the operator's approved area of operations, the operator will need to take actions to restore the disturbed area to the natural conditions and processes that existed before the spill.

Reclamation standards require removing or neutralizing any contaminating substances (36 C.F.R. § 9.39(a)(2)(iii)). Neutralization of contamination means that contaminant concentrations will be reduced in soils to a condition that will not adversely affect, injure, or damage federally-owned or controlled lands, waters, and other resources, provides for the safe movement of native wildlife, and which does not jeopardize visitor safety or public use of the park (36 C.F.R. § 9.39(b)). If warranted, the operator will need to test soils to verify that contaminating substances have been removed or neutralized.

SECTION E – CONTINGENCY ACTIONS FOR EMERGENCIES OTHER THAN SPILLS

During scoping, the operator and NPS will identify the need for developing and coordinating contingency actions for emergencies other than spills. The NPS intent is to prevent unnecessary damage to park resources. The approach is twofold. First, the operator needs to be aware of hazards that are not necessarily inherent to its operations, but that could affect them. Second, the operator needs to take all reasonable precautions, with due regard to personnel safety, to remove or minimize potential of spills cause by the external hazards. Primary considerations in developing and implementing emergency preparedness procedures in order of importance are: 1) personnel safety, 2) pollution prevention, and 3) equipment/facility protection.

Contingency actions will vary widely depending on the nature of the hazard, but in general this section should include:

- A description of the expected hazard, when it may occur, and potential consequences to personnel, spill potential, and facilities.
- Communication protocol among NPS management, NPS field personnel, operator management, and operator field personnel. This should include up-to-date names and 24/7 contact numbers.
- Description of preparedness measures taken in advance of the expected hazard. For example, maintenance of fire breaks around facilities in anticipation of a forest or grass fire hazard.
- Description of preparedness measures taken when there is an increased possibility of the hazard occurring. For example, stepped-up communications, securing or removal of potential pollutants, etc. when fires are burning in the area, but not immediately endangering the site or its access.
- Description of preparedness measures taken if occurrence of the hazard is imminent. For example, stepped-up communications, evacuation procedures, etc.

- Description of actions to be taken once the hazard is passed.

The roles and responsibilities of both the NPS and operator should be developed to conform with existing NPS and operator procedures. Also, if no specific hazards are identified, but the park has a general emergency response plan, then the operator and park need to determine and document their respective roles and responsibilities in this section of the Spill Control and Emergency Preparedness Plan.

SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLANS

If determined to be adequate by the superintendent, a Spill Prevention Control and Countermeasure Plan, approved under 40 C.F.R. Part 112, may be used to satisfy most of the Spill Control and Emergency Preparedness Plan requirements. The SPCC addresses facilities where oil spills would pollute or threaten to pollute waters of the United States. Many facilities in parks will meet the criteria for having to have an SPCC plan. If this is the case, a properly prepared SPCC plan may be referenced and incorporated as an attachment to the Spill Control and Emergency Preparedness Plan. In addition to the SPCC plan, the operator still needs to provide the following:

1. A list of contaminating or toxic substances along with their MSDS as described in Section A above and a statement that the provisions of the SPCC apply to these in addition to oil.
2. The statements supporting NPS spill reporting requirements as follows:

   "For all releases to the ground of contaminating or toxic substances, [operator] will promptly report the following initial information to [park superintendent]: the time the spill was discovered; the type of product released; the location; estimated spill volume; cause of spill; area covered; estimated rate of release if spill is ongoing; direction of oil movement; description of contaminated area; proximity to surface waters, roads, or trails; weather conditions; what steps are being taken to remedy the situation; and initial response equipment required. For releases in excess of five barrels in the aggregate, [operator] will provide a written report to [park superintendent] within 10 working days of the incident. In addition to the information reported in the initial notification, the written report will include steps that will be or have been taken to prevent recurrence of the incident."

SAMPLE
SPILL CONTROL AND EMERGENCY PREPAREDNESS PLAN

The following example can be used as a template by an operator when preparing a Spill Control and Emergency Preparedness Plan for a proposed plan of operations.

In the Spill Control and Emergency Preparedness Plan shown below, the NPS includes **NOTES** (shown in **bold**) to help explain the plan content. The **NOTES** would not be included in the actual plan.

In this example, Tidy Oil Company has just acquired several oil and gas operations inside a national park. The operations consist of two oil wells on pumpjacks, and a tank battery that includes separators, two 1000-barrel oil tanks, and one 1000-barrel saltwater tank. The oil and brine is trucked and gas that is not used as lease fuel is flared. Tidy also plans to drill an additional development well, which it expects to be a flowing oil and gas well with its own separation and storage facility.

SECTION A – IDENTIFICATION OF CONTAMINATING OR TOXIC SUBSTANCES USED ON SITE OR EXPECTED TO BE ENCOUNTERED DURING OPERATIONS

During the operations of producing oil and gas from the existing and drilling proposed wells, the substances listed in Table 11.1 are used or expected to be encountered. Table 11.1 lists each substance by generic product name, its use in operations, its hazardous content, and its hazardous effect. A copy of the Material Safety Data Sheet (MSDS) for each item listed in Table 11.1 is also attached. The MSDS lists proper safety procedures and protective devices for using each product as well as first aid information in the event of exposure.

Table 11.1. Contaminating and Toxic Substances

DRILLING OPERATIONS				
PRODUCT NAME	**HAZARDOUS CONTENT**	**HAZARDOUS EFFECT**	**USE**	**MSDS ATTACHED**
Gel (Wyoming Bentonite)	Silica (2-6%)	Carcinogen, Irritant	Mud Additive	Yes
Barite	Silica (2-6%)	Carcinogen, Irritant	Mud Weighting	Yes
Caustic Soda	Sodium Hydroxide	Corrosive	Mud Additive	Yes
Poly-Plus (Liquid)	Petroleum Distillates	Irritant, Toxic	Mud Additive	Yes
PolyPac	Cellulose	Irritant	Mud Additive	Yes
Lignite	Silica (3%)	Carcinogen, Irritant	Mud Additive	Yes
Lime	Calcium Hydroxide	Moderately Caustic Irritant	Mud Additive	Yes
Soda Ash	Sodium Carbonate	Irritant	Mud Additive	Yes
Cottonseed Hulls	None	Allergen	Lost Circulation Material	Yes
Cement	Portland Cement	Irritant	Cementing	Yes
Diesel	Diesel	Fire Hazard, Irritant, Toxic	Fuel	Yes
PRODUCTION OPERATIONS				
PRODUCT NAME	**HAZARDOUS CONTENT**	**HAZARDOUS EFFECT**	**USE**	**MSDS ATTACHED**
Natural Gas	Methane, Ethane, etc.	Extreme Fire Hazard, Asphyxiant	Produced from wells	Yes
Crude Oil	Mixture of Parrafins, Naphthenes, and Aromatics	Fire Hazard, Irritant, Toxic	Produced from wells	Yes
Demulsifier	Blend of sulfanates, oxyalkylated phenolic resins, and alkanolamines in aromatic and alcohol solvent	Irritant, toxic	Production stream additive	Yes

SECTION B – IDENTIFICATION OF ABNORMAL PRESSURE, TEMPERATURE, OR OTHER HAZARDOUS CONDITIONS ON SITE OR EXPECTED TO BE ENCOUNTERED DURING OPERATIONS

Tidy Oil does not expect any abnormal pressures, temperatures, or other hazardous conditions that require any special precautions during the course of drilling and production operations.

Tidy's existing wells are no longer capable of flowing naturally. The proposed Tidy Well No. 3 is expected to flow naturally at first, but will eventually require artificial lift. Bottomhole pressures ranging from 1500 to 2200 psi and a bottomhole temperature of 130^{o} F are normal for a partially depleted reservoir at 5000 feet depth. Surface operating pressures are expected to be less than 500 psi. Gas not used as lease fuels is compressed to 300 psi for delivery to the AAA Pipeline.

Hydrogen sulfide gas, overpressured zones, or extreme lost circulation zones are not known to exist in the area and are not expected to be encountered while drilling the Tidy No. 3 well.

Operations are located in a wooded area that is prone to forest fires. The park also conducts prescribed burns from time to time in the area. Tidy's operations could exacerbate a fire or complicate response to one.

SECTION C – MANAGEMENT MEASURES TO MINIMIZE THE RISKS TO HUMAN HEALTH AND SAFETY AND THE ENVIRONMENT

Drilling Operations

Tidy Oil has a number of strategies to prevent and contain contaminating substance spills during drilling operations. Site construction (as described in detail in Section V., Description of Operations) includes construction of a ditch and ring levee around the entire drill site. The area underneath the drilling rig, pumps, jetting pits, mixing tanks, pipe racks, compressors, generator house, BOP accumulator, tool houses, and fuel and chemical storage is lined with 18 mil impervious PVC liner. After setting the conductor casing, the cellar will be sealed on the bottom with cement and around the sides with epoxy and corrugated steel.

Any rainwater, rig wash, and spilled liquids within the lined area will flow to the cellar where they can be collected for recycling into the closed loop containerized mud system or disposal. Rainwater that collects outside the lined area will be visually inspected for sheen and tested for conductivity prior to supervised discharge. Any contaminated stormwater will be recycled into the mud system or vacuumed up for disposal.

Leak sources on the drill site include mud tanks, diesel fuel tank, chemical and lubricating oil drums, piping, machinery, hydraulic systems, mud additives, and the well itself. All of these items are maintained within a lined area as previously described. Other than a complete loss of well control, the largest spill potential would be the rupture of a mud storage tank (300 barrels). The capacity of the diesel storage tank is 180 barrels. The lined area could contain a spill of 1200 barrels. Any spills within the lined area would be contained and picked up.

The possibility of a well blowout is extremely small. Open flow potentials of wells in the field are less than 1000 barrels of oil per day. The area enclosed by the ditch and ring levee could hold up to 18,000 barrels of fluid. Tidy would respond as quickly as possible to control a blowout. A

spill that escaped the drilling location would move to the northeast towards Fish Creek, which is about 3000 feet from the drill site. Should it become necessary, Tidy would consult with the superintendent to build berms to prevent a catastrophic spill from reaching the creek. A topographic map is included in Section II of the Plan of Operations.

Other preventive practices to be used during drilling include:

- Employees and contractors will be properly trained to reduce the number of human errors that often cause spills.
- Visual inspection during rig-up to assure the satisfactory condition of storage tanks, piping, fittings, and other rig equipment that normally hold contaminating substances such as drilling mud, oil, fuel, lubricating oil, hydraulic fluid, etc.
- During operations, employees and contractors will be observant for signs of spills or leaks and the need for equipment maintenance.
- The drill rig is manned by personnel trained in well control.
- Blowout preventers will be installed after setting the surface casing. All blowout prevention equipment is visually inspected daily. The blind and pipe rams are function tested daily or as operations permit. The rams and annular preventer are pressure tested weekly.
- Equipment oil and coolant changes will be performed prior to mobilizing on location rather than on-site.
- Less toxic substances will be substituted for more toxic substance where practical.
- Secondary containment areas will be inspected daily for integrity.
- Placement of temporary liners under service equipment such as logging units, cementing equipment, etc.
- A security guard will be posted where the well access road leaves the public park road to keep visitors from entering the location and to direct rig traffic on the single lane road.

The following cleanup equipment will be available at the drill site for immediate use by on-site personnel in response to small spills, and for initial spill containment and clean up efforts in response to larger spills that may require additional contractor assistance:

- Two 100-foot containment booms,
- 10 bales absorbent pads,
- 10 bales absorbent sweep,
- One 2-inch pump with hose,
- One case of disposal bags, and
- Assortment of shovels, rakes, etc.

Also, a front-end loader is kept on location during drilling operations and is available if needed to contain a spill.

The drilling location is designed to include adequate distance between equipment and the adjacent forest to serve as a firebreak.

Production Operations

Tidy Oil has a number of strategies to prevent and contain contaminating substance spills during production operations.

Leak sources that are common to each of the production sites are the wellheads, flowlines, separation equipment, storage tanks, and the chemical storage and injection systems.

The greatest leak potential would be the rupture of a full 1000-barrel storage tank. All storage tanks have secondary containment within bermed areas. In the event of a tank failure, free liquids would be vacuumed up and returned to storage tanks or disposed of offsite.

Should Tidy Oil No. 3 become a producer, separation and storage facilities will be located within a lined, bermed area as described in Section V, Description of Operations. The berm will be designed to hold 1500 barrels (150% of the largest tank). If Tidy No. 3 is completed as a flowing well, the wellhead will include an automatic shutoff wing valve. The valve will automatically close off production from the well if there is a loss of flowline pressure.

Tidy Oil No. 2 and 3 are no longer capable of natural flow. Each well produces about 50 barrels of oil and 200 barrels of salt water per day on pump jack. The Tidy No. 2 and 3 tanks are also within a bermed area that has a compacted clay bottom. Outside the bermed areas, the largest conceivable spill from a well would be 50 barrels of oil and 200 barrels of saltwater resulting from a flowline break that goes undetected for a 24-hour period. The ditch and ring levee configuration around each well is capable of holding at least one week's production.

Rainwater that collects in bermed areas or in the drip pans will be inspected for sheen and tested for conductivity prior to discharge. All stormwater discharges are supervised and recorded. Any stormwater that is found to be contaminated will be pumped into the brine storage tank and ultimately disposed of at an approved facility outside of the park.

Other preventive practices to be used during production include:

- Secondary containment under chemical bulk storage containers is provided by drip pans. The chemical pumps are also located beneath the chemical tank on the drip pans.
- Loading connections for the oil and brine tanks are located within the bermed areas. Drip basins are provided under each connection point. Any oil or brine leaked into the drip basin during loading operation is removed promptly.
- Training on spill prevention, control, and clean up measures is conducted for each employee on an annual basis. Employees and contractors are trained on the specifics of this Spill Control and Emergency Preparedness Plan.
- The gauger visually inspects the wellhead, piping, valves, tanks, vessels, and chemical injection system on a daily basis for signs of leakage or maintenance needs.
- The gauger also walks the parameter of each location at least weekly or after heavy rains and checks the ditch for accumulation of anything other than rainwater.
- The gauger inspects secondary containment areas for integrity daily.
- Inspect all oil and brine tanks for signs of excessive external corrosion which may lead to tank failure.
- Inspect base of tanks for signs of bottom leaks.
- Flowlines to Tidy No. 1 and No. 2 are walked every 6 months or immediately if there is any evidence of a flowline leak.

- Inspect valves for proper position and locks, if applicable.
- The existing tank battery is fenced with a locked gate, as are the pump jacks at the Tidy No. 1 and 2 wells. If Tidy No. 3 becomes a producer, a fence will be constructed around the well and production facilities.

No emergency response equipment will be kept on location during production operations. The gauger's truck is equipped with one bundle of absorbent pads, two 10-foot absorbent booms, a hand-held fire extinguisher, shovels, rake, and an assortment of hand tools.

SECTION D – CONTINGENCY ACTIONS FOR SPILLS

In the event of a spill, Tidy Oil's actions will focus on:

1. Controlling the source to prevent further spillage.
2. Securing the site if necessary.
3. Containing the spilled material to the smallest practical area.
4. Cleaning up the spill.
5. Reporting the spill to appropriate agencies.

Spill Reporting

Although reporting the spill is listed as #5 above, Tidy Oil will provide the superintendent a verbal notification of a spill event at the earliest practical time. The company supervisor will determine from onsite personnel the following information and report it to the superintendent:

- The location of the spill and the time it was discovered;
- The type of product released;
- Estimated spill volume and area covered;
- Description of contaminated area;
- Estimated rate of release if spill is ongoing;
- Cause of spill;
- Direction of oil movement;
- Proximity to surface waters, roads, or trails;
- Weather conditions;
- What steps are being taken to remedy the situation; and,
- Initial response equipment required.

For releases in excess of five barrels in the aggregate, Tidy Oil will provide a written report to the superintendent within 10 working days of the incident. In addition to the information reported in the initial notification, the written report will include steps that will be or have been taken to prevent recurrence of the incident.

NOTE: State and federal regulations require formal notification for certain types of spill or release events. The operator should list those agencies here along with the reporting criteria.

Emergency Response

The largest reasonable anticipated spill events will be contained within bermed areas or at least contained to the location by the surrounding ditch and ring levee.

In the event a spill is encountered, initial response actions will be aimed at controlling the spill, then containing spilled materials. The gauger or other person(s) onsite will immediately assess the situation and take steps to control the source of the spill (if it can be done safely) by shutting valves, shutting down equipment, or closing in wells as needed.

For small spills, onsite personnel will use equipment on hand to contain the spread of the spill. This would typically involve placing absorbent pads or booms, or by constructing a retaining dike from dirt, boards, synthetic absorbents, hay, straw, etc. Small spills will be picked up immediately with absorbent materials. All contaminated cleanup materials will be stored in impermeable, weatherproof containers until removed from the site. All contaminated materials will be disposed of outside of the park according to state and federal guidelines.

For larger spills, the company supervisor will be notified of the spill. For drilling operations, the company representative on location will direct response actions for spill events. The company supervisor will direct actions to immediately isolate and shut off the source of the material being spilled (if it can be done safely). The supervisor will assess containment needs and call out contract equipment and services as determined necessary. Onsite personnel will use equipment and materials on hand to slow the spread of oil or contaminants until additional equipment/services can reach the site.

In the rare event that spilled materials escape from the location, Tidy Oil will consult with the park superintendent and obtain the superintendent's consent prior to mobilizing equipment that may have lingering impacts to natural resources outside the area of operations. In the event immediate response is necessary, approval will be sought via telephone conversation with the superintendent or designated representative.

If a tank truck is involved in a spill incident outside the approved area of operations, but inside the park, Tidy Oil will respond in the same manner as spills within the approved area of operations. The county sheriff's department will be contacted to help control traffic if a tank truck experiences a spill outside of Tidy Oil's area of operations.

At the same time steps are being taken to control and contain the spill, the supervisor will determine what steps may be needed to protect park visitors. Such actions might include locking the gate to the location or blocking the private lease access route from the main park road. Other than the park road, Tidy Oil's operations are not near any areas used by visitors on a regular basis. The only time visitor evacuation of the immediate area might be necessary would be during uncontrolled escape of oil and gas from a well blowout. Tidy Oil would request assistance from the park and local law enforcement as needed to close the park road for all except emergency response personnel.

Clean up and Removal of Contaminating or Toxic Substances

Clean up and removal of spills within the containment areas will be performed using accepted industry practices. Such practices include the pickup of free liquids with vacuum equipment, application of absorbent booms, materials, and pads; removal of contaminated wellpad material, and replacement with clean wellpad material. In place of treatment of contaminated wellpad material could be used as an option to offsite disposal if approved by the superintendent.

Tidy will not mobilize response or cleanup equipment (that could cause damage to park resources) outside the approved area of operations without first obtaining consent of the superintendent.

All contaminated cleanup materials will be stored in impermeable, weatherproof containers and removed from the site as early as practical. All contaminated materials will be disposed of outside of the park according to state and federal guidelines.

Clean up and removal of spills within Tidy's approved area of operations will meet the standards of 36 C.F.R. § 9.45, Handling of Waste.

Should a spill occur or reach beyond Tidy Oil's approved area of operations, the operator will take actions to restore the disturbed area to the natural conditions and processes that existed before the spill. Cleanup operations will be the same as discussed above for clean up of spills within containment areas except:

1. Tidy Oil will consult with the superintendent and obtain the superintendent's consent prior to mobilizing equipment that may have ongoing impacts to natural resources, and
2. Restoration of the affected area will be performed in consultation with the superintendent and meet the same standards as the Reclamation Plan provided in Section VII of this plan of operations.

SECTION E – CONTINGENCY ACTIONS FOR EMERGENCIES OTHER THAN SPILLS

Operations are located in a wooded area that is prone to forest fires. The park also conducts prescribed burns from time to time in the area. Fires may occur at any time, but unplanned fires are most likely during the dry season from May through September. The park's prescribed burns typically occur in April through June. Uncontrolled fires present a serious threat to personnel safety. In addition, by its flammable nature, oil and gas increases the danger to company personnel and could complicate response to the fire and increase risks to firefighters.

Tidy's field foreman [name, number] will take information from the park's fire chief [name, number] including fire danger levels and actual fires burning in the area. Tidy will immediately inform the park superintendent of any fires it spots in or near the park. The foreman will provide weekly, daily, or hourly fire status and direction to field personnel, the regularity depending on fire danger level or proximity of actual fires to wells sites and access routes, and directions consistent with those of the fire's incident commander.

Tidy will take measures at the operations site in advanced preparation of a fire. Tidy will maintain firebreaks around its drilling and production facilities at all times. Vegetation will be mechanically controlled to maintain firebreaks. Also, Tidy will prevent and remove accumulations of oil wastes or other materials deemed to be fire hazards from the vicinity of the operation's area. Tidy's safety training for its field personnel include fire safety. Tidy has provided the park will location data for all its facilities including gathering lines and access roads for use in its fire incident command. Also, the gathering lines that cross through wooded areas are clearly marked in the field with orange plastic stakes.

In the event a fire could reasonably be expected to reach a Tidy facility, Tidy will lower crude stocks to a minimum, make sure firebreaks are clear of vegetation or other flammable materials,

and wrap-up or hold-off on any non-routine work. Only personnel essential to daily operations will then remain onsite. The Tidy field foreman will maintain communications with the fire's incident command team.

Should the fire become an imminent threat to pass through/around operations, all equipment will be powered down, and wells shut by closing all wellhead valves. Field personnel will evacuate the area as directed by the Tidy foreman in communication with the incident command.

Once incident command has given clearance to re-enter the site, Tidy will take full inventory of the facility and make any repairs necessary. Should a spill have occurred, Tidy will implement the procedures of Section D.

Other Emergencies: Because of the inland location and distance from waterbodies, flooding and hurricanes are extremely unlikely

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CHAPTER 12
LIABILITY OF OPERATORS, CONTRACTORS AND SUBCONTRACTORS

Any oil and gas operation that requires access on, across or through federally-owned or controlled lands or waters would be subject to the NPS's statutory mandates, regulatory provisions, policies, and federal Executive Orders. The NPS regulatory requirements establish standards for conducting oil and gas activities so that park managers can ensure that these activities are conducted in a manner that protects park resources and values and do not impair park resources and values.

36 C.F.R. PART 9 SUBPART B

Operators will be held fully accountable for their contractor's or subcontractor's compliance with the requirements of the approved plan of operations (36 C.F.R. § 9.41(g)). Undertaking any operation within the boundaries of any NPS unit in violation of the 36 C.F.R. 9B regulations shall be deemed a trespass against the United States and shall be cause for revocation of approval of the plan of operations (36 C.F.R. § 9.51(c)). Further, the operator shall be held liable for any damages to federally-owned or controlled lands, water, or resources resulting from his/her failure to comply with:

- the approved plan of operations under § 9.37,
- the applicable permit where existing operations are continued pursuant to § 9.33, or
- the terms of the temporarily approved operation under § 9.38.

PARK SYSTEM RESOURCE PROTECTION ACT

The Park System Resource Protection Act (16 U.S.C. § 19jj) (the Act) makes any person who destroys, causes the loss of, or injures any park system resource strictly liable to the United States for response costs and for damages resulting from such destruction, loss, or injury. A park system resource includes any living or non-living resource located within the boundaries of a NPS unit, except for resources owned by a non-federal entity. Because the statute imposes strict liability, the only defenses arise when an act of god or war caused the damage, a third party who constituted neither an employee or nor an agent of the owner/operator caused solely the damage, or an activity authorized by federal or state law caused the damage.

The Act authorizes the Secretary of the Interior to request the Department of Justice to file a civil action for the costs of replacing, restoring or acquiring the equivalent of a park system resource; the value of any loss of use pending its restoration; replacement, or acquisition, the cost of damage assessments; and the cost of response including actions to prevent, to minimize, or to abate injury.

The Act applies to nonfederal oil and gas activities on National Park System units. Operators need to ensure that they operate within the specifications of their approved 9B plan, comply with all other applicable legal requirements, and take precautions to avoid actions that may damage park system resources.

The Act provides the following comprehensive definitions for both response costs and damages:

Response costs means the costs of actions taken by the Secretary of the Interior to prevent or minimize destruction or loss of or injury to park system resources; or to abate or minimize the imminent risk of such destruction, loss, or injury; or to monitor ongoing effects of incidents causing such destruction, loss or injury.

Damages include the following:

1. Compensation for -
   - the cost of replacing, restoring, or acquiring the equivalent of a park system resource; and
   - the value of any significant loss of use of a park system resource pending its restoration or replacement or the acquisition of an equivalent resource; or
   - the value of the park system resource in the event the resource cannot be replaced or restored.

2. The cost of damage assessments under the Act.

The above provisions embody a very broad articulation of the scope of liability that attaches to private activities in parks. In addition, under 16 U.S.C. § 19jj-1(d), Congress makes clear that the provisions of the Act are "in addition to any other liability which may arise under federal or state law." With respect to nonfederal oil and gas activities in parks in general, an operator's liability for damages to park resources may easily exceed the amount of the bonds set under 36 C.F.R. § 9.48(d). Under 16 U.S.C. § 19jj, the NPS can recover the costs associated with such damages.

OTHER APPLICABLE LAWS AND REGULATIONS

Specific liability provisions for protection of cultural resources is provided for under 36 C.F.R. 9B and 43 C.F.R. 3. Under these provisions, the operator shall not injure, alter, destroy, or collect any site, structure, object, or other value of historical, archeological, or cultural scientific importance. Violations shall be punishable by law under trespass regulations, the Antiquities Act, and the Archeological Resources Protection Act for fines and possible costs for any cultural resources damaged by vehicular traffic or collection.

Protection of threatened and endangered species and their habitat is provided for under the Endangered Species Act (16 U.S.C. §§ 1531-1544 and implementing regulations at 50 C.F.R. Parts 10, 17, 23, 81, 217, 222, 225 402, and 450; and 36 C.F.R. Part 13). Harming an endangered species without an authorization (*e.g.*, Section 7 Incidental Take Permit) would result in substantial fines.

“The Service will take affirmative and aggressive action to ensure that all NPS costs and damages associated with the release of contaminants are borne by those responsible for the contamination of NPS property.” (USDI, NPS Management Policies, 2006, § 9.1.6.2). Liability provisions for community right-to-know, and rapid response and cleanup of releases of oil, gas, or contaminating and hazardous substances are required by the following list of regulations, executive orders, and federal laws. A summary of each of these is provided in Appendix B.

- NPS Nonfederal Oil and Gas Rights regulations - 36 C.F.R. §§ 9.31(o) and 9.45;
- Park System Resource Protection Act -16 U.S.C. § 19jj;
- Resource Conservation and Recovery Act - 42 U.S.C. §§ 6901 *et seq*); 40 C.F.R. Parts 240-282; 49 C.F.R. Parts 171-179;
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended - 42 U.S.C. §§ 9601-9675; 40 C.F.R. Parts 279, 300, 302, 307, 355, and 373;
- Executive Order No. 12088 – Federal Compliance with Pollution Control Standards - 3 C.F.R. 1978 Comp. p. 243, as amended by Executive Order No. 12580 - 3 C.F.R. 1987 Comp. p. 193;
- Oil Pollution Act - 33 U.S.C. §§ 2701-2761; 15 C.F.R. Part 990; 30 C.F.R. Part 253; 33 C.F.R. Parts 135 and 150; 40 C.F.R. Part 112;
- Pipeline Safety Act of 1992 - 49 U.S.C. § 60101 *et seq.*; 49 C.F.R. Subtitle B, Ch 1, Parts 190-199; 49 C.F.R. Parts 190-199;
- Federal Water Pollution Control Act of 1972 - 33 U.S.C. §§ 1251*et seq.*; 33 C.F.R. Parts 320-330; 40 C.F.R. Parts 110, 112, 116, 117, 230-232; and
- Spill Prevention Control and Countermeasure Plan - 40 C.F.R. Part 112.

APPENDIX A

36 C.F.R. PART 9 SUBPART B
NON-FEDERAL OIL AND GAS RIGHTS REGULATIONS

AUTHORITY: Act of August 25, 1916, 39 Stat. 535 (16 U.S.C. §§ 1, *et seq*.); and the acts establishing the units of the National Park System, including but not limited to: Act of April 25, 1947, 61 Stat. 54 (16 U.S.C. §§ 241, *et seq*.); Act of July 2, 1958, 72 Stat. 285 (16 U.S.C. §§ 410, *et seq*.); Act of October 27, 1972, 86 Stat. 1312 (16 U.S.C. §§ 460dd, *et seq*.); Act of October 11,1974, 88 Stat. 1256 (16 U.S.C. §§ 698 -- 698e); Act of October 11, 1974, 88 Stat. 1258 (16 U.S.C. §§ 698f -- 698m); Act of December 27,1974, 88 Stat. 1787 (16 U.S.C. §§ 460ff *et seq*.).

SOURCE: 43 FR 57825, Dec. 8, 1978, unless otherwise noted.

§ 9.30 Purpose and scope.

(a) These regulations control all activities within any unit of the National Park System in the exercise of rights to oil and gas not owned by the United States where access is on, across or through federally owned or controlled lands or waters. Such rights arise most frequently in one of two situations: (1) When the land is owned in fee, including the right to the oil and gas, or (2) When in a transfer of the surface estate to the United States, the grantor reserved the rights to the oil and gas. These regulations are designed to insure that activities undertaken pursuant to these rights are conducted in a manner consistent with the purposes for which the National Park System and each unit thereof were created, to prevent or minimize damage to the environment and other resource values, and to insure to the extent feasible that all units of the National Park System are left unimpaired for the enjoyment of future generations.

These regulations are not intended to result in the taking of a property interest, but rather to impose reasonable regulations on activities which involve and affect federally-owned lands.

(b) Regulations controlling the exercise of minerals rights obtained under the Mining Law of 1872 in units of the National Park System can be found at 36 C.F.R. Part 9, Subpart A. In area where oil and gas are owned by the United States, and leasing is authorized, the applicable regulations can be found at 43 C.F.R., Group 3100.

(c) These regulations allow operators the flexibility to design plans of operations only for that phase of operations contemplated. Each plan need only describe those functions for which the operator wants immediate approval. For instance, it is impossible to define, at the beginning of exploratory activity, the design that production facilities might take. For this reason, an operator may submit a plan which applies only to the exploratory phase, allowing careful preparation of a plan for the production phase after exploration is completed. This allows for phased reclamation and bonding at a level commensurate with the level of operations approved. However, it must be noted that because of potential cumulative impacts, and because of qualitative differences in the nature of the operations, approval of a plan of operations covering one phase of operations does not guarantee later approval of a plan of operations covering a subsequent phase.

[43 FR 57825, Dec. 8, 1978, as amended at 44 FR 37914, June 29, 1979]

§9.31 Definitions.

The terms used in this Subpart shall have the following meanings:

(a) Secretary. The Secretary of the Interior.

(b) Director. The Director of the National Park Service or his designee.

(c) Operations. All functions, work and activities within a unit in connection with exploration for and development of oil and gas resources, the right to which is not owned by the United States, including: gathering basic information required to comply with this subpart, prospecting, exploration, surveying, preproduction development and production; gathering, onsite storage, transport or processing of petroleum products; surveillance, inspection, monitoring, or maintenance of equipment; reclamation of the surface disturbed by such activities; and all activities and uses reasonably incident thereto performed within a unit, including construction or use of roads, pipelines, or other means of access or transportation on, across, or through federally owned or controlled lands and waters, regardless of whether such activities and uses take place on Federal, State or private lands.

(d) Operator. A person conducting or proposing to conduct operations.

(e) Person. Any individual, firm, partnership, corporation, association, or other entity.

(f) Superintendent. The Superintendent, or his designee, of the unit of the National Park System containing lands subject to the rights covered by these regulations.

(g) Commercial Vehicle. Any motorized equipment used in direct or indirect support of operations.

(h) Unit. Any National Park System area.

(i) Owner. The owner, or his legal representative, of the rights to oil and gas being exercised.

(j) Designated Roads. Those existing roads determined by the Superintendent in accordance with 36 C.F.R. 1.5 and § 4.19 to be open for the use of the general public or for the exclusive use of an operator.

(k) Oil. Any viscous combustible liquid hydrocarbon or solid hydrocarbon substance easily liquifiable on warming which occurs naturally in the earth, including drip gasoline or other natural condensates recovered from gas without resort to manufacturing process.

(l) Gas. Any fluid, either combustible or noncombustible, which is produced in a natural state from the earth and which maintains a gaseous or rarefied state at ordinary temperature and pressure conditions.

(m) Site. Those lands or waters on which operations are to be carried out.

(n) Contaminating substances. Those substances, including but not limited to, salt water or any other injurious or toxic chemical, waste oil or waste emulsified oil, basic sediment, mud with

injurious or toxic additives, or injurious or toxic substances produced or used in the drilling, development, production, transportation, or on-site storage, refining, and processing of oil and gas.

(o) Statement for Management. A National Park Service planning document used to guide short- and long-term management of a unit; to determine the nature and extent of planning required to meet the unit's management objectives; and, in the absence of more specific planning documents, to provide a general framework for directing park operations and communicating park objectives to the public.

[43 F R 57825, Dec. 8, 1978: 44 FR 37914, June 29, 1979, as amended at 60 FR 55791, Nov. 3 1995; 62 FR 30234, June 3, 1997]

§ 9.32 Access.

(a) No access on, across or through lands or waters owned or controlled by the United States to a site for operations will be granted except for operations covered by § 9.33 and, except as provided by § 9.38, until the operator has filed a plan of operations pursuant to § 9.36 and has had the plan of operations approved in accordance with § 9.37. An approved plan of operations serves as the operator's access permit.

(b) No operations shall be conducted on a site within a unit, access to which is on, across or through federally owned or controlled lands or waters except in accordance with an approved plan of operations, the terms of § 9.33 or approval under § 9.38.

(c) Any operator intending to use aircraft of any kind for access to a federally-owned or controlled site must comply with these regulations. Failure of an operator to receive the proper approval under these regulations prior to using aircraft in this manner is a violation of both these regulations and 36 C.F.R. 2.17.

(d) No access to a site outside a unit will be permitted across unit lands unless such access is by foot, pack animal, or designated road. Persons using designated roads for access to such a site must comply with the terms of § 9.50 where applicable.

(e) Any operator on a site outside the boundaries of a unit must comply with these regulations if he is using directional drilling techniques which result in the drill hole crossing into the unit and passing under any land or water the surface of which is owned by the United States. Except, that the operator need not comply in those areas where, upon application of the operator or upon his own action, the Regional Director is able to determine from available data, that such operations pose no significant threat of damage to park resources, both surface and subsurface, resulting from surface subsidence fracture of geological formations with resultant fresh water aquifer contamination, or natural gas escape, or the like.

§ 9.33 Existing operations.

(a) Any person conducting operations on January 8, 1979 in accordance with a Federal or State issued permit may continue to do so as provided by this section. After expiration of such existing permits no operations shall be conducted except under an approved plan of operations, unless access is granted by the Regional Director under § 9.38.

(1) All Federal special use permits dealing with access on, across or through lands or waters owned or controlled by the United States to a site for the conduct of operations within any unit issued prior to January 8, 1979 shall expire according to their terms and shall not be renewed, unless by the terms of the existing permit it must be renewed.

(2) All operations on a site in a unit access to which is on, across, or through federally owned or controlled lands or waters conducted pursuant to a valid State access permit may be continued for the term of that permit, exclusive of any renewal period whether mandatory or discretionary, if conducted in accordance with the permit.

(b) Any person conducting operations on January 8, 1979 in a unit where Federal or State permits were not required prior to January 8, 1979 may continue those operations pending a final decision on his plan of operations; Provided, That:

(1) The operator (within thirty (30) days of January 8, 1979), notifies the Superintendent in writing of the nature and location of the operations; and

(2) Within sixty (60) days after such notification, the operator submits, in accordance with these regulations, a substantially complete proposed plan of operations for those operations;

(3) Failure to comply with § 9.33(b) (1) and (2) shall constitute grounds for the suspension of operations.

(c) At any time when operations which are allowed to continue under § 9.33 (a) and (b) pose an immediate threat of significant injury to federally owned or controlled lands or waters, the Superintendent shall require the operator to suspend operations immediately until the threat is removed or remedied. The Superintendent must, within five (5) days of this suspension notify the operator in writing of the reasons for the suspension and of his right to appeal the suspension under § 9.49.

[43 FR 57825, Dec. 8, 1978; 44 FR 37914, June 29, 1979]

§ 9.34 Transfers of interest.

(a) Whenever an owner of rights being exercised under an approved plan of operations sells, assigns, bequeaths, or otherwise conveys all or any part of those rights, he, his agent, executor, or representative must notify the Superintendent within sixty (60) days of the transfer of: the site(s) involved; the name and address of the person to whom an interest has been conveyed; and a description of the interest transferred. Failure to so notify the Superintendent shall render the approval of any previously approved plan of operations void.

(b) The transferring owner shall remain responsible for compliance with the plan of operations and shall remain liable under his bond until such time as the Superintendent is notified of the transfer in accordance with paragraph (a). At that time the Superintendent will prohibit the new owner from operating until such time as the new owner has filed with the Superintendent: (1) A statement ratifying the existing plan of operations and stating his intent to be bound thereby, or a new plan of operations, and (2) a suitable substitute performance bond which complies with the requirements of § 9.48.

§ 9.35 Use of water.

No operator may use for operations any water from a point of diversion which is within the boundaries of any unit unless authorized in writing by the Regional Director. The Regional Director shall not approve a plan of operations requiring the use of water from such source unless the operator shows either that his right to the use of the water is superior to any claim of the United States to the water, or where the operator's claim to the water is subordinate to that of the United States that the removal of the water from the water system will not damage the unit's resources. In either situation, the operator's use of water must comply with appropriate State water laws.

§ 9.36 Plan of operations.

(a) The proposed plan of operations shall include, as appropriate to the proposed operations, the following:

(1) The names and legal addresses of the following persons: The operator and the owner(s) or lessee(s) (if rights are State-owned) other than the operator;

(2) Copy of the lease, deed, designation of operator, or assignment of rights upon which the operator's right to conduct operations is based;

(3) A map or maps showing the location of the perimeter of the area where the operator has the right to conduct operations, as described in § 9.36(a)(2), referenced to the State plane coordinate system or other public land survey as acceptable to the Superintendent;

(4) A map or maps showing the location, as determined by a registered land surveyor or civil engineer, of a point within a site of operations showing its relationship to the perimeter of the area described in § 9.36(a)(2) and to the perimeter of the site of operations; the location of existing and proposed access roads or routes to the site; the boundaries of proposed surface disturbance; the location of proposed drilling; location and description of all surface facilities including sumps, reserve pits and ponds; location of tank batteries, production facilities and gathering, service and transmission lines; wellsite layout; sources of construction materials such as fill; and the location of ancillary facilities such as camps, sanitary facilities, water supply and disposal facilities, and airstrips. The point within the site of operations identified by registered land surveyor or civil engineer shall be marked with a permanent ground monument acceptable to the Superintendent, shall contain the point's State plane coordinate values, and shall be placed at least to an accuracy of third order, class I, unless otherwise authorized by the Superintendent;

(5) A description of the major equipment to be used in the operations, including a description of equipment and methods to be used for the transport of all waters used in or produced by operations, and of the proposed method of transporting such equipment to and from the site;

(6) An estimated timetable for any phase of operations for which approval is sought and the anticipated date of operation completion;

(7) The geologic name of the surface formation;

(8) The proposed drilling depth, and the estimated tops of important geologic markers;

(9) The estimated depths at which anticipated water, brines, oil, gas, or other mineral bearing formations are expected to be encountered;

(10) The nature and extent of the known deposit or reservoir to be produced and a description of the proposed operations, including:

(i) The proposed casing program, including the size, grade, and weight of each string, and whether it is new or used;

(ii) The proposed setting depth of each casing string, and the amount of type of cement, including additives, to be used;

(iii) The operator's minimum specifications for pressure control equipment which is to be used, a schematic diagram thereof showing sizes, pressure ratings, and the testing procedures and testing frequency;

(iv) The type and characteristics of the proposed circulating medium or mediums to be employed for rotary drilling and the quantities and types of mud and weighting material to be maintained;

(v) The testing, logging, and coring programs to be followed;

(vi) Anticipated abnormal pressures or temperatures expected to be encountered; or potential hazards to persons and the environment such as hydrogen sulfide gas or oil spills, along with plans for mitigation of such hazards;

(11) A description of the steps to be taken to comply with the applicable operating standards of § 9.41 of this subpart;

(12) Provisions for reclamation which will result in compliance with the requirements of § 9.39:

(13) A breakdown of the estimated costs to be incurred during the implementation of the reclamation plan;

(14) Methods for disposal of all rubbish and other solid and liquid wastes, and contaminating substances;

(15) An affidavit stating that the operations planned are in compliance with all applicable Federal, State and local laws and regulations

(16) Background information, including:

(i) A description of the natural, cultural, social and economic environments to be affected by operations, including a description and/or map(s) of the location of all water, abandoned, temporarily abandoned, disposal, production, and drilling wells of public record within a two-mile radius of the proposed site. Where such information is available from documents identified in § 9.36(d), specific reference to the document and the location within the document where such information can be found will be sufficient to satisfy this requirement

(ii) The anticipated direct and indirect effects of the operations on the unit's natural, cultural, social, and economic environment;

(iii) Steps to be taken to insure minimum surface disturbance and to mitigate any adverse environmental effects, and a discussion of the impacts which cannot be mitigated

(iv) Measures to protect surface and subsurface waters by means of casing and cement, etc.

(v) All reasonable technologically feasible alternative methods of operations their costs, and their environmental effects, and

(vi) The effects of the steps to be taken to achieve reclamation

(17) Any other facets of the proposed operations which the operator wishes to point out for consideration; and

(18) Any additional information that is required to enable the Superintendent to establish whether the operator has the right to conduct operations as specified in the plan of operations; to effectively analyze the effects that the operations will have on the preservation, management and public use of the unit, and to make a recommendation to the Regional Director regarding approval or disapproval of the plan of operations and the amount of the performance bond to be posted.

(b) Where any information required to be submitted as part of a proposed plan of operations has been submitted to the Superintendent in substantially the same form in a prior approved plan of operations, a specific cross-reference to that information contained in the prior approved plan of operations will be sufficient to incorporate it into the proposed plan and will satisfy the applicable requirement of this section.

(c) Information and materials submitted in compliance with this section will not constitute a plan of operations until information required by § 9.36(a) (1) through (18), which the Superintendent determines as pertinent to the type of operations proposed, has been submitted to and determined adequate by the Regional Director.

(d) In all cases the plan of operations must consider and discuss the unit's Statement for Management and other planning documents as furnished by the Superintendent, and activities to control, minimize or prevent damage to the recreational, biological physical, scientific, cultural, and scenic resources of the unit, and any reclamation procedures suggested by the Superintendent.

[43 FR 57825, Dec. 8, 1978; 44 FR 37914, June 29, 1979]

§ 9.37 Plan of operations approval.

(a) The Regional Director shall not approve a plan of operations:

(1) Until the operator shows that the operations will be conducted in a manner which utilizes technologically feasible methods least damaging to the federally-owned or controlled lands, waters and resources of the unit while assuring the protection of public health and safety.

(2) For operations at a site the surface estate of which is not owned by the federal government, where operations would constitute a nuisance to federal lands or waters in the vicinity of the operations, would significantly injure federally-owned or controlled lands and waters; or

(3) For operations at a site the surface estate of which is owned or controlled by the federal government, where operations would substantially interfere with management of the unit to ensure

the preservation of its natural and ecological integrity in perpetuity, or would significantly injure the federally-owned or controlled lands or waters; Provided, however, that if the application of this standard would under applicable law, constitute a taking of a property interest rather than an appropriate exercise of regulatory authority, the plan of operations may be approved if the operations would be conducted in accordance with paragraph (a)(1) of this section, unless a decision is made to acquire the mineral interest.

(4) Where the plan of operations does not satisfy each of the requirements of § 9.36 applicable to the operations proposed.

(b) Within sixty (60) days of the receipt of a plan of operations, the Regional Director shall make an environmental analysis of such plan, and:

(1) Notify the operator that the plan of operations has been approved or rejected, and, if rejected, the reasons for the rejection; or

(2) Notify the operator that the plan of operations has been conditionally approved, subject to the operator's acceptance of specific provisions and stipulations; or

(3) Notify the operator of any modification of the plan of operations which is necessary before such plan will be approved or of additional information needed to effectively analyze the effects that the operations will have on the preservation, management and use of the unit, and to make a decision regarding approval or disapproval of the plan of operations and the amount of the performance bond to be posted; or

(4) Notify the operator that the plan of operations is being reviewed, but that more time, not to exceed an additional thirty days, is necessary to complete such review, and setting forth the reasons why additional time is required. Provided, however, That days during which the area of operations is inaccessible for such reasons as inclement weather, natural catastrophe acts of God, etc., for inspection shall not be included when computing either this time period, or that in subsection (b) above; or

(5) Notify the operator that the plan of operations has been reviewed, but cannot be considered for approval until forty-five (45) days after a final environmental statement has been prepared and filed with the Environmental Protection Agency; or

(6) Notify the operator that the plan of operations is being reviewed, but that more time to provide opportunities for public participation in the plan of operations review and to provide sufficient time to analyze public comments received is necessary. Within thirty (30) days after closure of the public comment period specified by the Regional Director, he shall comply with § 9.37(b) (1) through (5).

(c) The Regional Director shall act as expeditiously as possible upon a proposed plan of operations consistent with the nature and scope of the operations proposed. Failure to act within the time limits specified in this section shall constitute a rejection of the plan of operations from which the operator shall have a right to appeal under § 9.49.

(d) The Regional Director's analysis shall include:

(1) An examination of all information submitted by the operator;

(2) An evaluation of measures and timing required to comply with reclamation requirements;

(3) An evaluation of necessary conditions and amount of the bond or security deposit (See § 9.48);

(4) An evaluation of the need for any additional requirements in the plan;

(5) A determination regarding the impact of this operation and cumulative impacts of all proposed and existing operations on the management of the unit; and

(6) A determination whether implementation by the operator of an approved plan of operations would be a major Federal action significantly affecting the quality of the human environment or would be sufficiently controversial to warrant preparation of an environmental statement pursuant to section 102(2)(c) of the National Environmental Policy Act of 1969.

(e) Prior to approval of a plan of operations, the Regional Director shall determine whether any properties included in, or eligible for inclusion in the National Register of Historic Places or National Registry of Natural Landmarks may be affected by the proposed operations. This determination will require the acquisition of adequate information, such as that resulting from field surveys, in order to properly determine the presence and significance of cultural resources within the areas to be affected by operations. Whenever National Register properties or properties eligible for inclusion in the National Register would be affected by operations, the Regional Director shall comply with Section 106 of the Historic Preservations Act of 1966 as implemented by 36 C.F.R. Part 800.

(f) Approval of each plan of operations is expressly conditioned upon the Superintendent having such reasonable access to the site as is necessary to properly monitor and insure compliance with the plan of operations.

[43 FR 57825, Dec. 8, 1978; 44 FR 37914, June 29, 1979]

§ 9.38 Temporary approval.

(a) The Regional Director may approve on a temporary basis:

(1) Access on, across or through federally-owned or controlled lands or waters for the purpose of collecting basic information necessary to enable timely compliance with these regulations. Such temporary approval shall be for a period not in excess of sixty (60) days.

(2) The continuance of existing operations, if their suspension would result in an unreasonable economic burden or injury to the operator; provided that such operations must be conducted in accordance with all applicable laws, and in a manner prescribed by the Regional Director designed to minimize or prevent significant environmental damage; and provided that within sixty (60) days of the granting of such temporary approval the operator either:

(i) Submits an initial substantially complete plan of operations; or

(ii) If a proposed plan of operations has been submitted, responds to any outstanding requests for additional information.

(b) The Regional Director may approve new operations on a temporary basis only when:

(1) The Regional Director finds that the operations will not cause significant environmental damage or result in significant new or additional surface disturbance to the unit; and either

(2) The operator can demonstrate a compelling reason for the failure to have had timely approval of a proposed plan of operations; or

(3) The operator can demonstrate that failure to grant such approval will result in an unreasonable economic burden or injury to the operator.

[43 FR 57825, Dec. 8, 1978, as amended at 44 FR 37914, June 29, 1979]

§ 9.39 Reclamation requirements.

(a) Within the time specified by the reclamation provisions of the plan of operations, which shall be as soon as possible after completion of approved operations and shall not be later than six (6) months thereafter unless a longer period of time is authorized in writing by the Regional Director, each operator shall initiate reclamation as follows:

(1) Where the Federal government does not own the surface estate. the operator shall at a minimum:

(i) Remove or neutralize any contaminating substances; and

(ii) Rehabilitate the area of operations to a condition which would not constitute a nuisance or would not adversely affect, injure, or damage federally-owned lands or waters, including removal of above ground structures and equipment used for operations, except that such structures and equipment may remain where they are to be used for continuing operations which are the subject of another approved plan of operations or of a plan which has been submitted for approval.

(2) On any site where the surface estate is owned or controlled by the Federal government, each operator must take steps to restore natural conditions and processes. These steps shall include but are not limited to:

(i) Removing all above ground structures, equipment and roads used for operations, except that such structures, equipment and roads may remain where they are to be used for continuing operations which are the subject of another approved plan of operations or of a plan which has been submitted for approval, or unless otherwise authorized by the Regional Director consistent with the unit purpose and management objectives;

(ii) Removing all other man-made debris resulting from operations;

(iii) Removing or neutralizing any contaminating substances;

(iv) Plugging and capping all nonproductive wells and filling dump holes, ditches, reserve pits and other excavations;

(v) Grading to reasonably conform the contour of the area of operations to a contour similar to that which existed prior to the initiation of operations, where such grading will not jeopardize reclamation;

(vi) Replacing the natural topsoil necessary for vegetative restoration; and

(vii) Reestablishing native vegetative communities.

(b) Reclamation under paragraph (a)(2) of this section is unacceptable unless it provides for the safe movement of native wildlife, the reestablishment of native vegetative communities, the normal flow of surface and reasonable flow of subsurface waters, and the return of the area to a condition which does not jeopardize visitor safety or public use of the unit.

§ 9.40 Supplementation or revision of plan of operations.

(a) A proposal to supplement or revise an approved plan of operations may be made by either the operator or the Regional Director to adjust the plan to changed conditions or to address conditions not previously contemplated by notifying the appropriate party in writing of the proposed alteration and the justification therefore.

(b) Any proposed supplementation or revision of a plan of operations initiated under paragraph (a) of this section by either party shall be reviewed and acted on by the Regional Director in accordance with § 9.37. If failure to implement proposed changes would not pose an immediate threat of significant injury to federally-owned or controlled lands or waters, the operator will be notified in writing sixty (60) days prior to the date such changes become effective, during which time the operator may submit comments on proposed changes. If failure to implement proposed changes would pose immediate threat of significant injury to federally-owned or controlled lands or waters, the provisions of § 9.33(c) apply.

§ 9.41 Operating Standards.

The following standards shall apply to operations within a unit:

(a) Surface operations shall at no time be conducted within 500 feet of the banks of perennial, intermittent or ephemeral watercourses; or within 500 feet of the high pool shoreline of natural or man-made impoundments; or within 500 feet of the mean high tide line; or within 500 feet of any structure or facility (excluding roads) used for unit interpretation, public recreation or for administration of the unit unless specifically authorized by an approved plan of operations.

(b) The operator shall protect all survey monuments, witness corners, reference monuments and bearing trees against destruction, obliteration, or damage from operations and shall be responsible for the reestablishment, restoration, or referencing of any monuments, corners and bearing trees which are destroyed, obliterated, or damaged by such operations.

(c) Whenever drilling or producing operations are suspended for 24 hours or more, but less than 30 days, the wells shall be shut in by closing wellhead valves or blowout prevention equipment. When producing operations are suspended for 30 days or more, a suitable plug or other fittings acceptable to the Superintendent shall be used to close the wells.

(d) The operator shall mark each and every operating derrick or well in a conspicuous place with his name or the name of the owner, and the number and location of the well, and shall take all necessary means and precautions to preserve these markings.

(e) Around existing or future installations, *e.g.*, well, storage tanks, all high pressure facilities, fences shall be built for protection of unit visitors and wildlife, and protection of said facilities unless otherwise authorized by the Superintendent. Fences erected for protection of unit visitors and wildlife shall be of a design and material acceptable to the Superintendent, and where appropriate,

shall have at least one gate which is of sufficient width to allow access by fire trucks. Hazards within visitor use areas will be clearly marked with warning signs acceptable to the Superintendent.

(f) The operator shall carry on all operations and maintain the site at all times in a safe and workmanlike manner, having due regard for the preservation of the environment of the unit. The operator shall take reasonable steps to prevent and shall remove accumulations of oil or other materials deemed to be fire hazards from the vicinity of well locations and lease tanks, and shall remove from the property or store in an orderly manner all scrap or other materials not in use.

(g) Operators will be held fully accountable for their contractor's or subcontractor's compliance with the requirements of the approved plan of operations.

[43 FR 57825, Dec. 8, 1978; 44 FR 37915, June 29, 1979]

§ 9.42 Well records and reports, plots and maps, samples, tests and surveys.

Any technical data gathered during the drilling of any well, including daily drilling reports and geological reports, which are submitted to the State pursuant to State regulations, or to any other bureau or agency of the Federal government shall be available for inspection by the Superintendent upon his request.

§ 9.43 Precautions necessary in areas where high pressures are likely to exist.

When drilling in "wildcat" territory, or in any field where high pressures are likely to exist, the operator shall take all necessary precautions for keeping the well under control at all times and shall install and maintain the proper high-pressure fittings and equipment to assure proper well control. Under such conditions the surface string must be cemented through its length, unless another procedure is authorized or prescribed by the Superintendent, and all strings of casing must be securely anchored.

§ 9.44 Open flows and control of "wild" wells.

The operator shall take all technologically feasible precautions to prevent any oil, gas, or water well from blowing open or becoming "wild," and shall take immediate steps and exercise due diligence to bring under control any "wild" well, or burning oil or gas well.

§ 9.45 Handling of wastes.

Oilfield brine, and all other waste and contaminating substances must be kept in the smallest practicable area, must be confined so as to prevent escape as a result of percolation, rain high water or other causes, and such wastes must be stored and disposed of or removed from the area as quickly as practicable in such a manner as to prevent contamination, pollution, damage or injury to the lands, water (surface and subsurface), facilities, cultural resources, wildlife, and vegetation of or visitors of the unit.

§ 9.46 Accidents and fires.

The operator shall take technologically feasible precautions to prevent accidents and fires, shall notify the Superintendent within 24 hours of all accidents involving serious personal injury or

death, or fires on the site, and shall submit a full written report thereon within ninety (90) days. This report supersedes the requirement outlined in 36 C.F.R. 2.17, but does not relieve persons from the responsibility of making any other accident reports which may be required under State or local laws.

§ 9.47 Cultural resource protection.

(a) Where the surface estate of the site is owned by the United States, the operator shall not, without written authorization of the Superintendent, injure, alter, destroy, or collect any site, structure, object, or other value of historical, archeological, or other cultural scientific importance in violation of the Antiquities Act (16 U.S.C. 431-433 (See 43 C.F.R. Part 3).

(b) Once approved operations have commenced, the operator shall immediately bring to the attention of the Superintendent any cultural or scientific resource encountered that might be altered or destroyed by his operation and shall leave such discovery intact until told to proceed by the Superintendent. The Superintendent will evaluate the discoveries brought to his attention, and will determine within ten (10) working days what action will be taken with respect to such discoveries.

§ 9.48 Performance bond.

(a) Prior to approval of a plan of operations, the operator shall be required to file a suitable performance bond with satisfactory surety, payable to the Secretary or his designee. The bond shall be conditioned upon faithful compliance with applicable regulations, and the plan of operations as approved, revised or supplemented. This performance bond is in addition to and not in lieu of any bond or security deposit required by other regulatory authorities.

(b) In lieu of a performance bond, an operator may elect to deposit with the Secretary or his designee, cash or negotiable bonds of the U.S. Government. The cash deposit or the market value of such securities shall be at least equal to the required sum of the bond. When bonds are to serve as security, there must be provided to the Secretary a power of attorney.

(c) In the event that an approved plan of operations is revised or supplemented in accordance with § 9.40, the Regional Director may adjust the amount of the bond or security deposit to conform to the modified plan of operations.

(d) The bond or security deposit shall be in an amount:

(1) Equal to the estimated cost of reclaiming the site, either in its entirety or in phases, that has been damaged or destroyed as a result of operations conducted in accordance with an approved, supplemented, plan of operations; plus

(2) An amount set by the Superintendent consistent with the type of operations proposed, to bond against the liability imposed by § 9.51(a); to provide the means for rapid and effective cleanup; and to minimize damages resulting from an oil spill, the escape of gas, wastes, contaminating substances, or fire caused by operations. This amount shall not exceed twenty-five thousand dollars ($25,000) for geophysical surveys when using more than one field party or five thousand dollars ($5,000) when operating with only one field party, and shall not exceed fifty thousand dollars ($50,000) for each wellsite or other operation.

(3) When an operator's total bond or security deposit with the National Park Service amounts to two hundred thousand dollars ($200,000) for activities conducted within a given unit, no further

bond requirements shall be collected for additional activities conducted within that unit, and the operator may substitute a blanket bond of two hundred thousand dollars ($200,000) for all operations conducted within the unit.

(e) The operator's and his surety's responsibility and liability under the bond or security deposit shall continue until such time as the Superintendent determines that successful reclamation of the area of operations has occurred and, where a well has been drilled, the well has been properly plugged and abandoned. If all efforts to secure the operator's compliance with pertinent provisions of the approved plan of operations are unsuccessful, the operator's surety company will be required to perform reclamation in accordance with the approved plan of operations.

(f) Within thirty (30) days after determining that all reclamation requirements of an approved plan of operations are completed, including proper abandonment of the well, the Regional Director shall notify the operator that the period of liability under the bond or security deposit has been terminated.

[43 FR 57825, Dec. 8, 1978; 44 FR 37915 June 29, 1979]

§ 9.49 Appeals.

(a) Any operator aggrieved by a decision of the Regional Director in connection with the regulations in this Subpart may file with the Regional Director a written statement setting forth in detail the respects in which the decision is contrary to, or is in conflict with the facts, the law, or these regulations, or is otherwise in error. No such appeal will be considered unless it is filed with the Regional Director within thirty (30) days after the date of notification to the operator of the action or decision complained of. Upon receipt of such written statement from the aggrieved operator, the Regional Director shall promptly review the action or decision and either reverse his original decision or prepare his own statement, explaining that decision and the reasons therefor, and forward the statement and record on appeal to the Director for review and decision. Copies of the Regional Director's statement shall be furnished to the aggrieved operator, who shall have thirty (30) days within which to file exceptions to the Regional Director's decision. The Department has the discretion to initiate a hearing before the Office of Hearing and Appeals in a particular case (See 43 C.F.R. 4.700).

(b) The official files of the National Park Service on the proposed plan of operations and any testimony and documents submitted by the parties on which the decision of the Regional Director was based shall constitute the record on appeal. The Regional Director shall maintain the record under separate cover and shall certify that it was the record on which his decision was based at the time it was forwarded to the Director of the National Park Service. The National Park Service shall make the record available to the operator upon request.

(c) If the Director considers the record inadequate to support the decision on appeal, he may provide for the production of such additional evidence or information as may be appropriate, or may remand the case to the Regional Director, with appropriate instructions for further action.

(d) On or before the expiration of forty-five (45) days after his receipt of the exceptions to the Regional Director's decision, the Director shall make his decision in writing: provided however, that if more than forty-five (45) days are required for a decision after the exceptions are received, the Director shall notify the parties to the appeal and specify the reason(s) for delay. The decision of the Director shall include: (1) A statement of facts; (2) conclusions; and (3) reasons upon which the

conclusions are based. The decision of the Director shall be the final administrative action of the agency on a proposed plan of operations.

(e) A decision of the Regional Director from which an appeal is taken shall not be automatically stayed by the filing of a statement of appeal. A request for a stay may accompany the statement of appeal or may be directed to the Director. The Director shall promptly rule on requests for stays. A decision of the Director on request for a stay shall constitute a final administrative decision.

(f) Where, under this Subpart, the Superintendent has the authority to make the original decision, appeals may be taken in the manner provided by this section, as if the decision had been made by the Regional Director, except that the original statement of appeal shall be filed with the Superintendent, and if he decides not to reverse his original decision, the Regional Director shall have, except as noted below, the final review authority. The only decision of a Regional Director under this paragraph which shall be appealable by the Director is an appeal from a suspension under § 9.51(b). Such an appeal shall follow the procedure of paragraphs (a)-(3) of this section.

[43 FR 57825, Dec. 8, 1978; 44 FR 37915, June 29, 1979]

§ 9.50 Use of roads by commercial vehicles.

(a) After January 8, 1978, no commercial vehicle shall use roads administered by the National Park Service without being registered with the Superintendent. Roads must be used in accordance with procedures outlined in an approved plan of operations.

(1) A fee shall be charged for such registration and use based upon a posted fee schedule. The fee schedule posted shall be subject to change upon sixty (60) days of notice.
(2) An adjustment of the fee may be made at the discretion of the Superintendent where a cooperative maintenance agreement is entered into with the operator.

(b) No commercial vehicle which exceeds roadway load limits specified by the Superintendent shall be used on roads administered by the National Park Service unless authorized in writing by the Superintendent, or unless authorized by an approved plan of operations.

(c) Should a commercial vehicle used in operations cause damage to roads, resources or other facilities of the National Park Service, the operator shall be liable for all damages so caused.

§ 9.51 Damages and penalties.

(a) The operator shall be held liable for any damages to federally-owned or controlled lands, waters, or resources resulting from his failure to comply with either his plan of operations, or where operations are continued pursuant to § 9.33, failure to comply with the applicable permit or, where operations are temporarily approved under § 9.38, failure to comply with the terms of that approval.

(b) The operator agrees, as a condition for receiving an approved plan of operations, that he will hold harmless the United States and its employees from any damages or claims for injury or death of persons and damage or loss of property by any person or persons arising out of any acts or omissions by the operator, his agents, employees or subcontractors done in the course of operations.

(c) Undertaking any operations within the boundaries of any unit in violation of this Subpart shall be deemed a trespass against the United States and shall be cause for revocation of approval of the plan of operations.

(1) When a violation by an operator under an approved plan of operations is discovered, and if it does not pose an immediate threat of significant injury to federally-owned or controlled lands or waters, the operator will be notified in writing by the Superintendent and will be given ten (10) days to correct the violation; if the violation is not corrected within ten (10) days approval of the plan of operations will be suspended until such time as the violation is corrected.

(2) If the violation poses an immediate threat of significant injury to federally-owned or controlled lands or waters, approval of the plan of operations will be immediately suspended until such time as the violation is corrected. The operator will be notified in writing within five (5) days of any suspension and shall have the right to appeal that decision under § 9.48.

(3) Failure to correct any violation or damage to federally owned or controlled lands, waters or resources caused by such violations will result in revocation of plan of operations approval.

[43 FR 57825, Dec. 8, 1978; 44 FR 37915, June 29, 1979]

§ 9.52 Public inspection of documents.

(a) When a Superintendent receives a request for permission for access on, across or through federally-owned or controlled lands or waters for the purpose of conducting operations, the Superintendent shall publish a notice of this request in a newspaper of general circulation in the county(s) in which the lands are situated, or in such publications as deemed appropriate by the Superintendent.

(b) Upon receipt of the plan of operations in accordance with § 9.35(c), the Superintendent shall publish a notice in the FEDERAL REGISTER advising the availability of the plan for public review and comment. Written comments received within thirty (30) days will become a part of the official record. As a result of comments received or if otherwise deemed appropriate by the Superintendent, he may provide additional opportunity for public participation to review the plan of operations.

(c) Any document required to be submitted pursuant to the regulations in this Subpart shall be made available for public inspection at the office of the Superintendent during normal business hours, unless otherwise available pursuant to § 9.51(b). This does not include those records only made available for the Superintendent's inspection under § 9.41 of this Subpart or those records determined by the Superintendent to contain proprietary or confidential information. The availability of such records for inspection shall be governed by the rules and regulations found at 43 C.F.R. Part 2.

[43 FR 57825, Dec. 8, 1978; 44 FR 37915, June 29, 1979]

APPENDIX B

FEDERAL LAWS, REGULATIONS, EXECUTIVE ORDERS, POLICIES, AND GUIDELINES THAT APPLY TO NONFEDERAL OIL AND GAS OPERATIONS

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This appendix includes the following sections:

1. **Part A** - description of the federal laws, executive orders, and NPS polices that may be applicable to persons that want to conduct nonfederal oil and gas operations in units of the National Park System.

   The first four laws pertain specifically to the National Park Service. They are followed by:

   - Other federal laws and regulations,
   - Executive Orders, and
   - NPS policies, guidelines, and procedures.

   Part A is intended to acquaint the reader with many of the legal and policy requirements that apply to nonfederal oil and gas operations in units of the National Park System. These descriptions are not meant as legal interpretations and cannot be relied upon to create any rights, substantive or procedural, enforceable by any party in litigation with the United States. Congress may change statutes and agencies may update their regulations and policies. During project planning, operators are responsible for ensuring they have current and complete information on legal and policy requirements for nonfederal oil and gas operations on NPS lands.
2. **Part B** - overview of the compliance processes for the National Environmental Policy Act, and for the protection of cultural resources, threatened and endangered species, wetlands, floodplains, and coastal zones. This section also includes operating requirements (stipulations) to protect each of these resources and a flowchart illustrating the process taken by the NPS (and operator) to comply with these requirements.
3. **Part C** - a list of the federal, state and local permits that may be required for nonfederal oil and gas operations.
4. **Part D** – the applicability of solid waste disposal regulations to nonfederal oil and gas operations.

[20] The following persons have contributed to this appendix: Lisa Norby, Petroleum Geologist, NPS; Pat O'Dell, Petroleum Engineer, NPS; Edward Kassman, regulatory specialist, NPS; Madoline Wallace, environmental protection specialist, former NPS employee; Sandy Hamilton, environmental protection specialist, NPS; and Michael Graetz, law student, NPS.

PART A - FEDERAL LAWS, EXECUTIVE ORDERS, AND NPS POLICES THAT MAY BE APPLICABLE TO NONFEDERAL OIL AND GAS OPERATIONS IN NPS UNITS

Table B.1, summarizes many, but not all, of the legal and policy mandates governing the exercise of nonfederal oil and gas operations in national park units. These include statutes, regulations, executive orders and policies. This appendix contains summary descriptions of many of the Current Legal and Policy Requirements listed in the following table.

Table B.1. Legal and Policy Mandates Pertaining to Nonfederal Oil and Gas Operations

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
National Park Service Statutes and Applicable Regulations	
NPS Organic Act of 1916, as amended, 16 U.S.C. §§ 1 *et seq.*	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, and visual resources
National Park System General Authorities Act, 16 U.S.C. §§ 1a-1 *et seq.*	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, and visual resources
National Park Service Omnibus Management Act of 1998, 16 U.S.C. §§ 5901 *et seq.*	Any living or non-living resource
NPS Nonfederal Oil and Gas Rights regulations – 36 C.F.R. Part 9, Subpart B	All, *e.g.*, air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, T&E species, visitor use and experience
Park System Resource Protection Act, 16 U.S.C. § 19jj	Any living or non-living resource that is located within the boundaries of a unit of the National Park System, except for resources owned by a nonfederal entity
NPS Enabling Statutes that Reference Nonfederal Oil and Gas	
Enabling Act for Big Cypress National Preserve, 16 U.S.C. §§ 698f – 698m-4	Natural, scenic, hydrologic, floral and faunal resources; recreational values
Enabling Act for Big South Fork National River and Recreation Area (Water Resources Act of 1974) 16 U.S.C. § 460ee	Hydrologic, fish and wildlife, cultural, historic, archeologic, and geologic resources; scenic and recreational values
Enabling Act for Big Thicket National Preserve, 16 U.S.C. §§ 698 – 698e	Natural, scenic, and recreational resources and values; and ecologic values
Enabling Act for Jean Lafitte National Historic Park, 16 U.S.C. §§ 230 – 230i	Natural, cultural, scenic, historic resources
Enabling Act for New River Gorge National River, 16 U.S.C. §§ 460m-15 – 460m-30	Natural, scenic and historic resources, values and objects; recreational values
Enabling Act for Obed Wild and Scenic River, 16 U.S.C. § 1274(15)	Hydrologic, geologic, fish and wildlife, historic, and cultural resources; recreational and scenic values; primitive character
Enabling Act for Padre Island National Seashore , 16 U.S.C. §§ 459d – 459d-7	Seashore, recreational values
Enabling Act for Tallgrass Prairie National Preserve , 16 U.S.C. §§ 698u – 698u-7	Ecologic, natural, and wildlife resources; scenic and historic values
Other Applicable Federal Laws and Regulations	
American Indian Religious Freedom Act , as amended, 42 U.S.C. §§ 1996 – 1996a; 43 C.F.R. Part 7	Cultural and historic resources

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
Antiquities Act of 1906, 16 U.S.C. §§ 431-433; 43 C.F.R. Part 3	Cultural, historic, archeological, paleontological resources
Archeological Resources Protection Act of 1979, 16 U.S.C. §§ 470aa – 470mm; 18 C.F.R. Part 1312; 36 C.F.R. Part 296; 43 C.F.R. Part 7	Archeological resources
Clean Air Act, as amended, 42 U.S.C. §§ 7401-7671q; 40 C.F.R. Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 C.F.R. Part 23	Air resources
Coastal Zone Management Act of 1972, 16 U.S.C. § 1451 *et seq*., 15 C.F.R. Parts 923, 930, 933	Coastal waters and adjacent shoreline areas
Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601-9675; 40 C.F.R. Parts 279, 300, 302, 307, 355, and 373	Human health and welfare and the environment
Endangered Species Act of 1973, as amended, 16 U.S.C. §§ 1531-1544; 36 C.F.R. Part 13; 50 C.F.R. Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450	Plant and animal species or subspecies and their habitat, which have been listed as threatened or endangered by the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS).
Farmland Protection Policy Act, 7 U.S.C. §§ 4201-4209, 7 C.F.R. Part 658	Prime and unique farmland and soils
Federal Insecticide, Fungicide, and Rodenticide Act, as amended (commonly referred to as Federal Environmental Pesticide Control Act of 1972), 7 U.S.C. §§ 136 *et. seq.;* 40 C.F.R. Parts 152-180, except Part 157	Human health and safety and the environment
Federal Land Policy and Management Act of 1976, 43 U.S.C. §§ 1701 *et seq.;* 43 C.F.R. Part 2200 for land exchanges and 43 C.F.R. Parts 1700-9000 for all other BLM activities	Federal lands and resources administered by the Bureau of Land Management
Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. §§ 1251 *et seq.;* 33 C.F.R. Parts 320-330; 40 C.F.R. Parts 110, 112, 116, 117, 122, and 230-232	Water resources, wetlands, and waters of the U.S.
Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661 – 666c	Water resources, fish and wildlife
Historic Sites, Buildings, and Antiquities Act (Historic Sites Act of 1935), 16 U.S.C. §§ 461-467; 18 C.F.R. Part 6; 36 C.F.R. Parts 1, 62, 63, and 65	Historic sites, buildings and objects
Lacey Act, as amended, 16 U.S.C. §§ 3371 *et seq.;* 15 C.F.R. § 904; 50 C.F.R. Parts 10, 11, 12, 14, and 300	Fish and wildlife, vegetation
Migratory Bird Treaty Act, as amended, 16 U.S.C. §§ 703-712; 50 C.F.R. Parts 10, 12, 20, and 21	Migratory birds
National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321 *et seq.;* 40 C.F.R. Parts 1500-1508	Human environment (cultural and historic resources, natural resources, biodiversity, human health and safety, socioeconomic environment, visitor use and experience)
National Historic Preservation Act of 1966, as amended, 16 U.S.C. §§ 470 et seq.; 36 C.F.R. Parts 18, 60, 63, 78, 79, 800	Cultural and historic properties listed in or determined to be eligible for listing in the National Register of Historic Places
Native American Graves Protection and Repatriation Act, 25 U.S.C. §§ 3001-3013; 43 C.F.R. Part 10	Native American human remains, funerary objects, sacred objects, objects of cultural patrimony
Noise Control Act of 1972, 42 U.S.C. §§ 4901-4918; 40 C.F.R. Part 211	Human health and welfare
Oil Pollution Act, 33 U.S.C. §§ 2701-2762; 15 C.F.R. Part 990; 30 C.F.R. Part 253; 33 C.F.R. Parts 135 and 150; 40 C.F.R. Part 112	Water resources, natural resources
Pipeline Safety Act of 1992, 49 U.S.C. §§ 60101 *et seq*.; 49 C.F.R. Parts 190-199	Human health and safety, the environment

APPENDIX B – LEGAL AND POLICY REQUIREMENTS

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 *et. seq*.; 40 C.F.R. Parts 240-282; 49 C.F.R. Parts 171-179	Natural resources, human health and safety
Rivers and Harbors Act of 1899, as amended, 33 U.S.C. §§ 401 *et. seq*.; 33 C.F.R. Parts 114, 115, 116, 320-325, and 333	Shorelines and navigable waterways, tidal waters, wetlands
Safe Drinking Water Act of 1974, 42 U.S.C. §§ 300f *et seq*.; 40 C.F.R. Parts 141-148	Human health, water resources
Wild and Scenic Rivers Act of 1968, 16 U.S.C. §§1271 *et seq*.; 36 C.F.R. Part 297	Water resources, recreational values, geologic resources, fish and wildlife, historic, cultural and other similar values
Executive Orders	
Executive Order No. 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971), 3 C.F.R. 1971 Comp., 36 C.F.R. §§ 60, 61, 63, 800	Cultural resources
Executive Order No. 11644 – Use of Off-Road Vehicles on the Public Lands, 37 Fed Reg. 2877 (1972) reprinted in 42 U.S.C. § 4321, as amended by Executive Order No. 11989 (1977), 42 Fed. Reg. 26959; Executive Order No. 12608 (1987), § 21, 52 Fed. Reg. 34617	Natural and cultural resources, aesthetic and scenic values
Executive Order No. 11988 – Floodplain Management, 42 Fed. Reg. 26951 (1977), 3 C.F.R. 121 Comp., as amended by Executive Order No. 12148 (1979), 44 Fed. Reg. 43239, 3 C.F.R. 1979 Comp., p. 412	Floodplains, human health, safety, and welfare
Executive Order No. 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977), 3 C.F.R. 121	Wetlands
Executive Order No. 12088 – Federal Compliance with Pollution Control Standards, 43 Fed. Reg. 47707 (1978); as amended by Executive Order No. 12580 – Superfund Implementation, 52 Fed. Reg. 2923 (1987)	Natural resources, human health and safety
Executive Order No. 12630 – Governmental Actions and Interference with Constitutionally Protected Property Rights, 53 Fed. Reg. 8859 (1988)	Private property rights, public funds
Executive Order No. 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, amended by Executive Order No. 12948, 60 Fed. Reg. 6379 (1995)	Human health and safety
Executive Order No. 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)	Native Americans' sacred sites
Executive Order No. 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999), as amended by Executive Order 13286, 68 Fed. Reg. 10619 (2003)	Vegetation and wildlife
Executive Order No. 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)	Migratory birds
Executive Order No. 13212 – Actions to Expedite Energy-Related Projects, 66 Fed. Reg. 28357 (2001), as amended by Executive Order No. 13302, 68 Fed. Reg. 27429 (2003)	Production, transmission, conservation of energy
Executive Order No. 13352 – Facilitation of Cooperative Conservation, 69 Fed. Reg. 52989 (2004)	Natural resources, property rights, public health and safety
Federal Policies, Guidelines and Procedures	
NPS Management Policies (2006)	All resources including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, visual resources
Dept. of the Interior, Departmental Manual, 516 DM 1 - 15 –NEPA policies (2005)	All resources including cultural resources, historic resources, natural resources, human health and safety

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
Dept. of the Interior, Departmental Manual, 517 DM 1 - Pesticides (1981)	Human health and safety, the environment
Dept. of the Interior, Departmental Manual, 519 DM 1 - 2 – Protection of the Cultural Environment (1994)	Archeological, prehistoric resources, historic resources, Native American human remains, cultural objects
Department of the Interior, Departmental Manual, 520 DM 1 – Protection of the Natural Environment - Floodplain Management and Wetlands Protection Procedures (2001)	Floodplains and wetlands
Dept. of the Interior, Onshore Oil and Gas Order Number 2, Section III, Drilling Abandonment Requirements, 53 Fed. Reg. 46,810 - 46,811 (1988)	Human health and safety
NPS Director's Order 12 and Handbook – Conservation Planning, Environmental Impact Analysis, and Decision Making (2001)	All resources including natural resources, cultural resources, human health and safety, socioeconomic environment, visitor use
NPS Director's Order 28 – Cultural Resource Management (1998)	Cultural, historic, and ethnographic resources
NPS Director's Order 28A – Archeology (2004)	Archeological resources
NPS Director's Order 47 – Sound Preservation and Noise Management (2000)	Natural soundscapes
NPS Director's Order and Reference Manual 53 – Special Park Uses (2005)	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, visual resources.
RM 77 – Natural Resources Management (2004)	Natural resources
NPS Director's Order and Procedural Manual 77-1 – Wetland Protection (2002)	Wetlands
NPS Director's Order and Procedural Manual 77-2 – Floodplain Management (2003)	Floodplains
Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation," 48 Fed. Reg. 44716 (1983), also published as Appendix C of NPS Director's Order 28 – Cultural Resource Management	Cultural and historic resources
Government-to-Government Relations with Native American Tribal Governments, Presidential Memorandum (April 29, 1994)	Native Americans – Tribal rights and interests

NATIONAL PARK SERVICE LAWS

NATIONAL PARK SERVICE ORGANIC ACT OF 1916, as amended, 16 U.S.C. §§ 1 et seq.

Resources afforded protection: all resources including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, visual resources
Applicable regulation(s): 36 C.F.R. Parts 1-10, 12-14, 20, 21, 25, 28, 30, 34, and 51

Through this Act, Congress established the National Park Service and mandated that it "shall promote and regulate the use of federal areas known as national parks, monuments…by such means and measures as conform to the fundamental purpose of said parks, monuments…which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

Section 3 of the Organic Act provides the Secretary of the Interior with the authority to adopt rules and regulations to govern the use and the management of park units. Through this provision of the Organic Act, the NPS promulgated regulations governing the exercise of nonfederal oil and gas rights at 36 C.F.R. Part 9, Subpart B. These regulations control all activities during the exercise of rights to oil and gas not owned by the United States where access is on, across or through federally owned or controlled lands or waters within any NPS unit. The NPS does not intend the regulations to result in the taking of a property interest, but rather to impose reasonable regulations on activities that involve and affect federally owned lands. These regulations are written to ensure that operators conduct oil and gas activities in a manner consistent with the purposes for which Congress created the NPS unit. Likewise, the regulations prevent or minimize damage to the environment and other resource values and insure that all NPS units remain unimpaired for the enjoyment of future generations.

The courts have consistently interpreted the Organic Act and its amendments to elevate resource conservation above visitor recreation. Michigan United Conservation Clubs v. Lujan, 949 F.2d 202, 206 (6th Cir. 1991) states, "Congress placed specific emphasis on conservation." National Rifle Association of America v. Potter, 628 F. Supp. 903, 909 (D.D.C. 1986) states, "In the Organic Act Congress speaks of but a single purpose, namely, conservation." The NPS Management Policies (NPS 2006) also recognize that resource conservation takes precedence over visitor recreation. The policy dictates, "when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant."

Because conservation remains predominant, the NPS seeks to avoid or minimize adverse impacts on park resources and values; however, the NPS has the discretion to allow impacts when necessary to fulfill park purposes (NPS 2006, §§ 1.4.3, 1.4.3.1). While some actions and activities cause impacts, the NPS cannot allow an adverse impact that constitutes resource impairment (NPS 2006, § 1.4.3). The Organic Act prohibits actions that impair park resources unless a law directly and specifically allows for the acts (16 U.S.C. § 1a-1). An action constitutes an impairment when its impacts "harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values" (NPS 2006, § 1.4.5). An impact on any park resource or value may constitute an impairment,

but an impact would be more likely to constitute an impairment to the extent that it has a major adverse effect on a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance. (NPS 2006 § 1.4.5)

To determine impairment, the NPS must evaluate "the particular resources and values that would be affected, the severity, duration, and timing of the impact, the direct and indirect effects of the impact, and the cumulative effects of the impact in question and other impacts" (NPS 2006, § 1.4.5).

NATIONAL PARK SYSTEM GENERAL AUTHORITIES ACT, 16 U.S.C. §§ 1a-1 et seq.

Resources afforded protection: all resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, visual resources
Applicable regulation(s): 36 C.F.R. Parts 1-199

This act affirmed that while all national park system units remain "distinct in character," they are "united through their interrelated purposes and resources into one national park system as cumulative expressions of a single national heritage." The purpose of this act was "to include all such areas in the system and to clarify the authorities applicable to the system." The act made it clear that the NPS Organic Act and other protective mandates apply equally to all units of the system. Further, amendments stated that NPS management of park units should not "derogat[e] . . . the purposes and values for which these various areas have been established."

NATIONAL PARK SERVICE OMNIBUS MANAGEMENT ACT OF 1998, 16 U.S.C. §§ 5901 et seq.

Resources afforded protection: any living or non-living resource
Applicable regulation(s): none

This statute requires the Secretary of the Interior to continually improve the NPS's ability to provide management, protection and interpretation of National Park System resources. The statute directs the NPS to manage the units by employing high quality science and information; to inventory the system's resources to create baseline information so that NPS can monitor and analyze future data to determine trends in the resources' conditions; and to use the results of the scientific studies for park management. In the oil and gas context, this requires operators to support their plans of operations with scientific data. Further, it requires the operators to monitor their operations area to ensure that their operations do not adversely impact the park's resources.

PARK SYSTEM RESOURCE PROTECTION ACT, 16 U.S.C. § 19jj

Resources afforded protection: any living or non-living resource that is located within the boundaries of a unit of the National Park System, except for resources owned by a nonfederal entity
Applicable regulation(s): none

The Park System Resource Protection Act makes any person who destroys, causes the loss of, or injures any park system resource strictly liable to the United States for response costs and for damages resulting from such destruction, loss, or injury. A park system resource includes any living or non-living resource located within the boundaries of a NPS unit, except for resources owned by a non-federal entity. Because the statute imposes strict liability the only defenses arise when an act of god or war caused the damage, a third party who constituted neither an employee or nor an agent of the owner/operator caused solely the damage, or an activity authorized by federal or state law caused the damage.

The Park System Resources Protection Act authorizes the Secretary of the Interior to request the Department of Justice to file a civil action for the costs of replacing, restoring or acquiring the equivalent of a park system resource; the value of any use loss pending its restoration; replacement, or acquisition, the cost of damage assessments; and the cost of response including actions to prevent, to minimize, or to abate injury. Response costs include actions taken by the NPS "…to prevent or minimize destruction, loss of, or injury to park system resources; to abate or minimize the imminent risk of such destruction, loss or injury; or to monitor ongoing effects of incidents causing such destruction, loss or injury."

The Park System Resource Protection Act applies to nonfederal oil and gas activities in units of the National Park System. Operators need to make sure that they operate within the specifications of their approved 9B plan, comply with all other relevant legal requirements, and take precautions to avoid actions that may damage park system resources.

OTHER APPLICABLE FEDERAL LAWS AND REGULATIONS

AMERICAN INDIAN RELIGIOUS FREEDOM ACT, as amended, 42 U.S.C. §§ 1996 –1996a

Resources afforded protection: cultural and historic resources
Applicable regulation(s): 43 C.F.R. Part 7

This Act requires the federal government to protect and to preserve Native Americans', Eskimos', Aleuts', and Native Hawaiians' inherent right to believe, to express, and to exercise their traditional religions. It allows them to access, to use, and to possess sacred objects and gives them the freedom to worship through ceremonials and traditional rites. It further directs various federal departments, agencies, and other administrative bodies to evaluate their policies and procedures in consultation with native traditional religious leaders to determine changes necessary to protect and preserve Native American religious cultural rights and practices.

If the NPS anticipates a conflict between proposed oil and gas operations and tribal religious rights, it will consult with the tribe as part of the 9B plan approval process. To ensure compliance with this Act, the NPS will consult with tribes during the plan of operations approval process.

ANTIQUITIES ACT OF 1906, 16 U.S.C. §§ 431 – 433

Resources afforded protection: cultural, historic, archeological and paleontological resources
Applicable regulation(s): 43 C.F.R. Part 3

As the Archeological Resources Protection Act's forerunner, the Antiquities Act constituted the first general act providing protection for archeological resources. It protects all historic and prehistoric ruins or monuments on federal lands and prohibits their excavation, destruction, injury or appropriation without the departmental secretary's permission. It also authorizes the President of the United States' to proclaim as national monuments public lands having historic landmarks, historic and prehistoric structures, and other objects of historic or of scientific interest. The Antiquities Act also authorizes the President to reserve federal lands, to accept private lands, and to accept relinquishment of unperfected claims for that purpose.

The Act authorizes the departmental secretary to issue permits to qualified institutions to examine ruins, excavate archeological sites, and gather objects of antiquity. Regulations at 43 C.F.R. Part 3 establish procedures for permitting the excavation or collection of prehistoric and historic objects on federal lands. ARPA permits replace Antiquities Act permits.

Operators who excavate, injure, destroy or appropriate any "object of antiquity" while engaging in mineral activities on federal lands without or contrary to an approved plan of operations violate the Antiquities Act and trigger its penalties.

ARCHEOLOGICAL RESOURCES PROTECTION ACT OF 1979, 16 U.S.C. §§ 470aa –470mm

Resources afforded protection: archeological resources
Applicable regulation(s): 18 C.F.R. § 1312; 36 C.F.R. Part 79, 296; 43 C.F.R. Part 7

Congress enacted the Archeological Resources Protection Act (ARPA) to preserve and protect archeological resources and sites on federal and Indian lands. The law makes it illegal to excavate or to remove from federal or Indian lands any archeological resources without a permit from the federal land manager. It also prohibits the removal, sale, receipt, and interstate transport of archeological resources obtained illegally (*i.e.*, without permits) from federal or Indian lands.

Agencies may issue permits only to educational or to scientific institutions if the resulting activities will increase knowledge about archeological resources. The law defines archeological resources as material remains of past human life or activities that are of archeological interest and are at least 100 years old. All materials collected on federal lands as a result of permitted activities remain the property of the United States. Those excavated from Indian lands remain the property of the Indian or Indian tribe having rights of ownership over such resources.

Congress amended the law to require development of plans for surveying public lands for archeological resources and of systems for reporting incidents of suspected violations.

ARPA also fosters cooperation between governmental authorities, professionals, and the public. The ARPA permit process ensures that individuals and organizations wishing to work with federal resources have the necessary professional qualifications and that these persons follow federal standards and guidelines for research and curation. The process allows the State Historic Preservation Officer (SHPO) to review and comment on ARPA permit applications. Federal agencies do not issue ARPA permits to themselves or to their contractors. The scope of work and contractor's proposal, which constitute the contract, insures that contractors comply with federal standards and guidelines. The ARPA permit replaces the permit required by the Antiquities Act of 1906.

ARPA imposes severe criminal and civil penalties on anyone who excavates, removes, damages, or otherwise alters or defaces archeological resources without a permit. However, ARPA applies only to lands owned by the United States and lands held in trust by the United States for Indian tribes and individual Indians. ARPA does not apply on the nonfederal surface estate.

A contractor hired by an operator to conduct a cultural resource survey that involves any collection of archeological resources, whether or not excavation or subsurface testing is involved, must obtain an ARPA permit. Operations under an approved 9B plan do not need an ARPA permit for incidental disturbance of archeological resources because these operations occur exclusively for purposes other than excavation or removal of archeological resources. General earth-moving excavations performed under an approved plan of operations do not constitute "excavation or removal" of archeological resources. However, agencies require an ARPA permit before an operator under 36 C.F.R. Part 9B salvages previously unknown archeological resources discovered during operations.

ARPA regulations appear at 43 C.F.R. Part 7, Subparts A and B. Subpart A - "Protection of Archeological Resources, Uniform Regulations," promulgated pursuant to ARPA's section 10(a) jointly by the Secretaries of Interior, Agriculture, and Defense, and the Chairman of the Board of the Tennessee Valley Authority, establishes the uniform definitions, standards, and procedures that all federal land managers must follow when providing protection for archeological resources located on public and on Indian lands. Subpart B - "Department of the Interior Supplemental Regulations," provides definitions, standards, and procedures for federal land managers to protect archeological resources and provides further guidance for Interior bureaus concerning definitions, permitting procedures, and civil penalty hearings. In addition, NPS regulations at 36 C.F.R. § 9.47 discuss 9B plans and archeological resources.

Operators who remove, excavate, damage, alter, or deface archeological resources without or contrary to an approved plan of operations, while on federal property violate ARPA and trigger both its civil and criminal penalties.

CLEAN AIR ACT, as amended, 42 U.S.C. §§ 7401 – 7671q

Resources afforded protection: air resources
Applicable regulation(s): 40 C.F.R. Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; and 48 C.F.R. Part 23

The Clean Air Act (CAA) seeks to "protect and enhance" the quality of the nation's air resources; to promote the public health and welfare and the productive capacity of its population; to initiate and to accelerate a national research and development program to achieve the prevention and control of air pollution; to provide technical and financial assistance to state and local governments for aid in their development and execution of air pollution programs; and to encourage and to assist the development and the operation of regional air pollution control programs.

The Act requires the U.S. Environmental Protection Agency (EPA) to establish national primary standards to protect human health and more stringent national secondary standards to protect human welfare (National Ambient Air Quality Standards or NAAQS). The statute makes states and local governments responsible for the prevention or control of air pollution. NAAQS exist for sulfur dioxide, particulate matter, ozone, nitrogen dioxide, carbon monoxide, and lead.

Divided into air quality control regions, states must submit Implementation Plans for EPA approval. These plans provide strategies for the implementation, maintenance, and enforcement of national primary and secondary ambient air quality standards for each air quality control region.

Other provisions of the Act include: new source review permit programs, standards of performance for new stationary sources (NSPS), motor vehicle emission and fuel standards, national emission standards for hazardous air pollutants (NESHAPS), studies of particulate emissions from motor vehicles, studies of the cumulative effect of all substances and activities that may affect the stratosphere (especially ozone in the stratosphere), programs to Prevent Significant air quality Deterioration (PSD) in areas attaining the NAAQS, and programs to protect visibility in large national parks and wilderness areas.

All sources of air pollution, including publicly or privately owned facilities, must meet all federal, state, and local requirements under the CAA. In most cases, States and local authorities regulate air pollution control. For the National Park Service, the Prevention of Significant Deterioration of Air Quality (PSD) (42 U.S.C. §§ 7470-7475) and the Visibility Protection (42 U.S.C. § 7479) constitute the most important CAA sections.

The PSD provisions establish a classification system for the United States' clean air areas, which include those designated as Class I, Class II or Class III. National Park System units are designated as Class I or Class II areas. This classification indicates the additional increment of air quality degradation from particulate matter, sulfur dioxide ($S0_2$), nitrogen dioxide (NO_2), allowed in that area. Class I areas may only degrade by a very small increment of new pollution while Class III areas can degrade substantially. There are currently no Class III areas designated in the country.

As part of the Prevention of Significant Deterioration (PSD) program, Congress designated many National Parks and wilderness areas (including U.S. Fish and Wildlife Service and U.S. Forest Service wilderness areas) mandatory Class I areas. Because states may not

redesignate these areas, Congress provided those areas with maximum protection from future air quality degradation. EPA designated all other parts of the country where air quality did not violate the national ambient air quality standards Class II areas where moderate pollution increases may occur. States or Indian tribes may reclassify Class II areas as Class III, thus, allowing significant pollution increases. However, no entity can designate certain Class ll areas, such as national monuments and national recreation areas, as Class III but only Class II, or, at the option of the state, Class I.

Generally, the PSD rules apply only to major new or expanding facilities planning to locate or expand operations in clean air areas. An operator of a facility seeking a new source permit for location or for expansion in a clean air area must meet several requirements including National Ambient Air Quality Standards; PSD Classes I, II and III air pollution increments; and, a special "adverse impact determination" for Class I areas.

To protect the scenic value of visibility in National Parks and wilderness areas, Congress established a national visibility goal in section 169A of the CAA. Congress stated the agencies' goals as "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I federal areas which impairment results from manmade air pollution". Under current EPA regulations, the thirty-six states with mandatory Class I areas must assure reasonable progress toward the national visibility goal with respect to impairment reasonably attributed to major stationary sources of air pollution. EPA reviews new major stationary sources under permitting programs (*i.e.*, PSD and nonattainment area new source review) to assure visibility protection of Class I areas from potential future emissions.

These permitting programs also require that new major sources analyze visibility and other air quality impacts in the general area affected by the new source's emissions regardless of the classification of the area as Class I or Class II. If oil and gas development and operations result in major emissions of air pollutants as defined in PSD and nonattainment area permitting provisions, then such major emitting facilities would need to comply with these requirements as well as any other applicable, federal, state, and local air quality rules and regulations. EPA issued new regulations in July 1999 to address visibility impairment caused by regional haze, but implementation of this program will not occur for several more years.

The Clean Air Act Amendments of 1990 required EPA to promulgate rules to ensure that federal actions conform to appropriate nonattainment area SIPs. These rules prohibit federal agencies from taking any action that causes or contributes to any new violation of the NAAQS, increases the frequency or severity of an existing violation, or delays the timely attainment of a standard. The NPS will need to make a conformity determination for any oil and gas permitting decisions made under this management plan as it pertains to existing ozone nonattainment SIPs applicable in the area of the parks.

COASTAL ZONE MANAGEMENT ACT OF 1972, as amended, (16 U.S.C. § 1451 et seq.)

Resources afforded protection: coastal waters and adjacent shoreline areas, coastal uses and natural resources
Applicable regulation(s): 15 C.F.R. Parts 923, 930, 933

Congress enacted the Coastal Zone Management Act (CZMA) to preserve, protect, develop, and, where possible, restore or enhance the resources of the Nation's coastal zone. The purpose of the Act is to improve the nation's management of coastal resources, which have been irretrievably damaged or lost due to poorly planned development. Specific concerns were the loss of living marine resources and wildlife habitat, decreasing open space for public use, and shoreline erosion. Congress also recognized the need to resolve conflicts between various uses that were competing for coastal lands and waters (USDOC, NOAA, 1988a). The "coastal zone" means the coastal waters and the adjacent shorelands of the United States. It also includes coastal zones of the Great Lakes.

The CZMA establishes a state-federal partnership in which the states take the lead in managing their coastal resources by developing state CZM programs and plans, while the federal government provides financial and technical assistance. In section 309, the CZMA encourages each state, through a Coastal Zone Enhancement Grants Program, to improve continually its CZM program in one or more of eight identified national priority areas:

- coastal wetlands management and protection,
- natural hazards management (including potential sea and Great Lakes level rise),
- public access improvements,
- reduction in marine debris,
- assessment of cumulative and secondary impacts of coastal growth and development,
- special area management planning,
- ocean resource planning, and
- siting of coastal energy and government facilities.

Approved state CZM programs must provide a mechanism for public participation in permitting processes, consistency determinations and other similar decisions. They must also provide a mechanism to ensure that all state agencies will adhere to the program, and contain enforceable policies and mechanisms to implement the applicable requirements of the state's Coastal Nonpoint Pollution Control Program.

The CZMA requires federal agencies to act in a manner consistent with federally approved state management programs. Federal consistency under the CZMA means that federal actions that are reasonably likely to affect any land or water use or natural resource of the coastal zone must be consistent with the enforceable policies of a coastal state's or territory's federally approved coastal management program. In states that do not have a coastal zone management program approved by the Secretary of Commerce, the requirement for a consistency review and state concurrence does not apply.

The National Oceanic and Atmospheric Administration's (NOAA) coastal zone management program regulations (15 C.F.R. Part 923) require that the boundary of a state's coastal zone

must exclude federal lands. Units of the National Park System such as Big Thicket National Preserve are excluded from the boundaries of a state's coastal zone. However, the Coastal Zone Reauthorization Amendments in 1990 declared that all federal agency activities, whether located in or outside of the coastal zone, are subject to the consistency requirements of Section 307(c) of the CZMA if the activities affect natural resources, land uses, or water uses in the coastal zone. Additionally, the Texas Coastal Management Program/Final Environmental Impact Statement, prepared in 1996 by the NOAA's Office of Ocean and Coastal Resource Management and the State of Texas Coastal Coordination Council states that, "While activities on excluded federal lands are not required to comply with the TCMP goals and policies, an activity that has spillover effects on CNRAs is subject to the federal consistency requirement (Part II, 2-5)".

NPS Management Policies require that the NPS comply with the provisions of Executive Order 11988 (Floodplain Management) and state coastal zone management plans prepared under the Coastal Zone Management Act (NPS Management Policies, Chapter 4:8.1.1). Several NPS units have nonfederal oil and gas rights in the coastal zone. Jean Lafitte National Historical Park, Padre Island National Seashore, and a segment of the Beaumont Unit of Big Thicket National Preserve are examples of units that contain nonfederal oil and gas rights located in the coastal zone.

In the event that the NPS is considering issuing an access or surface use permit through the approval of a plan of operations, and the proposed nonfederal oil and gas operation may have a spillover effect on CNRAs, the NPS will consult with the Texas General Land Office for a consistency determination. In these cases, the Coastal Coordination Council must refer a consistency certification within 45 days of receipt by the Council Secretary of an administratively complete consistency certification, or the action is conclusively presumed to be consistent.

COMPREHNSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980, as amended, 42 U.S.C. §§ 9601 – 9675

Resources afforded protection: human health and welfare and the environment
Applicable regulation(s): 40 C.F.R. Parts 279, 300, 302, 307, 355, and 373

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as "Superfund," provides for cleanup of sites contaminated by hazardous substances in the United States. CERCLA defines "hazardous substance" as any substance: listed under the Resources Conservation and Recovery Act (42 U.S.C. § 6921) as hazardous waste or having the characteristics identified under that section; listed under the Clean Water Act (33 U.S.C. § 1321(b)(2)(a)) as a hazardous substance or (33 U.S.C. § 1317(a)) as a toxic pollutant; listed under the Clean Air Act (42 U.S.C. § 7412) as a hazardous air pollutant; listed under the Toxic Substances Control Act (15 U.S.C. § 2606) as an imminently hazardous chemical substance or mixture; or listed under CERCLA (42 U.S.C. § 9602) as a hazardous substance.

CERCLA explicitly excludes petroleum from the definition of hazardous substance, including crude oil or any fraction of petroleum that is not otherwise specifically listed or designated as a hazardous substance under statutory provisions listed above. It also excludes natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable as fuel from the definition of hazardous substances. (42 U.S.C. § 9601(14)).

Owners or operators of a facility that stored, treated, or disposed of hazardous substances must notify EPA of the location and of the type of waste at the site. EPA puts the most seriously contaminated sites on a National Priorities List (NPL) and updates it annually. Sites on the NPL are eligible for long-term clean up actions funded by the EPA administered Superfund program.

CERCLA also includes reporting requirements for spills or other releases of hazardous substances. CERCLA requires persons in charge of a vessel or facility to report releases (except federally permitted releases) of hazardous substances into the environment to the National Response Center. If releases constitute less than the reportable quantity established by EPA (40 C.F.R. § 302.4), then it does not have to be reported. Failure to report a reportable quantity release warrants a fine of up to $10,000 and imprisonment not to exceed one year (42 U.S.C. § 9603). "Release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, dumping or disposing into the environment. "Release" also includes the abandonment of barrels or containers that contain hazardous substances.

CERCLA directs the president to revise and to publish a National Contingency Plan (NCP) for the cleanup of petroleum and hazardous waste spills. EPA developed the original NCP under section 311 of the Clean Water Act. The NCP details how the EPA will respond to spills of oil or hazardous substances regulated under CERCLA and/or the Clean Water Act. EPA publishes the plan, called the National Oil and Hazardous Substances Pollution Contingency Plan, at 40 C.F.R. Part 300.

CERCLA authorizes the EPA to clean up sites using the Superfund, to issue administrative orders requiring potentially responsible parties (PRPs) to clean up sites, and to obtain court orders requiring PRPs to clean up sites. If EPA uses the Superfund, then CERCLA authorizes EPA to sue PRPs to recover costs of the cleanup. PRPs who have incurred costs cleaning up may sue other PRP's to recover part of the cost of the cleanup.

Under CERCLA, the EPA tries to find all PRPs, including the present owner or operator of a vessel or facility that released or threatened a release of hazardous substances, past owners or operators of a vessel or facility at the time of disposal of the hazardous substance; persons who arranged for disposal of the hazardous substance at the facility; and persons who transported a hazardous substance to the facility.

However, if the PRP can establish that the release or threatened release and the resulting damages occurred solely by an act of God, an act of war, or an unforeseen act or omission of a third party who neither constituted an agent nor an employee of the PRP, then no liability attaches. CERCLA provides an innocent landowner defense under limited circumstances.

Persons liable under CERCLA remain responsible for all response costs incurred by the United States, a state or an Indian tribe. They may also incur liability for damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing the injury, and for the destruction or loss of natural resources. Furthermore they may be responsible for costs of certain health assessments or studies.

CERCLA imposes strict liability meaning the government does not have to prove that the person intended to release, acted negligently in releasing, or caused the release of a hazardous substance into the environment. Moreover, in most cases, any of the liable parties may be held responsible for the entire cost of the cleanup. To recover part of the cleanup costs, the party then sues other liable parties for contribution.

Operators and their contractors should thoroughly investigate waste disposal sites before sending hazardous substances. They should check to make sure disposal sites have the relevant state and federal permits and that the disposal company has provided enough money to properly close the site. If a release occurs from the disposal site, then the persons who disposed of hazardous substances could incur large cleanup bills.

Operators should avoid releases of hazardous substances. Release of an operator's performance bond required under 36 C.F.R. § 9.48 does not affect possible subsequent liability under CERCLA for releases of a hazardous substance into the environment.

ENDANGERED SPECIES ACT OF 1973, as amended, 16 U.S.C. §§ 1531 – 1544

Resources afforded protection: plant and animal species or subspecies and their habitat, which have been listed as threatened or endangered by the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS). Distinct population segments of species of vertebrate fish or wildlife, which interbreed when mature, may also be listed as threatened or endangered, and are afforded protection.
Applicable regulation(s): 36 C.F.R. Part 13; and 50 C.F.R. Parts 10, 17, 23, 81, 217, 222, 225 402, and 450

The Endangered Species Act (ESA) requires federal agencies to ensure that their activities (authorized, funded, or carried out) will not jeopardize the continued existence of any listed threatened or endangered species or result in the destruction or adverse modification of critical habitat of such species. The FWS and NMFS administer the Act. The ESA makes it illegal to "take" an endangered species of fish or wildlife without a permit from the FWS or NMFS. "Taking" includes direct killing, hurting, trapping, or harassing. It also includes disrupting a habitat critical to the species' survival. Protective regulations issued at the time of listing for a threatened species of fish or wildlife may also prohibit or limit taking of the species without a permit.

Other federal agencies must formally consult with the FWS or NMFS when they believe that their own actions (including permitting) may affect a listed or a proposed threatened or endangered (T & E) species. The ESA prohibits agency actions occurring within the United States that jeopardize the continued existence of a T & E species and/or destroy or adversely affect designated critical habitat necessary for the species' survival.

When an operator submits a proposed plan of operations, the NPS and operators must comply with the requirements of the Endangered Species Act and the regulations FWS and NMFS have promulgated to implement it (50 C.F.R. Part 402). First, the NPS requests the FWS or NMFS to provide a list of proposed or listed species and proposed or designated critical habitat in the proposed operations area.

If the FWS or NMFS advises the NPS that listed or proposed T&E species may be present, then the NPS must prepare a biological assessment (BA). The BA evaluates the potential effects of the action on listed and proposed species and designated and proposed critical habitat. The BA will be concurrently released for public review and comment with the National Environmental Policy Act (NEPA) document (most likely an environmental assessment). The BA should include a list of listed and proposed threatened or endangered species occurring in the project

area; impacts the project could have on these species and their habitat; project measures intended to mitigate, or reduce adverse impacts to these species and their habitat; and a description of the formal and informal consultation with the FWS or NMFS.

If the BA indicates that the action will not adversely affect any remaining listed species or designated critical habitat and the FWS or NMFS concurs, then formal consultation is not required. Likewise, if the BA indicates that the action is not likely to jeopardize the continued existence of proposed species or result in the destruction or adverse modification of proposed critical habitat, and FWS or NMFS concurs, then a conference is not required.

However, if the BA indicates that the action will adversely affect a listed species or critical habitat, then the NPS must formally consult with the FWS or NMFS. At the end of the consultation, the FWS or NMFS provides the NPS and the applicant with its "biological opinion." If the opinion finds the proposed action will jeopardize the continued existence of the species or result in the destruction or adverse modification of designated critical habitat, then the FWS or NMFS must suggest reasonable and prudent alternatives to the proposed action. If the FWS or NMFS cannot develop any reasonable and prudent alternatives, then it will indicate that to the best of its knowledge there are no reasonable and prudent alternatives exist. The FWS or NMFS may also formulate conservation recommendations, which will help the NPS reduce or eliminate the impacts the proposed action may have on listed species or designated critical habitat. The NPS will comply with prescribed alternatives when approving the plan of operations or implementing any other related action.

The NPS cannot approve a plan of operations if the FWS or NMFS has found that, no matter how the proposed operation is modified, it will result in "jeopardy" to a listed species or "destruction or adverse modification to habitat" critical to a listed species. Jeopardizing a listed species or habitat critical to a listed species' survival constitutes a "significant injury to federal lands" in the meaning of 36 C.F.R. Part 9B. The 36 C.F.R. Part 9B regulations do not allow the NPS to approve proposed plan of operations that will result in a "significant injury to federal lands."

FARMLAND PROTECTION POLICY ACT, 7 U.S.C. §§ 4201, 4209

Resources afforded protection: prime and unique farmland and soils
Applicable regulation(s): 7 C.F.R. Part 658

Federal agencies must assess the effects of their actions on prime or unique farmland and land of statewide or local importance classified by the U.S. Department of Agriculture's Natural Resources Conservation Service. The FPPA does not authorize the Federal Government to regulate the use of private or nonfederal land or, in any way, affect the property rights of owners. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land. Prime farmland is land that has the physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops. Prime farmland includes land that possesses the above characteristics but is being used currently to produce livestock and timber. Unique farmland is land other than prime farmland

that is used for production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, fruits, and vegetables. Farmland that is of statewide or local importance for the production of food feed, fiber, forage, or oilseed crops, as determined by the appropriate state or unit of local government agency or agencies, and that the Secretary determines should be considered as farmland for the purposes of this subtitle.

FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT, as amended (commonly referred to as FEDERAL ENVIRONMENTAL PESTICIDE CONTROL ACT OF 1972), 7 U.S.C. §§ 136 *et. seq*.

Resources afforded protection: human health and safety, and the environment
Applicable regulation(s): 40 C.F.R. Parts 152-180, except Part 157

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, regulates pesticides in the United States. FIFRA prohibits the distribution or sale of unregistered pesticides and establishes procedures for registering pesticides with the EPA. EPA has the authority to suspend or to cancel registrations for pesticides, which cause unreasonable adverse effects on the environment. To gain registration approval, a pesticide must meet EPA criteria regarding efficacy, labeling, and environmental safety. The statute makes it illegal to use a pesticide in a manner inconsistent with its labeling. EPA determines whether it should classify pesticides for general or restricted use. People may only use pesticides classified for restricted use under the direct supervision of a certified applicator or subject to other restrictions imposed by regulation.

FIFRA also requires EPA to establish regulations for storage and disposal of pesticide containers, excess pesticides, and pesticides with canceled registration. The Act also outlines penalties, indemnities, and administrative procedures. In addition, EPA may exempt from any provision of the Act any federal or state agency, if it determines emergency conditions, requiring such exemption, exist.

The appropriate NPS pesticide specialist must review and approve use of pesticides, including herbicides and rodenticides, before anyone can use them in units of the National Park System, including those where nonfederal oil and gas operations occur. An NPS Integrated Pest Management Specialist must review and approve the proposed use of herbicides for clearing areas for oil and gas operations. The parks follow Department of the Interior Departmental Manual - 517; Reference Manual – 77, Natural Resources Management; and NPS Procedures for Pesticide Use Requests when considering proposals for pesticide use in NPS units.

FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976, 43 U.S.C. §§ 1701 et seq.

Resources afforded protection: federal lands and resources administered by the Bureau of Land Management
Applicable regulation(s): 43 C.F.R. Part 2200 for land exchanges and 43 C.F.R. Parts 1700-9000 for all other BLM activities

The Federal Land Policy and Management Act (FLPMA), also known as the “BLM Organic Act”, controls Bureau of Land Management’s (BLM) administration of more than three hundred million

acres of federal lands in the western United States and Alaska. FLPMA also contains a land exchange authority (43 U.S.C. § 1716) under which the Secretary of the Interior may exchange federal lands or interests outside National Park System units for nonfederal lands or interests within National Park System units. When appropriate, the NPS and BLM may use this exchange authority to acquire private mineral interests in National Park System units.

BLM regulations at 43 C.F.R. Part 2200 govern federal land exchanges authorized by FLPMA. The regulations describe the appraisal and other procedures BLM uses while conducting land exchanges. However, if the enabling or exchange act for a unit remains inconsistent with these regulations, then the enabling or exchange act applies.

FEDERAL WATER POLLUTION CONTROL ACT OF 1972, (commonly referred to as Clean Water Act), 33 U.S.C. §§ 1251 *et. seq.*

Resources afforded protection: water resources, wetlands, and waters of the U.S.
Applicable regulation(s): 33 C.F.R. §§ 320-330; and 40 C.F.R. Parts 110, 112, 116, 117, 122, and 230-232

Originally titled the Federal Water Pollution Control Act of 1972 (FWPCA) and significantly amended in 1977 and 1987, the Clean Water Act established a federal policy to restore and to maintain the chemical, physical, and biological integrity of the nation's waters; to enhance the quality of water resources; and to prevent, control and abate water pollution.

To achieve this objective, the FWPCA establishes the ultimate goal of eliminating the discharge of pollutants into navigable waters of the United States and the interim goal of maintaining water quality that provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water. The FWPCA prohibits the discharge of toxic pollutants in toxic amounts; provides federal assistance to construct publicly owned waste treatment works; develops and implements area-wide waste treatment management processes to assure adequate control of source pollutants in each state; makes a major research and demonstration effort to develop technology necessary to eliminate the discharge of pollutants into navigable waters, waters of the contiguous zone, and the oceans; and develops and implements programs for the control of nonpoint sources of pollution to control both point and nonpoint sources of pollution.

As with most environmental programs, the FWPCA requires that states set and enforce water quality standards to meet minimum federal (EPA) requirements, including: effluent limitations for point sources of pollution; permits for discharges of pollutants into waters of the United States; and permits for discharges of dredged or fill material into waters of the U.S., including wetlands.

The following sections of the CWA remain relevant to oil and gas operators in National Park System units: Section 311 - spill reporting and spill control; Section 401 - state certification of project compliance; Section 402 - National Pollutant Discharge Elimination System (NPDES); Section 404 - Corps of Engineers dredge and fill permits.

Section 311 (33 U.S.C. § 1321)
Under section 311 no person can discharge oil or hazardous substances in harmful quantities into or upon navigable waters of the U.S., into or upon adjoining shorelines, or into or upon waters of the contiguous zone. Likewise, a person cannot discharge in connection with

activities under the Outer Continental Shelf Lands Act or the Deepwater Port Act of 1974. For oil, a harmful quantity (*i.e.*, quantity that requires reporting) equals that amount which causes a violation of the applicable water quality standard or that amount which causes a film, sheen, or discoloration of the water surface. Persons who discharge a reportable quantity" must report the spill as soon as possible to the U.S. Coast Guard, EPA, and/or state agency, which agency depends on the geographic location of the spill and the type of substance spilled.

Hazardous substances are handled differently. Title 40 C.F.R. Part 116 lists about 300 hazardous substances. Title 40 C.F.R. Part 117 defines the reportable quantities for each substance. The reporting requirements of 40 C.F.R. Part 117 do not apply to permitted discharges. (See Section 402 permits below.) Failure to report a discharge can result in criminal penalties including fines and imprisonment. Section 311 also provides for federal cleanup of the spill and places the costs of cleanup on the entity that caused the spill. The section also protects the person in charge who reports the spill from criminal prosecution, but offers no immunity from civil penalties that may apply.

Under section 311, EPA issued regulations (40 C.F.R. Part 112) to prevent the discharge of oil and hazardous substances into the navigable waters of the United States. These regulations require that any of the facilities described below prepare a Spill Prevention Control and Countermeasure Plan (SPCCP). 40 C.F.R. Part 112 addresses the requirements for a SPCC Plan.

The SPCCP requirement applies to non-transportation related onshore and offshore facilities that drill, produce, gather, store, process, refine, transfer, distribute or consume oil or oil products. It only applies if the facilities due to their location, could potentially discharge oil in harmful quantities into or on the navigable waters of the United States or the adjoining shoreline. (Note: facilities with an underground storage capacity less than 42,000 gallons, or facilities with an above-ground storage capacity less than 1,320 gallons, are exempt from this requirement.)

Under its regulations at 36 C.F.R. Part 9B, the NPS requires a nonfederal oil and gas operator to submit a Spill Control and Emergency Preparedness Plan to deal with oil spills and other environmental hazards. A copy of the SPCCP, if one is required under 40 C.F.R. Part 112, will often meet most of the requirements for the Spill Control and Emergency Preparedness Plan under 36 C.F.R. Part 9B.

Section 401 Water Quality Certification (33 U.S.C. § 1341)

Section 401 requires certification from the state or interstate water control agency that a proposed activity complies with established effluent limitations and water quality standards. Applicants for federal permits or licenses must obtain this certification from the state agency that has been delegated authority to administer the FWPCA.

Section 402 Permits (33 U.S.C. § 1342(I)(2))

Under the National Pollutant Discharge Elimination System (NPDES), the EPA controls the discharges of pollutants from their point source into waters of the United States by using a permitting system. A "point source" could be a tank battery, for example. Any entity proposing to or discharging waste flows into U. S. waters needs a NDPES permit. EPA or states with EPA-approved programs issue NDPES permits.

The NPDES permit sets specific discharge limits. The limits rely on most recent pollution control technology, water quality standards, and government imposed schedules for installation

of new pollution control equipment. The permit gives directions to the operator for monitoring and reporting discharges. The regulations provide for individual permits, group permits for like facilities, and general permits.

The Water Quality Act of 1987 amended the CWA to address stormwater runoff from industrial facilities. EPA requires a NPDES stormwater runoff permit for runoff that may touch machinery or contaminated material onsite and cause contamination of adjacent property. Industrial facilities include oil and gas exploration, production and development operations. The EPA published its rule on NPDES permit application regulations for storm water discharges at 55 Fed. Reg. 47990 (November 16, 1990).

The CWA exempts mining and oil and gas operations from the Section 402 stormwater permit requirements if,

"…discharges of stormwater runoff from mining operations, oil and gas exploration, production, processing, or treatment operations or transmission facilities, [are] composed entirely of flows which are from conveyances or systems of conveyances (including but not limited to pipes, conduits, ditches, and channels) used for collecting and conveying precipitation runoff and…are not contaminated by contact with, or do not come into contact with, any overburden, raw material, intermediate products, finished product, by-product, or waste products located on the site of such operations." (33 U.S.C. § 1342(l)(2))

"Contaminated storm water runoff" includes runoff containing a hazardous substance in excess of reporting quantities established at 40 C.F.R. § 117.3 or 40 C.F.R. § 302.4, containing oil in excess of the reporting quantity established at 40 C.F.R. § 110.3 (*e.g.*, causes a visible sheen), or contributing to a violation of a water quality standard.

The EPA issued a Final Rule on June 12, 2006 that permanently exempts the NPDES stormwater permitting requirements for oil and gas construction activities under Section 402 of the Act (Federal Register Vol. 71 No. 112 6/12/2006). Discharges containing contaminated stormwater run-off require NPDES permits. The Final rule additionally clarifies that stormwater containing sediment run-off (associated with gas well construction activities) is not considered contaminated and will not trigger NPDES permitting requirements (40 C.F.R. § 122.26(a)(2)(ii).

Section 404 Permits (33 U.S.C. § 1344)

Under section 404, anyone who discharges dredge or fill material into navigable waters needs a permit from the U.S. Army Corps of Engineers. "Navigable waters" mean "…those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce." (33 C.F.R. § 329.4)

A determination of navigability, once made, applies over the entire surface of the waterbody and remains in effect even if later actions or events impede or destroy its navigability.

Section 404 regulates discharges into virtually all surface waters where the use, degradation, or destruction of these waters could affect interstate commerce. It also applies to all tributaries and adjacent wetlands of such waters. The COE defines wetlands as areas "inundated or saturated by surface or ground water at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions…" (33 C.F.R. § 328.3(b).

The Corps of Engineers may issue individual permits or general permits on a state, regional, or nationwide basis. It issues general permits for certain kinds of similar activities in wetlands that will cause only minimal adverse effects on the environment. General permits do not cover many operators of nonfederal oil and gas properties in National Parks. They must obtain an individual "404" permit to conduct any operations that involve dredging or discharge of fill material into wetlands.

Under the 404 permit program, the COE may issue individual permits or general permits on a state, regional, or nationwide basis. COE uses general permits for certain categories of activities that have only minimal adverse and cumulative effects on the environment. Many operators of nonfederal oil and gas properties in National Parks do not hold general permits. Operators must obtain an individual “404” permit to conduct operations that involve dredging or discharging fill material into wetlands.

Before the issuance of either a NPDES or section 404 permit, the applicant must obtain a section 401 certification. This declaration states that any discharge complies with all applicable effluent limitations and water quality standards.

The NPS cannot waive CWA requirements for oil and gas operators. An operator has full responsibility for obtaining section 402 (NPDES) or/and section 404 (dredge and fill) permits and for reporting spills of oil, or other contaminating and hazardous substances.

FISH AND WILDLIFE COORDINATION ACT, 16 U.S.C. §§ 661 – 666c 1935), 16 U.S.C. §§ 461 – 467

Resources afforded protection: water resources, fish and wildlife
Applicable regulation(s): none

This Act applies to major federal water resources development plans (impounding, diverting, deepening the channel, or otherwise controlling or modifying streams or other bodies of water). Requires federal agencies to consult with the Fish and Wildlife Service and applicable state agencies whenever such plans result in alteration of a body of water. The Act requires that wildlife conservation receive equal consideration with other features of water resource development. It also triggers coordination with the Fish and Wildlife Service upon application for a 404 permit.

HISTORIC SITES, BUILDINGS, AND ANTIQUITIES ACT (Historic Sites Act of 1935), 16 U.S.C. §§ 461 – 467

Resources afforded protection: historic sites, buildings and objects
Applicable regulation(s): 18 C.F.R. Part 6; and 36 C.F.R. Parts 1, 62, 63, and 65

This Act establishes a national policy “to preserve for public use, historic sites, buildings, and objects of national significance for the inspiration and benefit” of the American people. The Act authorizes the designation of national historic sites and landmarks, authorizes interagency efforts to preserve historic resources, and establishes fines for violations of the Act. It authorizes surveys of historic and archeological sites, buildings, and objects to determine which remain significant, and provides for the restoration, reconstruction, rehabilitation, preservation,

and maintenance of historic and prehistoric properties of national significance. The Act authorizes the Secretary of the Interior, through the National Park Service, to conduct surveys and studies, to collect information, and purchase significant historic properties. The Secretary may also restore, preserve, maintain, and rehabilitate structures and sites; establish museums; and operate and manage historic sites, and develop educational programs.

LACEY ACT, as amended, 16 U.S.C. §§ 3371 *et seq.*

Resources afforded protection: fish and wildlife, vegetation
Applicable regulation(s): 15 C.F.R. 904; 50 C.F.R. Parts 10, 11, 12, 14, and 300

The Lacey Act prohibits the import, export, transport, sales, receipt, acquisition, or purchase of fish, wildlife, or plants that are taken, possessed, transported, or sold in violation of any federal law, treaty, regulation or Indian tribal law. The act also makes illegal importing, exporting, transporting, selling, receiving, acquiring, or purchasing in interstate or foreign commerce any fish, wildlife or plants taken, possessed, transported or sold in violation of a state law or state regulation (or foreign law for fish and wildlife, but not for plants). The Act also establishes marking requirements for containers or packages containing fish or wildlife.

The 1981 amendments to the Act strengthened federal laws and improved federal assistance to states and foreign governments for enforcement of fish and wildlife laws. The Act has significant civil and criminal penalties for violations and has emerged as a vital tool in efforts to control smuggling and trade in illegally taken fish and wildlife.

The U.S. Fish and Wildlife Service regulations implementing the Lacey Act and other related laws describe the procedures for the assessment of civil penalties (50 C.F.R. Part 11) and for government seizure and forfeiture (50 C.F.R. Part 12).

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT, 16 U.S.C. § 1801

Resources afforded protection: commercial and recreational fisheries, fish habitat
Applicable regulation(s): none

The Magnuson Act provides for the management of the nations' fisheries within the exclusive economic zone. Regulations on commercial fishing activities are prescribed consistent with the terms of fishery management plans adopted through a collaborative process involving regional fishery management councils. Although the restrictions on commercial and recreational fishing activities are enforceable against those activities through criminal and civil sanctions, the Magnuson Act does not impose prohibitions on activities other than commercial and recreational fishing. To improve the conservation of any essential fish habitat identified by the Secretary of Commerce, the Magnuson Act requires that each "federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat . . . ." 16 U.S.C. § 1855(b)(2). This consultation requirement provides the Secretary of Commerce with the opportunity to offer recommendations to the federal action agency on ways to avoid, mitigate, or offset the impact of the proposed action on essential habitat. While the

federal agency is not bound to implement such recommendations, it must explain its reasons for not following them.

MARINE MAMMAL PROTECTION ACT (MMPA), as amended, 16 U.S.C. §§ 1361 – 1407

Resources afforded protection: marine mammals
Applicable regulation(s): none

The MMPA, enacted in 1972, was the first modern wildlife conservation law adopted at the federal level. Using dramatic, broad-scale moratoria on the taking and importation of marine mammals and marine mammal products, as well as the imposition of an absolute preemption on all state laws that relate to the taking of marine mammals (subject to an opportunity for transfer of management authority), the Congress adopted the MMPA to conserve these species and their marine habitats. The MMPA prohibits the taking of marine mammals within the United States (both territorial and resource jurisdiction) and on the high seas (for persons subject to U.S. jurisdiction). No permit or authorization may be issued for the taking of a marine mammal (for activities other than commercial fishing) unless one of the following exceptions applies:

1. The permitted taking would be for public display purposes (non-depleted marine mammals only), scientific research, photography for educational or commercial purposes (harassment take only), or enhancing the survival or recovery of a marine mammal species or stock, consistent with the requirements of Section 104.
2. The Secretary of the Interior (or Commerce for cetaceans and pinnipeds other than walruses) decides to waive the taking moratorium for a particular marine mammal species or stock after determining that such species or stock is at its "optimum sustainable population" level and adopts regulations for such taking under Section 103 pursuant to the formal rulemaking requirements of the APA [agency rulemaking on the record with an opportunity for a formal hearing before an administrative law judge].
3. The activity involves the non-lethal deterrence of marine mammals to prevent damage to fishing gear or catch or to other private or public property, consistent with guidelines adopted by the Secretary under Section 101(a)(4).
4. Incidental take of small numbers of marine mammals may be authorized by regulation for specified activities that occur within a specific geographic area for a period of not more than 5 years, provided that the total of such taking will have a negligible impact on the species or stock and will not have an unmitigable adverse impact on the availability of the species for the subsistence uses of Alaska natives (if the incidental take involves harassment only, regulations are not necessary and the Secretary may issue annual authorizations). In the event of a conflict between the terms of the Endangered Species Act and the Marine Mammal Protection Act, the more restrictive requirement of the MMPA takes precedence (16 U.S.C. § 1543).

MIGRATORY BIRD TREATY ACT, as amended, 16 U.S.C. §§ 703 – 712

Resources afforded protection: migratory birds
Applicable regulation(s): 50 C.F.R. Parts 10, 12, 20, and 21

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the United States, Canada, Japan, Mexico, and Russia for the protection of migratory birds. Unless permitted by regulations, under the MBTA a person cannot attempt or succeed at pursuing, hunting, taking, capturing, or killing, possessing, offering to sell, selling, bartering, purchasing, delivering, shipping, exporting, importing, transporting, carrying or receiving any migratory bird, body part (*e.g.* feathers), nest, egg, or product. The U.S. Fish and Wildlife Service regulations provide procedures for obtaining a migratory bird permit (50 C.F.R. Part 21). Regulations at 50 C.F.R. 20 cover hunting of migratory birds, and regulations at 50 C.F.R. Part 12 cover seizure and forfeiture procedures.

Operators and their employees should avoid actions with respect to migratory birds that could violate the Migratory Bird Treaty Act (*e.g.* destroying nests and eggs or picking up dead birds).

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969, 42 U.S.C. §§ 4321 et seq.

Resources afforded protection: human environment (*e.g.* cultural and historic resources, natural resources, biodiversity, human health and safety, socioeconomic environment, visitor use and experience)
Applicable regulation(s): 40 C.F.R. Parts 1500-1508

The National Environmental Policy Act (NEPA) mandates that federal agencies assess the environmental effects of a proposed action and engage the public in the analyses of environmental impacts before agencies make decisions affecting the human environment. NEPA requires that federal agencies "utilize a systematic interdisciplinary approach" to ensure the integrated use of resource information in federal decision-making affecting the environment. Federal agencies must complete all analyses, public input, and NEPA documentation in time to aid decision-making. Initiating or completing environmental analysis after making a decision, whether formally or informally, violates both the spirit and the letter of NEPA.

Besides setting environmental planning policy goals, NEPA created the Council on Environmental Quality (CEQ), an agency of the president's office, as the "caretaker" of NEPA. CEQ published NEPA regulations in 1978 (40 C.F.R. Parts 1500-1508). The CEQ regulations apply to all federal agencies and require each agency to "implement procedures to make the NEPA process more useful to agency decision-makers and the public" (40 C.F.R. 1500.2). Agencies must review and update their regulations as necessary. In 1981 CEQ also published a guidance document titled "Forty Most Asked Questions Concerning CEQ's NEPA Regulations" (46 Fed. Reg. 18026, (1981)). Director's Order 12 and Handbook (2001) is the National Park Service's guidance on implementing NEPA.

The NEPA process constitutes an essential component of conservation planning and resource management through the integration of scientific and technical information into management decisions. In order to be effective, agencies cannot fulfill NEPA compliance by conducting an

after-the-fact "compliance" effort. A well-crafted NEPA analysis provides useful information about the environmental pros and cons (*i.e.* impacts) of a variety of reasonable choices (alternatives), similar to an economic cost-benefit analysis, technical planning, or logistical planning. It remains an essential prelude to the effective management of park resources.

NEPA represents a procedural or process-oriented statute rather than a substantive or substance-oriented statute. Other substantive laws may prevent an agency from taking action or components of an action which have “too great” an impact on a particular resource. Within the NPS, the process of environmental analysis under NEPA provides the needed information to make substantive decisions for the long-term conservation of resources.

NEPA has a broad reach. NEPA is triggered whenever there is a major federal action, regardless of who proposes the action (NPS, private individuals, federal agencies, states, or local governments) or whether the action could impact the human environment. Even though the CEQ regulations give less emphasis to the socioeconomic environment than the physical or natural environment, the NPS considers the socioeconomic environment as an integral part of the human environment. Consequently, NPS will do NEPA analysis even if the impacts remain primarily socioeconomic, including potential impacts on minority and low-income communities (see Executive Order No. 12948, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations).

The National Park Service undertakes its environmental analyses in a number of ways. When the NPS considers taking a “major federal action”, it prepares an environmental assessment (EA) to assess the impacts of the proposed operation and to determine if the NPS must prepare an environmental impact statement (EIS). If, based on the EA’s analysis and public comments, the NPS determines that the proposed action would not significantly affect the human environment, the NPS would prepare a decision document called a Finding of No Significant Impact (FONSI). Conversely, if NPS determines the proposed action would likely cause significant affects on the human environment, then it prepares an EIS. The NPS may prepare an EIS, without first preparing an EA if the action will likely cause significant environmental impacts. If the proposal has been previously analyzed in site-specific detail, a “memo to files” may be prepared. Some actions or types of proposals fall under a NEPA “categorical exclusion” (CE). A categorical exclusion is used where the proposal meets specific criteria defined under Department of the Interior regulations and NPS Director’s Order 12, for activities that do not have the potential for measurable impacts on park resources.

NATIONAL HISTORIC PRESERVATION ACT OF 1966, as amended, 16 U.S.C. §§ 470 – 470x-6

Resources afforded protection: cultural and historic properties listed in or determined to be eligible for listing in the National Register of Historic Places
Applicable regulation(s): 36 C.F.R. Parts 60, 63, 65, 78, 79, 800, 801, and 810

The National Historic Preservation Act (NHPA) declared a national policy of historic preservation. It encouraged preservation on the state and the private levels, authorized the Secretary of the Interior to expand and to maintain a National Register of Historic Places, established the Advisory Council on Historic Preservation, and required federal agencies to conduct studies of potential effects of their proposed actions on National Register properties and to provide the Advisory Council opportunities to comment (§ 106). The Advisory Council

has promulgated regulations, “Protection of Historic and Cultural Properties,” at 36 C.F.R. Part 800, to implement section 106 and presidential directives issued under it.

The NHPA also required federal agencies to identify, evaluate, and nominate cultural resources for inclusion in the National Register. Likewise, agencies must manage for preservation those National Register eligible or listed properties that under their jurisdiction or control.

In 1980 Congress passed a series of amendments to the NHPA and other preservation legislation. These amendments: codified portions of Executive Order No. 11593, which required inventories of federal resources and federal agency programs to protect historic resources; clarified that federal agencies can exclude inventory and evaluation of resources from the one percent fund limit under the 1974 amendments to the Reservoir Salvage Act; and authorizes federal agencies to charge federal permitees and licensees reasonable costs for protection activities.

The 1992 amendments to the Act explicitly call for Native American consultations when potential traditional cultural properties may be on federal lands. If such properties are discovered through the consultations, they should be evaluated for possible eligibility and/or listing in the National Register of Historic Places.

The NPS must consider the potential effects of any proposed oil and gas activities on cultural resources listed on or eligible for listing on the National Register. This responsibility cannot be delegated to nonfederal parties. NPS regulations at 36 C.F.R. § 9.37(e) state that the regional director may not approve a proposed plan of operations until the NPS complies with the NHPA. NPS regulations also require that operators provide the information needed for the NPS to make the determinations required under the NHPA. Operators must submit, as part of the environmental section in a proposed plan of operations, a description of the environment to be affected, including the natural and cultural environment.

In general, the NPS will have surveyed its lands as required by section 110 of the NHPA. The NPS cultural resource survey typically constitutes a careful inspection of the ground surface. The NPS uses standard archeological methodology that may include exploratory subsurface testing. The data from the survey indicate whether the lands fulfill the eligibility requirements for listing on the National Register. Operators may obtain data gathered during NPS surveys for the environmental section of the proposed plan.

When an operator submits a proposed plan of operations, the NPS reviews the cultural resources section. Based upon that review, the staff’s knowledge of the affected area's history and prehistory, and the NPS cultural resource surveys, the regional director determines if the operations would affect a property listed or eligible for listing on the National Register.

If the NPS finds that the operations would not affect a property listed or eligible for listing, the NPS consults with the State Historic Preservation Officer (SHPO) to obtain agreement. If the SHPO agrees with the NPS, then the regional director may issue an archeological clearance for any ground-disturbing operations on federal park lands.

However, if the NPS finds that operations would affect listed or eligible properties, then the NPS prepares an "Assessment of Effect on Cultural Resources". The NPS then consults with the SHPO to determine what steps to take to protect the site. If the NPS and the SHPO cannot agree on a course of action, then the matter is referred to the Advisory Council on Historic

Preservation (ACHP). If the operation may affect a park also designated a National Historic Landmark, then the NPS must automatically consult with the ACHP.

Even if the property is listed on the National Register, private surface owners may take any lawful action they want on their own property. Under the authority of the NPS Organic Act and certain unit enabling legislation directing the NPS to regulate mineral activities to protect natural and cultural resources, the NPS can include stipulations in its plan approval to protect cultural resources on private property inside unit boundaries during the course of mineral operations.

NPS regulations at 36 C.F.R. § 9.47 require operators to stop all operations and to notify the superintendent if cultural resources are "discovered during operations. For the NPS to meet its obligations under the NHPA and the NPS Organic Act, an operator must notify the NPS of cultural resources that may be destroyed by a NPS-approved oil and gas operation. The notification requirement applies even though the operator may own the cultural resources. Notification gives the NPS an opportunity to judge the historic value of the resources, and, if warranted, acquire them from the owner.

An operator under 36 C.F.R. Part 9B may have to salvage cultural resources discovered in the course of operations. The operator may salvage the resources only after the NPS, in consultation with the SHPO, approves a mitigation and salvage plan and chooses a contractor to do the data recovery.

NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT, 25 U.S.C. §§ 3001 – 3013

Resources afforded protection: Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony
Applicable regulation(s): 43 C.F.R. Part 10

The Native American Graves Protection and Repatriation Act (NAGPRA) protects Native American and Native Hawaiian cultural items and establishes a process for the authorized removal of human remains, funerary objects, sacred objects, and objects of cultural patrimony for sites located on lands owned or controlled by the federal government. The Act also provides for the transfer of ownership of cultural objects to Native American or Native Hawaiian individuals, organizations, or tribes. It addresses the recovery, treatment, and repatriation of Native American and Native Hawaiian cultural items by federal agencies and museums. NAGPRA contains data gathering, reporting, consultation, and permitting provisions. The Act emphasizes consultation with Native American and Native Hawaiian organizations to ensure that these entities play a major role in the treatment of specific cultural objects.

Regulations at 43 C.F.R. Part 10 address the rights of lineal descendants, Indian tribes, and Native Hawaiian organizations to Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony. They require federal agencies and institutions that receive federal funds to provide information about these items to these people and, upon presentation of a valid request, to dispose of or to repatriate these objects to them. Section 10.4 describes the regulatory requirements under NAGPRA for inadvertent discoveries of human these items.

Appendix R - "NAGPRA Compliance," in NPS Director's Order 28 - Cultural Resources Management, describe NPS-specific guidance for implementing NAGPRA. If NPS anticipates an operation may impact Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony protected by NAGPRA, then it will consult with the appropriate Native American or Native Hawaiian organization as part of the 9B plan approval process.

NOISE CONTROL ACT OF 1972, 42 U.S.C. §§ 4901 – 4918

Resources afforded protection: human health and welfare
Applicable regulation(s): 40 C.F.R. Part 211

The Act establishes a national policy to promote an environment free from noise that jeopardizes the public's health and welfare. To accomplish this, the Act provides for the coordination of federal research and activities to control noise, authorizes the establishment of federal noise emission standards for products distributed in commerce, and provides information to the public respecting the noise emission reduction characteristics of such products.

The Act authorizes and directs that federal agencies carry out the programs within their control in a manner that furthers the Act's policies. Agencies having jurisdiction over any property or facility or engaged in any activity resulting or potentially resulting in increased noise must comply with federal, state, interstate, or local requirements. Agencies must, upon request, furnish information to the EPA regarding the nature, scope, and results of noise research and noise control programs and must consult with EPA in prescribing standards or regulations respecting noise. The Act also provides for citizen lawsuits. Any person may commence civil action against the United States or any government instrumentality or agency that violates any noise control requirement.

Operators must ensure that their facilities, equipment, and operations comply with all applicable federal, state, interstate, or local noise emission requirements. NPS management policies provide that the NPS will strive to preserve the natural quiet and natural sounds associated with the physical and biological resources of the parks (*e.g.* waves breaking on the shore, wind in the trees, and bird and wildlife sounds). NPS should prevent or minimize unnatural sounds that adversely affect park resources or values or the visitors' enjoyment of them.

OIL POLLUTION ACT, 33 U.S.C. §§ 2701 – 2762

Resources afforded protection: water resources, natural resources
Applicable regulation(s): 15 C.F.R. Part 990; 30 C.F.R. Part 253; 33 C.F.R. Parts 135 and 150; 40 C.F.R. Part 112

The Oil Pollution Act (OPA) expands the federal role in spill response, establishes contingency planning requirements for vessels and certain facilities, establishes the Oil Spill Liability Trust Fund, increases liability for spills of oil or hazardous substances from vessels and facilities, creates requirements for double hulls on new tankers, and increases requirements for research and development of spill response technologies.

OPA imposes liability for removal costs and damages resulting from discharge of oil into the U.S.'s navigable waters, its adjoining shorelines, or the exclusive economic zone. Damages incurred include injuries to natural resources, loss of natural resources, and loss of use of natural resources. Natural resources include land, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other resources belonging to the United States, state, local, foreign governments or Indian tribes.

Liability does not apply to discharges allowed by a permit issued under a federal, state or local law. In addition, liability does not apply if the responsible party establishes that the discharge, damages, or removal costs occurred solely because of an act of God, an act of war, or a third party who constitutes neither an agent nor employee of the responsible party. However, despite these defenses, the responsible party remains liable if he fails to report the incident, help or cooperate as requested, or comply with certain orders. Also, OPA has increased penalties for regulatory noncompliance, broadened the response and enforcement authorities of the federal government, and preserved state authority to establish law governing oil spill prevention and response.

OPA provides new requirements for government and industry oil spill contingency planning. The "National Oil and Hazardous Substances Pollution Contingency Plan" (NCP) was expanded to encompass a three-tiered approach. The federal government directs all public and private response efforts for certain types of spill events. Area committees, composed of federal, state, and local government officials, must develop detailed, location-specific Area Contingency Plans. Owners or operators of vessels and certain facilities that pose a serious threat to the environment must prepare their own facility response plans.

OPA may require operators of nonfederal oil and gas operations in units of the National Park System to develop contingency plans. Contingency plans developed to meet the requirements of OPA may also satisfy the NPS 9B requirement for a contingency plan. NPS would determine if the OPA required plan meets NPS requirements as part of the 9B plan approval process.

PIPELINE SAFETY ACT OF 1992, 49 U.S.C. §§ 60101 et seq.

Resources Afforded Protection: human health and safety, and the environment
Applicable Regulation(s): 49 C.F.R. Parts 190-199

This Act allows the Department of Transportation (DOT) to create and to enforce oil and gas pipeline safety regulations. The act creates design, construction, maintenance, and testing standards for all new, changed, or relocated interstate and intrastate pipelines. DOT's Office of Pipeline Safety regulates interstate pipeline safety but state agencies may also be approved to regulate intrastate pipelines. States that get approval to implement the program may enforce stricter standards than those in the Act. Violations of the Act can lead to civil and criminal penalties. The Act replaced the Hazardous Liquid Pipeline Safety Act of 1979, the Hazardous Materials Transportation Act, and the Natural Gas Pipeline Safety Act of 1968.

Oil and gas pipelines exist within several units of the National Park System. Operators of oil and gas pipelines crossing NPS units must comply with the Pipeline Safety Act of 1992. NPS regulations at 36 C.F.R. 9B require a 9B plan of operations for the construction or use of oil and gas pipelines (flowlines and gathering lines) in connection with nonfederal oil and gas

operations within a NPS unit. Transpark pipelines (those owned and operated by persons or entities exercising rights not tied to the oil and gas ownership within the park boundary) located in rights-of-way that predate the establishment of the park unit do not qualify as an existing operations exempted from a plan of operations by 36 C.F.R. § 9.33. Rather, the NPS will issue a Special Use Permit (SUP) to regulate maintenance activities along the right-of-way corridor, including but not limited to mowing and trimming vegetation, pipeline inspection and testing, removal of fluids from oil and gas pipelines, and installing, shutting down, or replacing pipelines (36 C.F.R. § 1.6).

RESOURCE CONSERVATION AND RECOVERY ACT, 42 U.S.C. §§ 6901 et seq.

Resources afforded protection: natural resources, human health and safety
Applicable regulation(s): 40 C.F.R. 240-282 and 49 C.F.R. Parts 171-179

The Resource Conservation and Recovery Act (RCRA) seeks to promote the protection of health and the environment and to conserve valuable material and energy resources. RCRA regulates the management of hazardous waste from generation to final disposal. The law consists of nine subtitles. Two subtitles create significant regulatory programs: Subtitle C establishes a hazardous waste program from generation to disposal; Subtitle D addresses disposal of nonhazardous solid waste. "Solid waste" includes garbage, refuse, and other discarded materials. It includes solids, liquids, and containerized gases.

The requirements of Subtitle C apply if the waste falls under EPA's criteria governing hazardous waste. EPA codified the regulatory criteria for hazardous waste at 40 C.F.R. Parts 260 and 261. EPA codified a list of hazardous wastes (known as listed wastes) in Subpart D of Part 261. Subpart C of Part 261 establishes the criteria for determining whether a solid waste constitutes a hazardous waste by exhibiting a characteristic of corrosivity, reactivity, ignitability, or toxicity (known as characteristic waste). EPA can regulate a solid waste because it either appears on the hazardous waste lists or displays a characteristic of a hazardous waste.

The 1980 amendments to RCRA excluded certain oil, gas, and geothermal drilling and production wastes from the hazardous waste requirements of Subtitle C. The amendments specifically exempt drilling fluids, produced water, and other drilling and production wastes. In 1988, the EPA decided to keep the exemption for oil and gas exploration and production wastes. State agencies regulate the exempted wastes under the less strict Subtitle D governing nonhazardous waste.

Oil field workers must understand how RCRA works because mistakes can be costly for operators. The Act dictates that when Subtitle C and Subtitle D wastes are mixed, the mixture becomes a Subtitle C hazardous waste. It does not matter if the mixture loses all of its hazardous characteristics. For example, if the rig mechanic dumps used motor oil into the reserve pit, the entire volume of drilling muds, cuttings, rig wash, excess cement, and completion fluids becomes a hazardous waste. This remains true even if it does not exhibit hazardous properties.

RCRA provides for strict civil and criminal penalties. Persons who do not comply with RCRA will receive fines of as much as $25,000 per day per violation. It does not matter whether or not EPA first served the person with a compliance order. It is up to the operator to know and

comply with RCRA. The operator cannot wait to receive a compliance order and make corrections to avoid a penalty. Also, RCRA's criminal penalties can fine an operator as much as $50,000 and imprison the operator for as many as two years if they "knowingly" cause transportation of hazardous materials without a manifest.

In addition, the RCRA exemption from Subtitle C for oil and gas drilling and production waste does not exclude these wastes from the operation of RCRA section 7003. Section 7003 allows EPA to compel any person who contributed or contributes to the handling, storage, treatment, transportation or disposal of the hazardous waste in a manner that causes an imminent and substantial danger to take any action to protect human health and the environment. Because this can include expensive cleanup actions to protect human health and the environment, operators should handle waste from their operations in such a way that it does not contaminate the environment either now or in the future.

Regardless of oil and gas exploration and production wastes' exemption from Subtitle C regulation, the NPS will likely require operators to dispose of all wastes associated with the oil and gas operation outside of the park. NPS requirements for waste disposal in an operator's plan of operations will provide for the strict protection of park resources and values.

RIVERS AND HARBORS ACT OF 1899, As Amended, 33 U.S.C. §§ 401 *et seq.*

Resources afforded protection: shorelines and navigable waterways, tidal waters, wetlands
Applicable regulation(s): 33 C.F.R. Parts 114, 115, 116, 320 -325, and 333

Section 10 of the Rivers and Harbors Act of 1899 prohibits the unauthorized obstruction or alteration of any navigable waterway of the United States. In order to obstruct or alter the waterway, a person must obtain a permit from the Army Corps of Engineers. Activities requiring a permit include constructing structures in or over any waters of the U.S., excavating material from the water, conducting stream channelization, and depositing materials in such waters.

SAFE DRINKING WATER ACT OF 1974, 42 U.S.C. §§ 300f *et seq.*

Resources afforded protection: human health, water resources
Applicable regulation(s): 40 C.F.R. Parts 141-148

The Safe Drinking Water Act (SDWA) protects the safety of drinking water supplies throughout the United States by establishing national standards enforceable by each state. The Act provides for the establishment of primary regulations to protect human health and of secondary regulations relating to the taste, odor, and appearance of drinking water. Primary drinking water regulations include either a maximum contaminant level (MCL) or a prescribed treatment technique that prevents adverse health effects to humans. A MCL constitutes the permissible level of a contaminant in water delivered to any user of a public water system. States should only use prescribed treatment techniques when a MCL remains uneconomical or technologically infeasible.

The Act's 1986 amendments require EPA to publish a list of contaminants every three years, which EPA knows or anticipates will occur in public water systems.

The most important part of the SDWA as far as the NPS and petroleum operators are concerned is the Underground Injection Control (UIC) permit program. Under the program, the EPA regulates underground injection of wastes or other materials. The EPA has authorized many states to administer the UIC permit program.

Owners of underground injection wells must obtain permits or be authorized by rule under the UIC program to operate the wells. The permit holder must prove to the state or federal permitting agency that, through sound and prudent practice and well construction, the underground injection will not endanger drinking water sources. The NPS will approve a plan of operations involving underground injection only when the wells have valid UIC permits.

The UIC program defines five classes of underground injection wells. Class II wells may relate to oil and gas operations in National Parks. The following fluids may be injected into Class II wells: 1). waste fluids produced by oil and gas operations and that are exempt from the hazardous waste requirements of RCRA, subtitle C (for example, produced brine, recovered treatment fluids, and waste waters from gas plants), 2). fluids used for enhanced recovery of oil and natural gas, and 3). fluids for below ground storage of hydrocarbons.

WILD AND SCENIC RIVERS ACT, as amended 16 U.S.C. §§ 1271 et seq.

Resources afforded protection: water resources, recreational values, geologic resources, fish and wildlife, historic, cultural and other similar values
Applicable regulation(s): 36 C.F.R. § 297

The Wild and Scenic Rivers Act (Act) was passed by Congress in October 1968. The Act establishes a policy that certain rivers in the U.S. which, with their immediate environments, possess outstanding remarkable scenic, recreational, geologic, fish, and wildlife, historic, cultural and other similar values shall be preserved in free-flowing condition, and that their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Act identifies specific river reaches for designation as wild and scenic, and provides criteria to be used for classifying additional river reaches. “Wild river areas” are those rivers or sections of rivers that are free from impoundments and generally are inaccessible except by trail, with watersheds or shorelines essentially primitive and the waters are unpolluted. “Scenic river areas” are those rivers or sections of rivers that are free from impoundments, with shorelines or watersheds that are still largely primitive and shorelines undeveloped, but the river is accessible in places by roads. “Recreational river areas” are rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

The national Wild and Scenic River system was established to protect the environmental values of free-flowing streams from degradation by impacting activities, including water resources projects. The system is jointly administered by the U.S. Forest Service and the National Park Service. U. S. Army Corps of Engineers activities on the streams included in the system are subject to review by whichever of these agencies is responsible for the specific stream. In all planning for the use and development of water and related land resources, consideration shall be given to potential national wild, scenic, and recreational river areas, and all river basin and project plan reports submitted to Congress shall consider and discuss such potential.

Under the Wild and Scenic Rivers Act, valid existing mineral rights within the Wild and Scenic river boundary remain in effect, and activities may be allowed if the projects avoid or minimize surface disturbance, water sedimentation, pollution, and visual impairment. Based on the park's enabling statute and applicable regulations, reasonable access to develop nonfederal oil and gas rights will be permitted. Compliance with the Clean Water Act or non-degradation of existing water quality, whichever is more protective is required, including the development and implementation of management actions that protect and enhance water quality.

EXECUTIVE ORDERS

EXECUTIVE ORDER NO. 11593 – PROTECTION AND ENHANCEMENT OF THE CULTURAL ENVIRONMENT, 36 Fed. Reg.8921 (1971)

Resources afforded protection: cultural resources
Applicable regulation(s): 3 C.F.R. 1971 Comp., 36 C.F.R. §§ 60, 61, 63, 800

Executive Order No. 11593 instructs all federal agencies to support the preservation of cultural properties. It directs them to identify and nominate cultural properties under their jurisdiction to the National Register. Moreover, the executive order states that federal agencies must "exercise caution…to assure that any federally owned property that might qualify for nomination is not inadvertently transferred, sold, demolished, or substantially altered."

EXECUTIVE ORDER NO. 11644 – USE OF OFF-ROAD VEHICLES ON THE PUBLIC LANDS, 37 FR 2877 (1972), reprinted in 42 U.S.C. § 4321, as amended by Executive Order No. 11989 (1977), 42 Fed. Reg. 26959; Executive Order No. 12608 (1987), § 21, 52 Fed. Reg. 34617

Resources afforded protection: natural resources, aesthetic and scenic values

The order establishes a uniform federal policy to ensure that use of off-road vehicles on public lands are controlled and directed to protect resources, promote safety of all users of those lands and to minimize conflicts among users. Areas and trails shall be located in units of the National Park System only if the director determines that such use in those areas will not adversely affect their natural, aesthetic or scenic values. Within six months of the date of this order, each respective director shall designate specific areas and trails on public lands on which the use of off-road vehicles may be permitted, and areas in which the use of off-road vehicles may not be permitted, and set a date by which such designation of all public lands shall be completed. Those regulations shall direct that the designation of such areas and trails will be based upon the protection of the resources of the public lands, promotion of the safety of all users of those lands, and minimization of conflicts among the various uses of those lands.

Executive Order No. 11989 promulgates guidelines for the controlled use of off-road vehicles on public lands. The order directs that agency heads shall, whenever he determines that the use of off-road vehicles will cause or is causing considerable adverse effects on the soil, vegetation,

wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands, immediately close such areas or trails to the type of off-road vehicle causing such effects, until such time as he determines that such adverse effects have been eliminated and that measures have been implemented to prevent future recurrence.

EXECUTIVE ORDER NO. 11988 – FLOODPLAIN MANAGEMENT OF 1977, 42 FED. REG. 26951 (1977), as amended by Executive Order No. 12148 (1979), 44 Fed. Reg. 43239, 3 C.F.R. 1979 COMP., P. 412

Resources afforded protection: floodplains, human health, safety, and welfare

Executive Order No. 11988 seeks to avoid, where practicable alternatives exist, the short-term and long-term adverse impacts associated with floodplain development. In carrying out agency responsibilities, federal agencies must reduce the risk of flood losses, minimize the impacts of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. If an agency proposes an action in a floodplain, then the agency must consider alternatives to avoid adverse effects and incompatible development in the floodplain. Agencies must also provide opportunity for early public review of any plans for actions in floodplains.

EXECUTIVE ORDER NO. 11990 – PROTECTION OF WETLANDS, 42 Fed. Reg. 26961 (1977)

Resources afforded protection: wetlands

Executive Order No. 11990 seeks to avoid adverse impacts on wetlands when there is a practicable alternative. Executive agencies, in carrying out their land management responsibilities, must minimize wetlands destruction, loss, or degradation and preserve and enhance the wetlands' natural and beneficial values.

EXECUTIVE ORDER NO. 12088 – FEDERAL COMPLIANCE WITH POLLUTION CONTROL STANDARDS, 43 Fed. Reg. 47707 (1978), amended by Executive Order No. 12580, Superfund Implementation, 52 Fed. Reg. 2923 (1987)

Resources afforded protection: natural resources, human health and safety

Executive Order No. 12088 delegates each executive agency head the responsibility for taking all necessary actions to prevent, control, and abate environmental pollution. It gives the EPA authority to conduct reviews and inspections for the purpose of monitoring federal facility compliance with pollution control standards. Section 1-101 requires prevention, control, and abatement of pollution from federal facilities. Section 1-201 requires federal agencies to cooperate with state, interstate, and local agencies to prevent, to control, and to abate environmental pollution.

EXECUTIVE ORDER NO. 12630 – GOVERNMENTAL ACTIONS AND INTERFERENCE WITH CONSTITUTIONALLY PROTECTED PROPERTY RIGHTS, 53 Fed. Reg. 8859 (1988)

Resources afforded protection: private property rights, public funds

Executive Order No. 12630 seeks the following: to assist agencies in reviewing their actions to prevent unnecessary takings and in proposing, planning, and implementing agency actions with due regard for the constitutional protections provided by the 5th Amendment to the U.S. Constitution; to account in decision-making for those takings necessitated by statutory mandate; and to reduce the risk of undue or inadvertent burdens on the federal treasury resulting from lawful government action.

When an agency requires a private party to obtain a permit to undertake a specific use of private property, any conditions imposed on the permit must substantially advance the governmental interest that is impacted by the land use. The permitting processes must be kept to the minimum necessary so that the government does not interfere with the use of private property during the process.

EXECUTIVE ORDER NO. 12898 – FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS, as amended by Executive Order No. 12948, 60 Fed. Reg. 6379 (1995)

Resources afforded protection: human health and safety

This executive order requires that federal agencies incorporate environmental justice into their mission. Environmental justice promotes the fair treatment of people of all races, incomes, and cultures with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no person or group of people should receive a disproportionate share of the negative environmental impacts from the execution of this country's domestic and foreign policy programs.

EXECUTIVE ORDER NO. 13007 – INDIAN SACRED SITES, 61 Fed. Reg. 26771 (1996)

Resources afforded protection: Native Americans' sacred sites

To the extent practicable, permitted, and consistent with essential agency functions, all federal land management agencies must accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. Consistent with this executive order, if a proposed plan of operations may affect the physical integrity of, the ceremonial use of or the access to these sites by Native American religious practitioners in federally recognized tribes, then the superintendent will consult with the tribe as part of the 9B approval process.

EXECUTIVE ORDER NO. 13112 – INVASIVE SPECIES, 64 Fed. Reg. 6183 (1999), as amended by Executive Order 13286, 68 Fed. Reg. 10619 (2003)

Resources afforded protection: vegetation and wildlife

This executive order seeks to prevent the introduction of invasive species, to provide for their control, and to minimize the economic, ecological, and human health impacts they cause. It outlines federal agency duties, creates a new Invasive Species Council, defines the council's duties, and authorizes the creation an Invasive Species Management Plan. Executive Order No. 13112 also creates a framework for planning and for coordination involving all stakeholders, which it defines as states, tribal entities, local government agencies, academic institutions, scientific communities, and non-governmental entities such as environmental groups, agricultural groups, conservation organizations, trade groups, commercial interests, and private landowners.

Federal agencies should use the programs and authorities to prevent the introduction of invasive species; detect and respond rapidly to control populations of such species in a cost-effective and an environmentally sound manner; monitor invasive species populations accurately and reliably; provide for restoration of native species and habitat conditions in invaded ecosystems; conduct research on invasive species and develop technologies to prevent their introduction; provide environmentally sound control of invasive species; promote public education on invasive species and means to address them.

The order directs agencies not to authorize, fund, or carry out any action likely to cause or promote the introduction or the spread of invasive species in the United States or elsewhere. However, agencies can determine that the benefits outweigh the potential harm and ensure that they take prudent measures to minimize harm. Federal agencies should consult with the Invasive Species Council and undertake actions consistent with the Invasive Species Management Plan with the cooperation of stakeholders.

EXECUTIVE ORDER NO. 13186 – RESPONSIBILITIES OF FEDERAL AGENCIES TO PROTECT MIGRATORY BIRDS, 66 Fed. Reg. 3853 (2001)

Resources afforded protection: migratory birds

This executive order defines federal agency responsibilities to protect migratory bird populations, in furtherance of the purposes of the migratory bird conventions, the Migratory Bird Treaty Act (16 U.S.C. §§ 703-711), the Bald and Golden Eagle Protection Acts (16 U.S.C. §§ 668-668d), the Fish and Wildlife Coordination Act (16 U.S.C. §§ 661-666c), the Endangered Species Act of 1973 (16 U.S.C. §§ 1531-1544), the National Environmental Policy Act of 1969 (42 U.S.C. §§ 4321-4347), and other pertinent statutes.

This executive order directs each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement, within two years, a Memorandum of Understanding (MOU) with the Fish and Wildlife Service that shall promote the conservation of migratory bird populations.

EXECUTIVE ORDER NO. 13212 – ACTIONS TO EXPEDITE ENERGY – RELATED PROJECTS, 66 Fed. Reg. 28357 (2001), as amended by Executive Order 13302, 68 Fed. Reg. 27429 (2003)

Resources afforded protection: all resources, production, transmission, and conservation of energy

This executive order establishes an interagency task force to coordinate, monitor, and assist executive departments and federal agencies to expedite the increased production, transmission, and conservation of energy, in a safe and environmentally sound manner. Specifically, it provides for executive departments and federal agencies where appropriate to expedite their review of permits or take other actions as necessary to accelerate the completion of such projects, while maintaining safety, public health, and environmental protections, to the extent permitted by law and regulations.

EXECUTIVE ORDER 13352 – FACILITATION OF COOPERATIVE CONSERVATION, 69 Fed. Reg. 52989 (2004)

Resources afforded protection: natural resources, property rights, public health and safety

This order seeks to ensure that laws relating to the environment and natural resources are implemented "in a manner that promotes cooperative conservation, with an emphasis on appropriate inclusion of local participation in Federal decision making." The Secretary of the Interior is directed to implement laws in a way that: "(i) facilitates cooperative conservation; (ii) takes appropriate account of and respects the interests of persons with ownership or other legally recognized interests in land and other natural resources; (iii) properly accommodates local participation in Federal decision making; and (iv) provides that the programs, projects, and activities are consistent with protecting public health and safety."

POLICIES, GUIDELINES, AND PROCEDURES

NATIONAL PARK SERVICE MANAGEMENT POLICIES (2006)

Resources afforded protection: all resources including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, visual resources

The NPS Management Policies is the service-wide policy document of the National Park Service. These policies provide the overall foundation, set the framework, and provide direction for management decisions within the NPS. Management policy direction may be general or specific; it may prescribe the process through which decisions are made, how an action is to be accomplished, or the results to be achieved. Management Policies guide NPS staff to manage National Park System units consistently and professionally to achieve the Congressional mandate of the National Park System. Adherence to NPS policy is mandatory, unless

specifically waived or modified by the Secretary, the Assistant Secretary, or the Director of the NPS.

These policies cover park system planning, land protection, natural resource management, cultural resource management, wilderness preservation and management, interpretation and education, use of the parks, park facilities, and commercial visitor services.

The second tier of NPS policies (level 2 guidance) are Director's Orders which clarify or supplement the NPS Management Policies. As they are completed, Director's Orders will replace existing NPS guidelines and special directives. The most detailed and comprehensive guidance implementing service-wide policy, called level 3 guidance, are handbooks or reference manuals and are a compilation of legal references, operating policies, standards, procedures, general information, recommendations, and examples to assist field staff in carrying out the NPS Management Policies.

DEPARTMENT OF THE INTERIOR, DEPARTMENTAL MANUAL, 516 DM 1 – 15 – NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (2005)

Resources afforded protection: all resources including cultural resources, historic resources, natural resources, human health and safety

Section 516 of the Departmental Manual establishes the Department of Interior's policies for implementing the National Environmental Policy Act. It includes policies about initiating the NEPA process, categorical exclusions, and preparing environmental assessments and environmental impact statements.

DEPARTMENT OF THE INTERIOR, DEPARTMENTAL MANUAL, 517 DM 1 – PESTICIDES (1981)

Resources afforded protection: human health and safety and the environment

DM 517 establishes Department of the Interior policy for the use of pesticides on the lands and waters under its jurisdiction and for compliance with the Federal Insecticide, Fungicide, and Rodenticide Act.

DEPARTMENT OF THE INTERIOR, DEPARTMENTAL MANUAL, 519 DM 1 - 2 – PROTECTION OF THE CULTURAL ENVIRONMENT (1994)

Resources afforded protection: archeological, prehistoric resources, historic resources, Native American human remains, and cultural objects

DM 519 describes the policies and responsibilities of the Department of the Interior for managing, preserving, and protecting prehistoric resources, historic resources, Native American human remains, and Native American cultural objects located on Indian and public lands administered by the Department.

DEPARTMENT OF THE INTERIOR, DEPARTMENT MANUAL, 520 DM 1 – PROTECTION OF THE NATURAL ENVIRONMENT – FLOODPLAIN MANGEMENT AND WETLANDS PROTECTION PROCEDURES (2001)

Resources afforded protection: wetlands and floodplains

DM 520 describes the policies and responsibilities of the Department of the Interior for implementing Executive Order No. 11988, Floodplain Management (May 24, 1977) and Executive Order No. 1199, Protection of Wetlands (May 24, 1977).The Department's policy is to:

A. Exercise leadership and take action to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of wetlands and floodplains;

B. Avoid the direct or indirect support of wetland or floodplain development whenever there is a practicable alternative;

C. Reduce the risk of flood loss and minimize the impact of floods on human health, safety and welfare;

D. Restore and preserve the natural and beneficial values served by floodplains and wetlands;

E. Develop an integrated process to involve the public in the floodplain management decision making process;

F. Incorporate the Unified National Program for Floodplain Management into relevant Departmental programs.

NPS DIRECTOR'S ORDER 12 AND HANDBOOK – CONSERVATION PLANNING, ENVIRONMENTAL IMPACT ANALYSIS, AND DECISION MAKING (2001)

Resources afforded protection: all resources including natural resources, cultural resources, human health and safety, socioeconomic environment, visitor use

Director's Order 12 and Handbook sets forth policy and procedures for the NPS to comply with the National Environmental Policy Act (NEPA), including direction on the analysis process and documentation of environmental impact assessments. The Director's Order and handbook are derived in whole or part from the CEQ regulations and Department of Interior NEPA guidelines. Director's Order 12 and the handbook include specific NPS requirements beyond those imposed by CEQ to help facilitate the mandates of the Organic Act, other laws and policies that guide NPS actions, and to help NPS managers and staff make day-to-day decisions related to implementation of the NEPA.

NPS DIRECTOR'S ORDER 28 – CULTURAL RESOURCE MANAGEMENT (1998)

Resources afforded protection: cultural, historic, and ethnographic resources

Director's Order 28 is the comprehensive guideline for management of cultural resources in units of the National Park Service. It elaborates on the policies articulated in the "NPS

Management Policies" and offers guidance in applying federal laws and the Secretary's Standards to establish, to maintain, and to refine park cultural resource programs. Director's Order 28 also establishes procedures for complying with NHPA sections 10 and 106.

Director's Order 28, Appendix R: NAGPRA Compliance provides direction on complying with the Native American Graves Protection and Repatriation Act. Appendix R requires that an operator who inadvertently discovers human remains, funerary objects, sacred objects, or objects of cultural patrimony immediately notify the park's superintendent first by telephone and then in writing. The operator must stop activity in the area of the discovery for a specified time and make a reasonable effort to protect the human remains or objects. The superintendent will notify the appropriate Native American tribes or Native Hawaiian organizations and begin consultation about the disposition of the items.

DIRECTOR'S ORDER 28A – ARCHEOLOGY (2004)

Resources afforded protection: archeological resources

DO 28A promotes a common management framework for planning, reviewing and undertaking archeological activities and other activities that may affect archeological resources within the National Park System. This DO also addresses the manner in which the Service will meet its archeological assistance responsibilities outside the national parks. General archeological requirements are covered in DO-28: Cultural Resource Management (http://www.nps.gov/policy/DOrders/DOrder28.html), and the Cultural Resource Management Guideline Release No. 5 (http://www.cr.nps.gov/history/online_books/nps28/28contents.htm).

DIRECTOR'S ORDER 47 – SOUND PRESERVATION AND NOISE MANAGEMENT (2000)

Resources afforded protection: natural soundscapes

The purpose of this Director's Order is to articulate National Park Service operational policies that will require, to the fullest extent practicable, the protection, maintenance, or restoration of the natural soundscape resource in a condition unimpaired by inappropriate or excessive noise sources. For nonfederal oil and gas operations, soundscape management goals are to reduce noise to minimum levels consistent with the appropriate service or activity, as long as that service or activity continues to be needed.

DIRECTOR'S ORDER 53 AND REFERENCE MANUAL 53 – SPECIAL PARK USES (2005)

Resources afforded protection: all resources including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, visual resources

DO 53 defines and clarifies legal and policy requirements for special uses in NPS units and describes Special Use Permit (SUP) requirements and provisions. Applicable regulations for Special Use Permits are 36 C.F.R. Parts 1 – 5.

Special park uses are defined as activities that take place in a unit of the National Park System and: provide a benefit to an individual, group or organization, rather than the public at large; require written authorization and some degree of management control from the NPS in order to protect park resources and the public interest; are not prohibited by law or regulation; and are neither initiated, sponsored, nor conducted by the NPS. A special park use may involve either rights or privileges, and may or may not support the purposes for which a park was established.

The NPS applies the Special Use Permit regulations at 36 C.F.R. Parts 1 – 5 and guidance in Director's Order/Reference Manual 53 to control activities within rights-of-way associated with transpark oil and gas pipelines. Mowing and trimming vegetation, inspection or testing pipelines, removal of fluids from oil and gas pipelines and installing, shutting down or replacing pipelines, are common activities in pipeline rights-of-way requiring an approved NPS Special Use Permit. Special Use Permits for transpark pipelines must be approved before these activities can occur. The SUP must include a performance bond and mitigation measures to protect park resources, values, and ensure the protection of public health and safety.

RM 77 – NATURAL RESOURCE MANAGEMENT (2004)

Resources afforded protection: all natural resources

Natural Resource Management Reference Manual 77 offers comprehensive guidance to National Park Service employees responsible for managing, preserving, and protecting the natural resources found in National Park System units. It guides the actions of park managers so that natural resource activities comply with federal law, federal regulation, Department of Interior policy, and National Park Service policy. Natural resources include native plants, native animals, water, air, soils, topographic features, geologic features, paleontologic resources, natural quiet, and clear night skies. Reference Manual 77 covers natural resources management, uses in parks, planning, and program administration and management. A listing of topics included in RM 77 can be found at: http://www.nature.nps.gov/rm77/.

Reference Manual 77 serves as the primary "Level 3" guidance on natural resource management in units of the National Park System, replacing NPS-77, The Natural Resource Management Guideline, issued in 1991 under the previous NPS guideline series. The transition of NPS-77 into Reference Manual 77 is still in progress. Some sections are still being revised while others have undergone a field review with comments from the field incorporated as applicable.

NPS DIRECTOR'S ORDER AND PROCEDURAL MANUAL 77-1 – WETLAND PROTECTION (2002)

Resources afforded protection: wetlands

NPS Director's Order 77-1 and Procedural Manual implement Executive Order No. 11990, Protection of Wetlands. They establish policies, requirements, and standards to protect wetlands. Operators must perform a wetlands delineation when proposed operations could potentially cause direct and/or indirect impacts to wetlands. The Corps of Engineers and the NPS review the wetlands delineation for adequacy. When proposed operations cannot avoid direct and/or indirect impacts on wetlands, the operator must compensate for these impacts by

restoring a disturbed wetlands area in the unit at a minimum 1:1 compensation ratio. The compensation ratio can be greater if the functional values of the site being impacted are high and the restored wetlands will be of a lower functional value. Operators must perform the compensation before or concurrently with the occurrence of impacts associated with approved oil and gas operations. When operations are completed, the operator must restore the site to its pre-impact wetlands condition.

NPS must comply with Executive Order No. 11990 and the NPS Wetland Protection Guideline (DO 77-1) as part of the 36 C.F.R. 9B procedure for approving a plan of operations for nonfederal oil and gas operations within a unit of the National Park System.

NPS DIRECTOR'S ORDER AND PROCEDURAL MANUAL 77-2 – FLOODPLAIN MANAGEMENT (2003)

Resources afforded protection: floodplains

Director's Order and Procedural Manual 77-2 replaces NPS Special Directive 93-4 and provides NPS policies and procedures for implementing Executive Order No. 11988, Floodplain Management. NPS policy seeks to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare; and restore and preserve the natural and beneficial values served by floodplains.

The NPS will protect and preserve the natural resources and functions of floodplains; avoid the long- and short-term environmental effects associated with the occupancy and modification of floodplains; avoid direct and indirect support of floodplain development and actions that could adversely affect the natural resources and functions of floodplains or increase flood risks; and restore, when practicable natural floodplain values previously affected by land use activities within floodplains. If it is not practicable to locate or relocate development or inappropriate human activities outside the floodplain, the NPS will, prepare a Statement of Findings in accordance with the Procedural Manual 77-2; take all reasonable actions to minimize the impact to the natural resources in floodplains; use nonstructural methods to reduce hazards to human life and property; and ensure that structures and facilities located in floodplains are designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program (44 C.F.R. Part 60).

The Director's Order requires the NPS to classify proposed actions into one of three action classes - the 100-year (base floodplain), 500-year, or extreme regulatory floodplain. If a preliminary floodplain assessment shows that the area may experience flooding, then the applicable regulatory floodplain must be shown on a map, and information on flood conditions and hazards must be developed.

During project planning, the NPS identifies and evaluates practicable alternative sites for the proposal outside of the regulatory floodplain. If practicable sites are identified, NPS policy gives preference to locating the proposed action at a site outside the regulatory floodplain. If there is no practicable alternative site for the proposal, then the NPS will apply mitigation measures to protect floodplain resources, values, and human life and property.

NPS must comply with Executive Order No. 11988 and the NPS Floodplain Management Guideline as part of the 36 C.F.R. 9B process for approving a plan of operations for nonfederal oil and gas operations within a unit of the National Park System.

SECRETARY OF THE INTERIOR'S "STANDARDS AND GUIDELINES FOR ARCHEOLOGY AND HISTORIC PRESERVATION," 48 FR 44716 (1983) (also published as Appendix C of NPS Director's Order 28 – Cultural Resource Management)

Resources afforded protection: cultural and historic resources

Prepared under the authority of sections 101(f), (g), and (h) and 110 of the National Historic Preservation Act, the Standards and Guidelines provide basic technical standards, guidelines, and advice about archeological and historical preservation activities and methods. While the standards and guidelines are not regulatory, NPS Director's Order 28 requires the NPS to comply with their substantive and procedural requirements.

GOVERNMENT-TO-GOVERNMENT RELATIONS WITH NATIVE AMERICAN TRIBAL GOVERNMENTS, Presidential Memorandum signed April 29, 1994

Resources afforded protection: Native Americans

In order to ensure that NPS recognizes and respects the rights of sovereign tribal governments, this memorandum instructs each executive department and agency to operate in a government-to-government relationship with federally recognized tribes and to consult with tribal governments prior to taking any action that might affect them. The memorandum directs agencies to assess the impacts of their programs and policies on tribes and to take their rights and concerns into consideration during development of any plan, programs, or projects. NPS must also remove any impediments to working directly with tribal governments in designing agency plans, programs, and projects. Finally, it instructs agencies to try to work cooperatively to carry out the intent of the memorandum and to tailor federal programs to meet the unique needs of tribal communities.

PART B - ENVIRONMENTAL COMPLIANCE

Numerous federal laws, regulations, executive orders, and NPS policies are used by the NPS to assist in its resource protection efforts. The following section summarizes the primary federal requirements that are used to protect park resources:

- All park resources – National Environmental Protection Act,
- Cultural resources – National Historic Preservation Act,
- Threatened and endangered species and their habitat – Endangered Species Act,
- Floodplains – Executive Order No. 11988 and NPS Director's Order 77-2 and accompanying Procedural Manual,
- Wetlands – Executive Order No. 11990 and NPS Director's Order 77-1 and accompanying Procedural Manual, and
- Coastal natural resource areas – Coastal Zone Management Act and approved state coastal zone management program.

This section includes a description of the resource, an overview of the compliance process, operating requirements (stipulations) to protect the particular resource, and a flowchart illustrating the process taken by the NPS (and operator) to comply with these requirements. Tasks that are required by the oil and gas operator are shown in **bold** in each of the flowcharts.

NATIONAL ENVIRONMENTAL POLICY ACT

The NPS plan of operations permitting process requires compliance with the National Environmental Policy Act (NEPA). NEPA mandates that federal agencies assess the environmental effects (impacts) of proposed federal actions, including approving permits for private actions on federal land or involving federal resources. The analysis of environmental effects in the NEPA document will be used by the regional director to determine if the operation meets the applicable approval standards at 36 C.F.R. § 9.37.

NEPA requires the NPS and other federal agencies to:

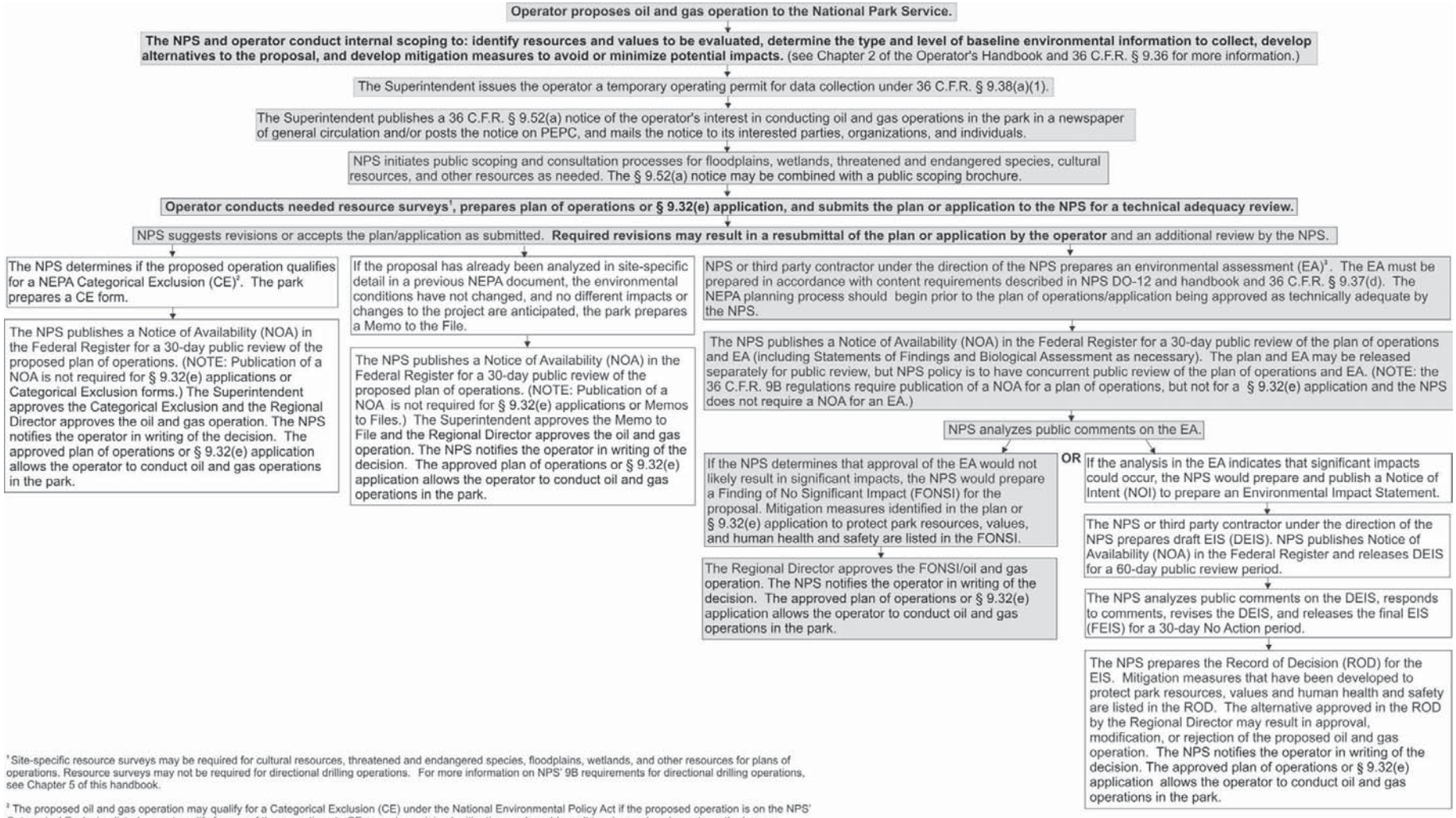
- include public input in the decision-making process,
- use a systematic approach which assures that all federal agencies fully explore alternative courses of action for the proposal,
- consider the environmental impacts of the proposed actions, and
- identify steps to mitigate environmental damage.

NEPA at § 1502.25(b) requires that the NEPA document "…list all the federal permits, licenses and other entitlements that are needed to implement the proposal." For this reason, the NPS recommends that operators include this information in his/her plan of operations. For more information see Question # 9 *NEPA 's 40 Most Asked Questions*.

Once a plan is determined to be technically adequate, the NPS must prepare a Categorical Exclusion form (CE), Memo to the Files, environmental assessment (EA) or environmental impact statement (EIS) on the plan of operations (36 C.F.R. § 9.37(b)). Most often, an EA is the appropriate level of NEPA documentation. If the project is highly controversial or there is the potential for major (significant) environmental impacts, the NPS would be required to prepare an

environmental impact statement (EIS) on the proposal. Figure B.1 illustrates the NEPA process that must be followed for a proposed plan of operations or § 9.32(e) application and highlights the compliance responsibilities of the oil and gas operator and NPS.

The NPS is responsible for the content and accuracy of the NEPA document (CE, Memo to the Files, EA or EIS) and decision document (FONSI for an EA or ROD for an EIS). Preparation of an environmental assessment or environmental impact statement must be done either by the NPS or under the direction of the NPS, typically through a third party contract. The operator's responsibility lies in supplying the necessary site-specific, resource information so that the NPS can analyze the potential impacts of the proposed operation on park resources and values.



[1] Site-specific resource surveys may be required for cultural resources, threatened and endangered species, floodplains, wetlands, and other resources for plans of operations. Resource surveys may not be required for directional drilling operations. For more information on NPS' 9B requirements for directional drilling operations, see Chapter 5 of this handbook.

[2] The proposed oil and gas operation may qualify for a Categorical Exclusion (CE) under the National Environmental Policy Act if the proposed operation is on the NPS' Categorical Exclusion list, does not qualify for any of the exceptions to CEs, requires minimal mitigation, and would result in minor or less impacts on the human environment (NPS Director's Order 12 and Handbook). CEs may apply for data collection, transfer of an approved operation to a new operator, amendment or supplement to an approved operation, maintenance of oil and gas access roads, installation of oil and gas support equipment within the existing operations area (e.g., compressors, fencing, overhead utilities), and well plugging and surface reclamation.

[3] There may be rare occasions where a proposed oil and gas operation could result in significant impacts on the environment and an Environmental Impact Statement (EIS) is prepared for the proposal rather than an Environmental Assessment (EA).

(Flowchart revised 10/16/06)

Figure B.1 Generalized 36 CFR 9B and NEPA Process Flowchart for Nonfederal Oil and Gas Operations. Items shown in **bold** are the operator's responsibility. The shaded tasks represent the most common NEPA pathway for nonfederal oil and gas operations.

PROTECTION OF CULTURAL RESOURCES

The NPS Organic Act, the 36 C.F.R. 9B regulations, and many of the parks' enabling legislations require the protection of cultural resources. The overarching statute that protects cultural resources, including archeological resources, historic sites and structures, cultural landscapes, and ethnographic resources is the National Historic Preservation Act (NHPA). Under § 106 of the Act, potential impacts to National Register eligible or listed cultural resources (referred to as historic properties) must be determined once an "undertaking" is identified. This section of the handbook outlines the Section 106 process the NPS uses to protect historic properties whenever an undertaking occurs. Figure B.2 illustrates the cultural resource compliance process and the compliance responsibilities of the oil and gas operator and NPS.

In order to protect cultural resources, the following operating stipulations are required for all nonfederal oil and gas operations in NPS units.

Stipulations for Protecting Cultural Resources

1. Cultural Resource Surveys. Cultural resource surveys must be conducted to document the location and significance of any cultural resource (includes various components of archeological resources, structures, cultural landscapes, ethnographic resources, and museum objects) that might be affected by operations (36 C.F.R. § 9.36 (a)(16)(i), 36 C.F.R. § 63, 36 C.F.R. § 800.4).

   Cultural resource surveys must be conducted by qualified cultural resource professionals who have knowledge of, and experience with, the specific cultural resources in question. A final report must be prepared for the cultural resource survey that allows the NPS, in conjunction with the State Historic Preservation Office (SHPO) and Tribal Historic Preservation Office (THPO) to determine National Register of Historic Places (NRHP) eligibility and effect (no historic properties affected, no adverse effect, or adverse effect). Additional work beyond the initial survey may be necessary before a Determination of Eligibility (DOE) on the National Register of Historic Places can be made.

   National Park Service cultural resource professionals, in conjunction with the SHPO/THPO must determine whether the existing survey information is adequate and up-to-date. If cultural resource surveys have been previously conducted in the proposed operations area, the NPS/SHPO/THPO cultural resource experts determine the continuing adequacy of the survey(s). In some cases an updated survey may not be necessary.

   Note for proposed § 9.32(e) directional drilling operations: Cultural resources surveys would not be required for lands outside park units that could be affected by § 9.32(e) directional drilling proposals, unless required by the state (located on state surface) or through other permitting requirements by other federal agencies (*i.e.*, Clean Water Act § 404), but may be required by the NPS for areas inside the park if the downhole operations could have an effect on cultural resources in the park.

2. Plan Work to Avoid Known Cultural Resources. If this is not possible, assess and mitigate effects on National Register eligible or listed properties in consultation with State/Tribal Historic Preservation Office and Advisory Council on Historic Preservation (36 C.F.R. §§ 800.3-800.9).

3. Cultural Resource Monitoring of Operations. Operations shall employ a qualified archeologist to monitor all ground-disturbing activities, including maintenance activities (36 C.F.R. § 9.47(b)). Qualified archeologists are those who meet the Secretary of the Interior Standards and Guidelines for Archeology and Historic Preservation.

   Ground disturbance is defined as earth-moving activities, including cut-and-fill, rutting, trenching, and blading roads, drilling and production pads, flowline and gathering line routes, staging areas, storage areas, and heavy equipment parking areas. The range of environments and cultural resources varies a great deal among park units, so the operator and park staff must define what does not constitute ground-disturbing activities for each proposal. All newly recorded archeological sites will be recorded both on state computerized sites forms and NPS Archeological Sites Management Information System (ASMIS) forms. GPS locations (requested in NAD 83) and site location maps will also be required.

4. Inadvertent Discovery of Cultural Resources. If any unknown cultural resources are discovered during the conduct of approved operations, and the resources might be altered or destroyed by the operations, the operator must cease operations in the immediate area and notify the park superintendent.

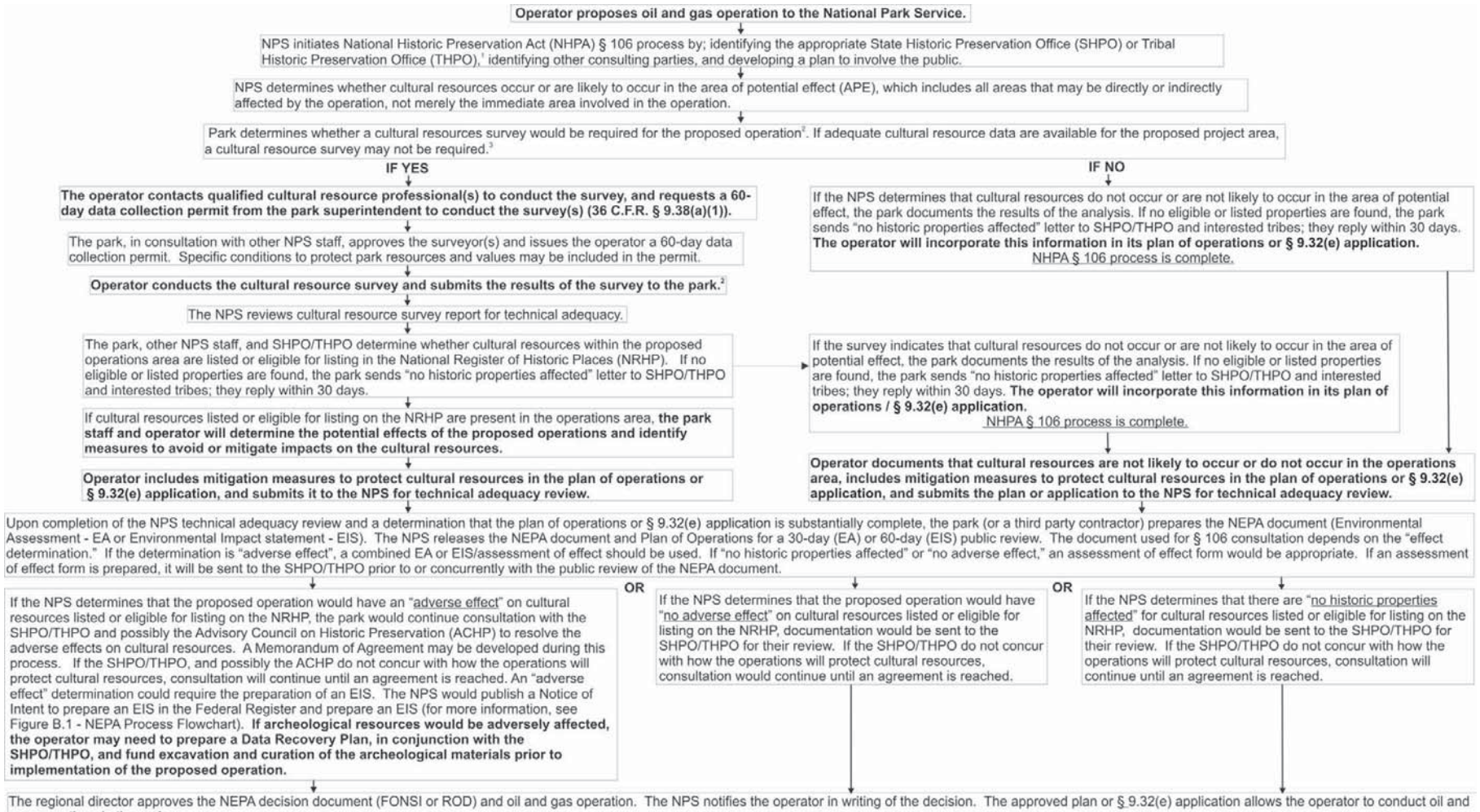
   In the event that the discovery includes Native American human remains, associated funerary objects, sacred objects, or objects of cultural patrimony, the operator must comply with the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA - 25 U.S.C. §§ 3001-3013). Specific procedures to be followed are described in 36 C.F.R. § 10.4.

   In either case, the operator must leave the discovery intact until the superintendent grants permission to proceed with the operations (36 C.F.R. § 9.47(b)). Before any further activities occur, a qualified cultural resource expert will assess the cultural resources, evaluate their National Register eligibility, and consult with the SHPO/THPO. Minor recordation, stabilization, or data-recovery may be necessary during this action and will be conducted at the operator's expense. Until the eligibility of the discovered historic properties can be determined, no further disturbance to the cultural resources may occur. Any plans for mitigating the adverse impacts on historic properties will be subject to approval of the NPS, and it is the responsibility of the operator to provide for any necessary mitigation efforts.

   If planned mitigation measures are likely to result in the excavation of Native American human remains, associated funerary objects, sacred objects or objects of cultural patrimony, mitigation will also require implementation of a Plan of Action as required by NAGPRA. Procedures of planned excavations are specified in 36 C.F.R. § 10.3.

5. Damage to Previously Identified Sites. If, in its operations, a nonfederal oil and gas operator damages, or is found to have damaged, any historic or prehistoric ruin, monument, or site, or any object of antiquity subject to the Antiquities Act of 1906, Archeological Resources Protection Act of 1979 (16 U.S.C. § 470), and the National Historic Preservation Act, as amended, the operator will prepare and implement a data recovery plan at his/her expense and hire a qualified permitted archeologist to carry out the specific instructions of the NPS.

6. Prohibition of Collecting Artifacts. Employees and subcontractors working for the operator shall be informed that any collection of artifacts is punishable by law under the Antiquities Act of 1906 and the Archeological Resources Protection Act of 1979. Both fines and civil penalties are possible for collecting artifacts under these federal laws.



[1] Consult with the THPO instead of the SHPO if the cultural resources affected are in an area where THPO has been recognized (e.g., for all NPS units within the Navajo Nation).

[2] Cultural resources surveys would not be required for lands outside park units that could be affected by § 9.32(e) directional drilling proposals, unless required by the state (located on state surface) or through other permitting requirements by other federal agencies (i.e., § 404 of CWA), but may be required by the NPS for areas inside the park if the downhole operations could have an effect on cultural resources in the park. For more information on NPS' 9B requirements for directional drilling operations, see Chapter 5 of this handbook.

[3] In addition to locating/identifying cultural resources, the survey should include recommendations on the eligibility of the discovered sites for inclusion in the National Register of Historic Places. The actual nomination of these resources for NHRP is done with SHPO and/or THPO, as appropriate (§ 110).
(Flowchart revised 10/16/06)

Figure B.2. Cultural Resources Compliance Flowchart for Nonfederal Oil and Gas Operations. Tasks shown in **bold** are the operator's responsibility.

PROTECTION OF THREATENED AND ENDANGERED SPECIES AND THEIR HABITAT

Section 7 of the Endangered Species Act, requires that the NPS ensure that an operator's proposed operation within a park unit does not jeopardize the continued existence of federally listed threatened and endangered plant and wildlife species or result in destruction or adverse modification of the critical habitat of these species. If the National Park Service determines that the proposed operation may affect a listed species or critical habitat, it must consult with the U.S. Fish and Wildlife Service (FWS) and / or the National Marine Fisheries Service (NMFS).

According to NPS Management Policies, the NPS "…will inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible. In addition, the Service will inventory other native species that are of special management concern to parks (such as rare, declining, sensitive, or unique species and their habitats) and will manage them to maintain their natural distribution and abundance." (NPS 2006, § 4.4.2.3)

Figure B.3 illustrates the process that the NPS must use to protect threatened and endangered plant and animal species on NPS lands and highlights the compliance responsibilities of the oil and gas operator and NPS.

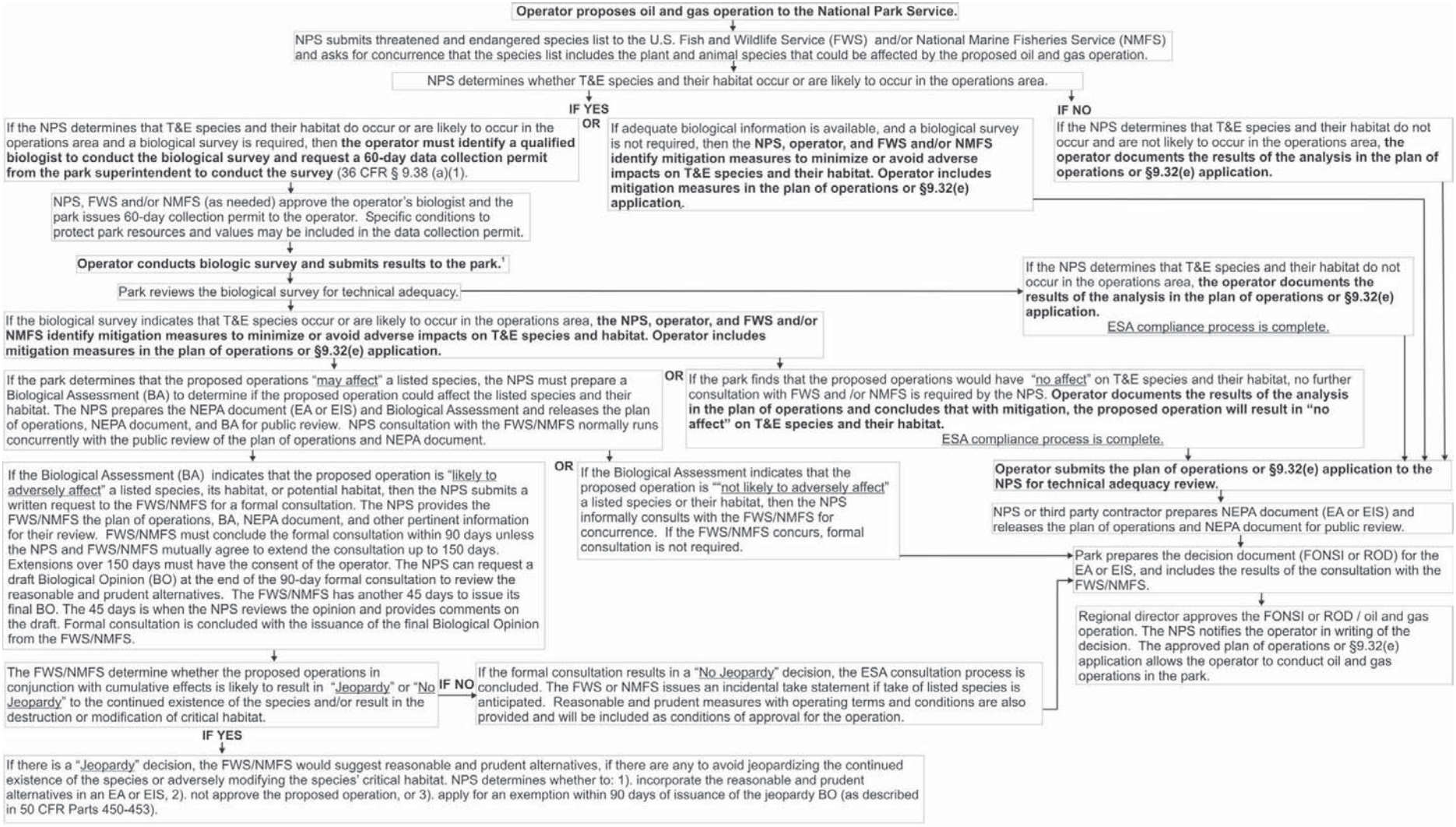
In order to protect threatened and endangered species and their habitat, the following operating stipulations are required for all nonfederal oil and gas operations in NPS units.

Stipulations for Protecting Threatened and Endangered Plant and Animal Species

1. Required Agency Consultations. Prior to beginning operations, the NPS will consult with the U.S. Fish and Wildlife Service, National Marine Fisheries Service (if applicable), and state parks and wildlife departments to identify threatened, endangered, and sensitive species that may be present in the project area. If there is not adequate T & E survey data, operators may be required to conduct biological surveys in the proposed operations area (36 C.F.R. § 9.36(a)(16)(I); Endangered Species Act of 1973 -16 U.S.C. §§ 1531 et seq.; Executive Order No. 13186).

   Note for proposed 9.32(e) operations: The operator may be required to contract and pay for a qualified biologist(s) to conduct a threatened and endangered species survey of the operations area both inside and outside of the park unit, if this information is not available and is required as a result of the Endangered Species Act 7 consultation process.

2. Schedule Work to Avoid T&E Species. Operators must schedule work during times least likely to affect threatened and endangered species (Endangered Species Act, 16 U.S.C. §§ 1531-1544, 50 C.F.R. Parts 402 & 450).



[1] **Note for proposed § 9.32(e) directional drilling operations:** The operator may be required to contract and pay for a qualified biologist to conduct a threatened and endangered species survey of the operations area, both inside and outside of the park unit if this information is not available and is required as a result of the Endangered Species Act 7 consultation process. For more information on NPS' 9B requirements for directional drilling operations, see Chapter 5 of this handbook.

(Flowchart revised 12/6/04)

Figure B.3. Endangered Species Act Compliance Flowchart for Nonfederal Oil and Gas Operations. Tasks shown in **bold** are the operator's responsibility.

PROTECTION OF FLOODPLAINS

Executive Order No. 11988, "Floodplain Management", dated May 24, 1977, was passed to ensure that short and long-term adverse affects associated with the occupancy and modification of floodplains will be avoided wherever possible. Where no practicable alternatives exist to siting oil and gas operations in a floodplain, mitigating measures (utilizing nonstructural methods when possible) will be implemented to minimize potential harm to life, property, and the natural values of floodplains. National Park Service Director's Order 77-2: Floodplain Management" and accompanying procedural manual, (September 8, 2003) outlines requirements for implementing the floodplain protection and management actions under the executive order.

Figure B.4 illustrates the process that the NPS must use to protect floodplains on NPS lands and highlights the compliance responsibilities of the oil and gas operator and the NPS.

In order to protect floodplain functions and values, the following operating stipulations are required for all nonfederal oil and gas operations that are conducted within the 100-year, 500-year, or extreme floodplain in a NPS unit.

Stipulations for Protecting Floodplains

1. Delineate Floodplains. Conduct a pre-operational analysis to adequately describe the natural environment that would be affected by the operations, including delineating floodplains. (36 C.F.R. § 9.36(a)(16)](i)).

   Note for proposed 9.32(e) operations: A floodplain assessment would not be required by the NPS for a surface operation's areas sited outside of a park unit. If there is another agency with floodplains jurisdiction, an operator may be required to contract with a qualified hydrologist to prepare a floodplain assessment within the proposed project area, which may include areas both inside and outside of the park unit. If the downhole operations could have an effect on floodplains inside the park, the NPS may require the operator to hire a qualified hydrologist to conduct a floodplains assessment inside of the park.

2. Use of Qualified Professionals. Information on flood conditions and hazards, and development of appropriate floodplain management actions should be determined by qualified professionals (NPS Procedural Manual § 77-2 VI(D)).

3. Site Operations to Avoid Watercourses. "Surface operations shall at no time be conducted within 500 feet of the banks of perennial, intermittent or ephemeral watercourses; or within 500 feet of the high pool shoreline of natural or man-made impoundments…unless specifically authorized by an approved plan of operations." (36 C.F.R. § 9.41(a)) If necessary, the operator must specifically request an exemption from this standard in the plan of operations and demonstrate that the exemptions are necessary for acceptable data quality, can be conducted with insignificant affects on park waters or manmade infrastructure, and result in overall resource impact reduction.

4. Site Operations to Avoid Regulatory Floodplains.

   a. **Siting of Oil and Gas Access Roads and Above-ground Flowlines and Gathering Lines.** The construction of roads used exclusively to access oil and gas operations and the construction and operation of above-ground flowlines and gathering lines fall into the NPS Class I Actions category. The associated regulatory floodplain is the 100-year floodplain (EO 11988 § 3 (b)).

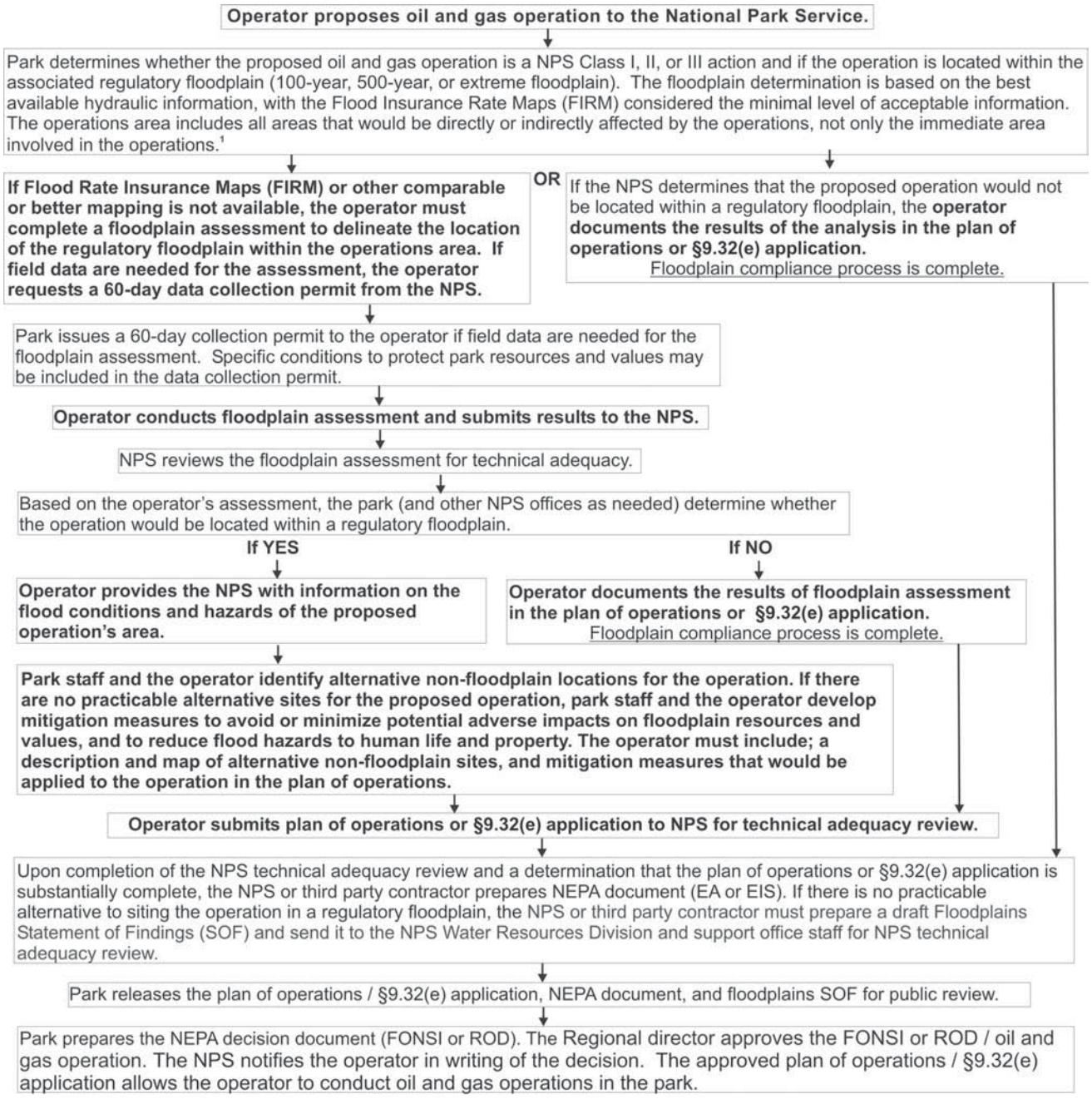
b. Oil and gas access roads and flowlines and gathering lines should not be constructed within the 100-year floodplain unless there is no practicable alternative. Where such operations must be located within the 100-year floodplain, appropriate mitigation measures must be taken to flood-proof the lines and roads to minimize structural and environmental risks associated with flooding.

c. **Siting of Drilling and Production Operations and Oil and Gas Storage Facilities.** Actions that would create an added disastrous dimension to the flood event (called critical actions) are Class II Actions. The associated regulatory floodplain is the 500-year floodplain. Examples of critical actions include well drilling, construction and operation of treatment and storage facilities, and storage of toxic, hazardous and/or water-reactive materials. Most oil and gas operations are classified as critical actions (Class II) (Executive Order No. 11988 , § 3 (b)).

   Drilling operations, wellheads, oil and gas processing and storage facilities and equipment, including heater treaters, separators, oil and produced water storage tanks should not be located within the 500-year floodplain (critical action floodplain) unless there is no practicable alternative. Where such operations must be located within the 500-year floodplain, appropriate mitigation measures must be taken to flood-proof or elevate the site to minimize structural and environmental risks associated with flooding.

   Storage tanks shall be firmly secured to reduce risk of tank failure during high winds and flooding. Storage tanks shall be emptied and filled with water in preparation for hurricanes or flooding.

5. Floodplain Statement of Findings. When use of the regulatory floodplain cannot be avoided, a Floodplain Statement (SOF) of Findings must be prepared according to direction provided in NPS Director's Order 77-2. At a minimum, the SOF must contain:
   a. the reasoning behind the determination of the absence of a practicable alternative non-floodplain location,
   b. description of the hydraulic conditions associated with flooding at the site including expected advance warning time, and
   c. a description of how mitigation will be implemented to protect people and floodplain natural resources and values.
   d. The mitigation plan will include an Emergency Response Plan setting forth operating procedures during emergencies and may include a flood warning system, when appropriate.



[1] **Note for proposed § 9.32(e) directional drilling operations** - A floodplain assessment would not be required by the NPS for surface operations areas sited outside of a park unit. If there is another agency with floodplains jurisdiction, an operator may be required to contract with a qualified hydrologist to prepare a floodplain assessment within the proposed project area, which may include areas both inside and outside of the park unit. If the downhole operations could have an effect on floodplains inside the park, the NPS may require the operator to hire a qualified hydrologist to conduct a floodplains assessment inside of the park. For more information on NPS' 9B requirements for directional drilling operations, see Chapter 5 of this handbook.

(Flowchart revised 5/2/2006)

Figure B.4. Floodplains Protection Compliance Flowchart for Nonfederal Oil and Gas Operations.
Tasks shown in **bold** are the operator's responsibility.

PROTECTION OF WETLANDS

Executive Order No. 11990, "Protection of Wetlands", dated May 24, 1977, requires that agencies avoid undertaking or providing assistance for new construction located in wetlands unless there is no practicable alternative and that all practicable measures to minimize harm to wetlands have been incorporated into the proposal. Where no practicable alternatives exist, mitigating measures will be implemented to avoid and minimize potential harm to wetland area and wetland functions. The NPS policy for protecting wetland resources and values are provided in Director's Order 77-1 and its accompanying Procedural Manual.

Figure B.5 illustrates the process that the NPS must use to protect wetlands on NPS lands and highlights the compliance responsibilities of the oil and gas operator and the NPS.

In order to protect wetland functions and values, the following stipulations are required for all nonfederal oil and gas operations in NPS units.

Stipulations for Protecting Wetlands

1. Site Operations to Avoid Streams and Impoundments. "Surface operations shall at no time be conducted within 500 feet of the banks of perennial, intermittent or ephemeral watercourses; or within 500 feet of the high pool shoreline of any natural or man-made impoundments…unless specifically authorized by an approved plan of operations." (36 C.F.R. § 9.41(a)) If necessary, the operator must specifically request an exemption from this standard in the plan of operations and demonstrate that the exemptions are necessary for acceptable data quality, can be conducted with insignificant affects on park waters or manmade infrastructure, and result in overall resource impact reduction.

2. Delineate Wetlands. Wetlands classified according to the *U.S. Fish and Wildlife Service's Classification of Wetlands and Deepwater Habitats of the U.S.* must be delineated by the operator where proposed operations would directly or indirectly adversely impact wetlands. Formal wetlands delineations must be conducted by a person with a wetlands delineation training certificate from a recognized provider or Society of Wetlands Scientists (SWS) Professional Wetland Scientist certification. The wetland delineation should be conducted to reflect the definition of wetlands as defined by the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife's classification. The wetland delineation must include a wetland functions assessment for the proposed operations area. The wetland delineations shall be approved by the U.S. Army Corps of Engineers and/or the Water Resources Division of the National Park Service, and incorporated into the operator's plan of operations and the Wetland Statement of Findings (36 C.F.R. § 9.36(a)(16)](i), NPS Director's Order 77-1, and NPS Procedures Manual 77-1 § 5.1). The WSOF will be released for public review concurrently with the NEPA document.

3. Wetland Statement of Findings. When the proposed operation cannot be designed to avoid direct and/or indirect adverse impacts to wetlands, the NPS (or a third party contractor under the direction of the NPS) shall prepare a Wetland Statement of Findings according to Section 5.3 E: Content and Signature Procedures for Wetland Statements of Findings (NPS Procedures Manual 77-1).

A wetland delineation must be completed as a foundation document, but not included in the Wetland Statement of Findings. The Statement of Findings for wetlands must contain:

a. A detailed description of the project procedures and equipment that will affect wetlands. For example, the dimensions of drilling equipment, fill or excavation procedures, pipeline length and width of disturbance area, extent of vegetation clearing, drainage, etc.
b. A map at sufficiently large scale to show the locations, boundaries, and types of wetlands at the project site and the aspects of the preferred alternative that would have adverse impacts on them.
c. A detailed description of the affected wetlands (*e.g.*, plant species and communities, hydrology, wetland classification, etc.) and their ecological, recreational, cultural, hydrologic, aesthetic, and other functions and values. Abundance of the affected wetland habitat types in the NPS unit/area/region should be included in this analysis.

Examples of wetland functions and values to be considered in this analysis include:

- biotic functions (*e.g.*, fish and wildlife habitat, floral and faunal productivity, native species and habitat diversity, threatened and endangered species),
- hydrologic functions (*e.g.*, flood attenuation, streamflow maintenance, ground water recharge and discharge, water supply, erosion and sediment control, water purification, detrital export to downstream systems),
- cultural values (*e.g.*, aesthetics, education, historical values, archeological values, recreation, interpretation),
- research/scientific values (*e.g.*, "reference sites" for research on unimpacted ecosystems), and
- economic values (*e.g.*, flood protection, fisheries, tourism).

Several methods are available (or are being developed) to assess wetland functions and values for a site and to predict which will be degraded or lost (and, therefore, need to be compensated for) if a project is implemented. The NPS Water Resources Division can provide information on current methods to assess wetland functions and values.

d. Full disclosure of the adverse impacts on the wetland habitats, processes, functions, and values at the site and acreages affected, by wetland type. This should include the total area of impact including dredge, fill, vegetation clearing, drainage, rutting from vehicle tires or tracks, etc., each broken down by wetland classification type (according to the FWS Cowardin classification).

e. A concise description of alternatives considered in addition to the preferred alternative.

f. The reasons why the preferred alternative must be located and designed such that it has adverse impacts on wetlands, and why no non-wetland alternatives or those with fewer wetland impacts were chosen. A discussion of the various factors and trade-offs considered in arriving at this decision must be included.

g. A description of how the preferred alternative was designed to minimize wetland impacts to the greatest extent practicable.

h. A description of compensation proposed, *i.e.*, what wetland area(s) will be restored to compensate for this loss or degradation (consistency with the NPS “no net loss of wetlands” goal found in Director's Order 77-1). This portion of the SOF must include:

- a large scale map of the compensation site,
- a description of wetland types to be restored, functions to be restored, and the degree to which they replace functions lost at the project site,
- a description of the restoration process (*e.g.*, excavation, grading, hydrologic restoration, structure removal, plantings, etc.),
- the anticipated schedule for project completion,
- the anticipated time-frame for full functioning of the compensation wetlands,
- monitoring and maintenance requirements, and
- the funding source for the project consistent with the funding source restrictions listed in Section 5.2.C of NPS Procedural Manual 77-1.

4. Compensation for Loss of Wetlands. When proposed operations cannot avoid direct and/or indirect adverse impacts to wetlands, the operator shall compensate for direct and indirect impacts on wetlands by restoring degraded or former wetland habitats. Compensation will be at a minimum 1:1 ratio. In other words, at least one acre of wetlands must be restored for each acre of wetland that is destroyed or degraded. The focus will be on the replacement of comparable wetland types and functions, not just wetland acreage. Compensation shall be performed prior to or at the same time impacts associated with the approved oil and gas operations occur (NPS Director's Order 77-1 and NPS Procedures Manual 77-1 § 5.2(C)).

Final compensation ratios may need to be greater than 1:1 in cases where:

- the functional values of the site being impacted are determined to be high and the restored wetlands will be of lower functional value;
- it will take a number of years for the restored site to become fully functional; or
- the likelihood of full restoration success is unclear.

If the adverse impacts on wetlands (direct plus indirect impacts) from the entire project totals less than 0.1 acre, then wetland compensation is strongly encouraged but may be waived by the NPS if the loss of wetland functions is considered to be minimal.

The compensation site shall be located in the park. Compensation shall be performed prior to or at the time impacts associated with proposed nonfederal oil and gas operations are anticipated to occur. On completion of operations that have directly and/or indirectly impacted wetlands, restoration of the site shall be done to return the impacted wetlands to their pre-disturbance condition.

Areas within the park that may be restored as compensation for wetland impacts associated with nonfederal oil and gas operations, in priority order, are:

- poorly restored abandoned oil and gas access roads and drilling locations, and
- wetlands that have been adversely affected by past actions.

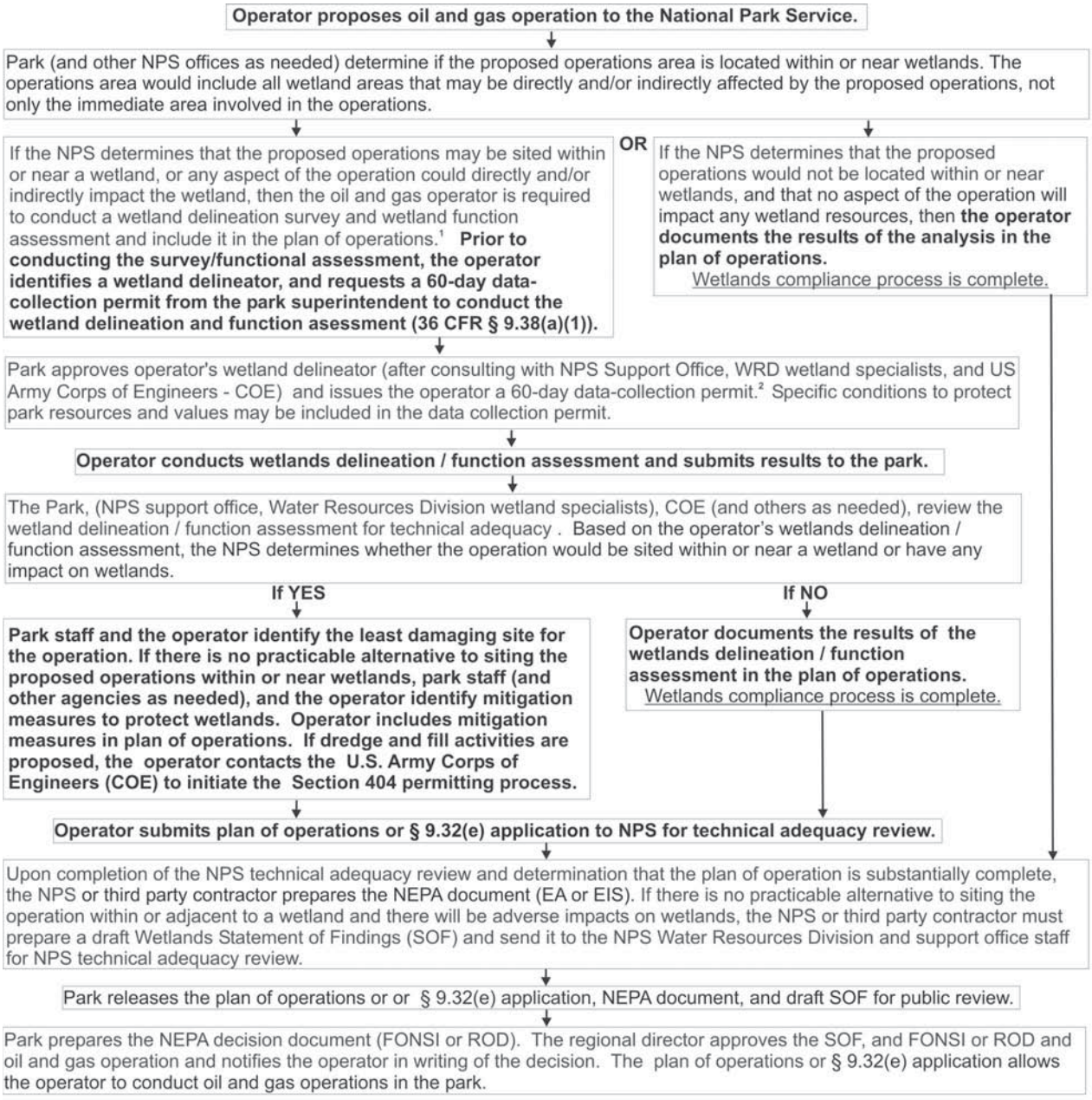
When the minimum 1:1 wetland compensation ratio cannot be performed in the park because no areas remain to be restored, operators shall be required by the NPS to perform the minimum 1:1 wetland compensation ratio in another NPS unit.

When potential wetland impacts from proposed nonfederal oil and gas operations would require wetland compensation ratios greater than 1:1, operators would be required to perform the initial 1:1 compensation by restoring disturbed wetland areas as described above. Operators would

then have two options to perform the remaining wetland compensation: by restoring additional disturbed wetland areas as described above, or by performing a commensurate portion of an "in-lieu" project by constructing segments of educational and interpretive elevated boardwalks at sites designated by the park superintendent. These wetland projects shall be decided upon, planned and designed by the park, and all environmental compliance performed by the NPS. A commensurate portion would be based on the costs for the initial 1:1 compensation described above.

In addition to the operating stipulations listed above, the following Best Management Practices (BMPs) are required when an operation has the potential to have adverse impacts on wetlands (NPS Procedures Manual 77-1, Appendix 2):

1. **Effects on Hydrology**: Action must have only negligible effects on site hydrology, including flow, circulation, velocities, hydroperiods, water level fluctuations, and so on.
2. **Water Quality Protection and Certification**: Action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway of wetlands. Action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements (check with appropriate state agency).
3. **Erosion and Siltation Controls**: Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.
4. **Effects on Fauna**: Action must have only negligible effects on the normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low flow conditions.
5. **Proper Maintenance**: Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.
6. **Heavy Equipment Use**: Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve pre-construction elevations.
7. **Stockpiling Material**: Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semi-permeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. The material must be stabilized with straw bales, filter cloth, or other appropriate means to prevent reentry into waterway or wetland.
8. **Removal of Stockpiles and Other Temporary Disturbances During Construction**: Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their preexisting elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable.
9. **Topsoil Storage and Reuse**: Revegetation of disturbed areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community.
10. **Native Plants**: Where plantings or seeding are required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management technologies must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.



[1]**Note for proposed § 9.32(e) directional drilling operations:** A wetlands delineation would not be required by the NPS for the surface operation's area located outside of a park unit. The operator is responsible for consulting with the U.S. Army Corps of Engineers (COE) regarding the applicability of Clean Water Act § 404 permitting and the COE's requirements for wetlands delineations. If the downhole operations could have an effect on wetlands inside the park, the NPS may require the operator to hire a qualified wetlands scientist to conduct a wetlands delineation inside the park.

[2]Formal wetlands delineations must be conducted by a person with a wetlands delineation training certificate from a recognized provider or SWS Professional Wetland Scientist certification.

(Flowchart revised 5/2/2006)

Figure B.5. Wetlands Protection Compliance Flowchart for Nonfederal Oil and Gas Operations.
Tasks shown in **bold** are the operator's responsibility.

MANAGEMENT OF COASTAL RESOURCES

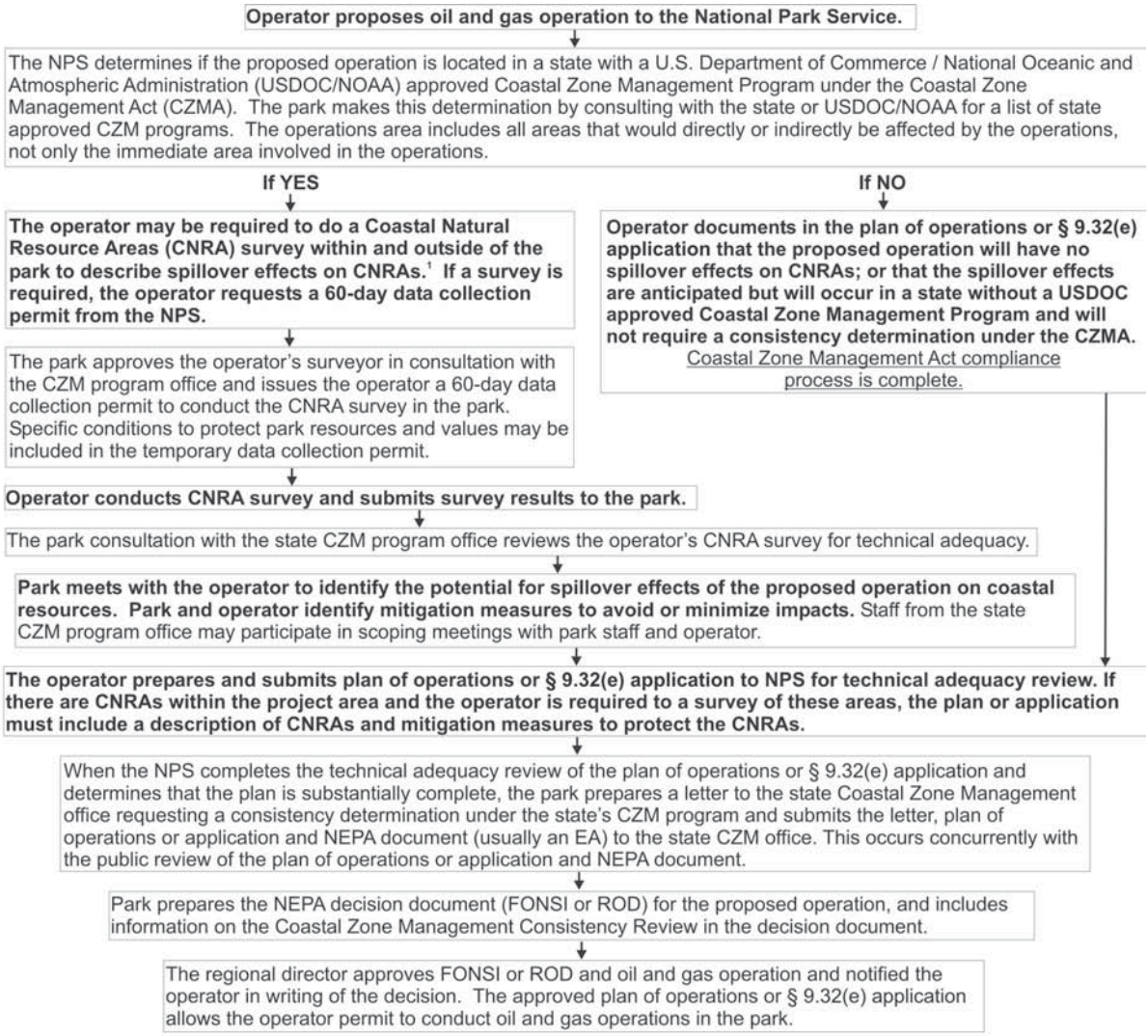
The Coastal Zone Management Act (CZMA) was enacted to preserve, protect, develop, and where possible, restore or enhance the resources of the nation's coastal zone. The purpose of the Act is to improve the nation's management of coastal resources. Specific concerns in the coastal zone include; the loss of living marine resources and wildlife habitat, decreases in open space for public use, and shoreline erosion. The "coastal zone" means the coastal waters and the adjacent shorelands of the United States. It also includes coastal zones of the Great Lakes.

The CZMA established a state-federal partnership in which the states take the lead in managing their coastal resources by developing state CZM programs and plans, while the federal government (U.S. Department of Commerce, National Oceanic and Atmospheric Administration) provides financial and technical assistance. The Act requires federal agencies to act in a manner consistent with federally approved state management programs. Federal consistency under the CZMA means that federal actions that are reasonably likely to affect any land or water use or natural resource of the coastal zone must be consistent with the enforceable policies of a coastal state's or territory's federally-approved coastal management program. In states that do not have a coastal zone management program approved by the Secretary of Commerce, the requirement for a consistency review and state concurrence does not apply.

All federal agency activities, whether in or outside of the coastal zone, must comply with the consistency requirements of Section 307(c) of the CZMA if the activities affect natural resources, land uses, or water uses in the coastal zone. In addition, the NPS Management Policies (2006) require that the NPS comply with state coastal zone management plans prepared under the Coastal Zone Management Act.

When the NPS is considering issuing a permit for nonfederal oil and gas operations under its 36 C.F.R. 9B regulations, and the proposed operation may have a spillover effect on Coastal Zone Natural Areas (CNRAs), the NPS will consult with the state agency responsible for carrying out the state approved CZM program for a consistency determination. In these cases, the state agency provides a consistency certification within 45 days of receipt of an administratively complete consistency certification, or the action is presumed to be consistent.

Figure B.6 illustrates the process that the NPS must use to protect coastal resources on NPS lands and highlights the compliance responsibilities of the oil and gas operator and the NPS.



[1]**Note for proposed § 9.32(e) directional drilling operations:** A survey of coastal natural resource areas would not be required by the NPS for the surface operation's area located outside of a park unit. If there is another federal agency with jurisdiction of coastal areas, an operator may be required to contract with a qualified professional to survey Coastal Natural Resource Areas within the operations area, which may include areas both inside and outside of the park unit. The operator is responsible for consulting with the U.S. Army Corps of Engineers (COE) regarding the applicability of Clean Water Act § 404 permitting. If the downhole operations could have an effect on coastal natural resource areas inside the park, the NPS may require the operator to hire a qualified professional to conduct a survey of these areas inside the park.

(Flowchart revised 1/5/05)

Figure B.6. Generalized Coastal Zone Management Compliance Flowchart for Nonfederal Oil and Gas Operations. Tasks shown in **bold** are the operator's responsibility.

PART C - FEDERAL, STATE, AND LOCAL PERMITS FOR NONFEDERAL OIL AND GAS OPERATIONS

The permits shown in Table B.2 may be required for a nonfederal oil and gas operation, depending on the type of operation, scope, and location. The operator, not the National Park Service, is responsible for obtaining the permits listed in the following table.

Table B.2. Federal, State, and Local Permits That May be Required for a Nonfederal Oil and Gas Operation in Units of the National Park System.

PERMIT	LAW OR REGULATION	RESPONSIBLE AGENCY
Plan of operations	Nonfederal Oil and Gas Rights Regulations, 36 C.F.R. Part 9, Subpart B	National Park Service
Permits to drill a well, treat and store oil and gas products, plug/abandon a well, and construct/operate intrastate oil and gas pipelines	Statewide oil and gas rules or regulations	state oil and gas division
Special use permit to construct and maintain surface for a transpark oil and gas pipeline in an existing right-of-way	36 C.F.R. Parts 1-5	National Park Service
Interstate oil and gas pipeline permit	49 C.F.R. Subtitle B, Ch. 1, Parts 190-199	U.S. Department of Transportation
Underground injection well permit	Safe Drinking Water Act of 1974	Environmental Protection Agency, via state oil and gas division or state water quality division
Prevention of significant deterioration (PSD) of air quality and/or visibility permit	Clean Air Act	Environmental Protection Agency, via state air quality division
National pollutant discharge elimination system (NPDES) permit	Federal Water Pollution Control Act of 1972 (a.k.a. Clean Water Act), Section 402	Environmental Protection Agency, via state water quality division
Section 10 permit to obstruct or alter a navigable waterway of the United States	Rivers and Harbors Act of 1899	U.S. Army Corps of Engineers
Section 404 permit to discharge dredge or fill material into waters of the U.S.	Federal Water Pollution Control Act of 1972 (a.k.a. Clean Water Act), Section 404	Environmental Protection Agency, via U.S. Army Corps of Engineers
Integrated pest management (IPM) permit to use a pesticide or herbicide	Federal Insecticide, Fungicide, and Rodenticide Act	National Park Service, via the NPS plan of operations
Floodplain management permit	State or local floodplain regulations	State or local floodplain management agency
Permit to “take” a T/E species	Endangered Species Act	U.S. Fish and Wildlife Service and/or National Marine Fisheries Service
Determination of consistency with state Coastal Zone Management Plan	Coastal Zone Management Act	Department of Commerce, via state coastal zone management agency
Archeological Resources Protection Act (ARPA) permit “to excavate or remove any archeological resources located on public lands or Indian lands and to carry out activities associated with such excavation or removal.” (16 U.S.C. § 470cc(a))	Archeological Resources Protection Act of 1979	National Park Service

PART D – THE APPLICABILITY OF SOILD WASTE DISPOSAL REGULATIONS TO NONFEDERAL OIL AND GAS OPERATIONS

Regulations at 36 C.F.R. Part 6 govern the handling of "solid waste" in park units. While the Part 6 regulations cover activities other than mining, this summary will address only that portion of the Part 6 regulations dealing with mining activities, which includes oil and gas. Part 6 applies on wholly private, state and federal lands within the park boundary and applies regardless of the jurisdictional arrangement in a park.

"Solid Waste from Mining" is defined as:

"Mining overburden, mining byproducts, solid waste from the extraction, processing and beneficiation of ores and minerals, drilling fluids, produced waters, and other wastes associated with exploration, development, or production of oil, natural gas or geothermal energy and any garbage, refuse or sludge associated with mining and minerals operations."

The Mining provision of Part 6 distinguishes between "new" and "existing" operations.

NEW OPERATIONS

New operations are defined as those proposed after January 25, 1995.

These operations "may not establish or operate a new solid waste disposal site within a unit." This means that any waste generated must be used for reclamation (temporary stockpile of waste is acceptable, if used for reclamation or removed at the end of operations), taken to an approved NPS landfill, or taken out of the park to a municipal landfill. Approved 9B plans usually cover the handling of solid waste generated by the operation.

EXISTING OPERATIONS

Existing operations are defined as those in operation as of January 25, 1995.

If the existing operation is EXEMPT from the 9B regulations:

- The operator must request a part 6 permit. Without the Part 6 permit the operator is subject to the § 6.12 penalty provision (criminal penalties) or suspension.

If the existing operation is UNDER A 9B PLAN:

- The 9B plan already covers the handling of solid waste

If the operator submits a plan revision and it solid waste is generated as a result of the plan, that solid waste must be used for reclamation (temporary stockpile of waste is acceptable if it is used for reclamation or removed at the end of operations), taken to an approved NPS landfill, or taken out of the park to a municipal landfill.

APPENDIX C

SAMPLE LETTERS FOR NONFEDERAL OIL AND GAS OPERATIONS

This appendix contains sample letters that are commonly used by the nonfederal oil and gas operator to correspond with the National Park Service. The following letters have been prepared to assist the operator in preparing for and conducting operations in units of the National Park System:

- Demonstration of an Operator's Ownership Right
- Request for a Temporary Access Permit
- Plan of Operations Amendment
- Request for Temporary Approval to Continue Operations
- Change of Operator Notification (from transferring owner)
- Change of Operator Notification (from new Owner)
- Operator Affidavit of Compliance

NOTE: In addition to the above sample letters, a model form and letter of credit for performance bonds are included in *Chapter 10 – Performance Bonds*.

The information that must be added by the operator to finalize the correspondence is shown in parentheses and **bold text**. There are also notes to the operator marked with "**NOTE TO OPERATOR."**

DEMONSTRATION OF AN OPERATOR'S OWNERSHIP RIGHT

SAMPLE LETTER

(insert date)

Superintendent **(insert name)**
(insert park name)
(insert address)

Attn: **(insert name of park's oil and gas program administrator)**

Dear Superintendent **(insert name)**:

Enclosed is a copy of the **(insert title of the legal instrument; *i.e.* Assignment and Bill of Sale, Lease Agreement, Geophysical Exploration Permit, etc.)** that demonstrates **(insert company name's)** ownership right to **(insert description of type of activity; *i.e.* conduct a 3-D seismic survey, or develop nonfederal oil and gas interests)** within the park.

(Insert company name) proposes to **(insert a brief description of the proposed operation and location)**. We would like to undertake these operations in **(insert projected timeline)**.

Please send information, including a CD ROM of the NPS Operator's Handbook for Nonfederal Oil and Gas Development in Units of the National Park System, that will assist us in obtaining a permit under the National Park Service's Nonfederal Oil and Gas Rights Regulations (36 C.F.R. Part 9, Subpart B). If you have questions, I can be reached at **(insert telephone number)**.

Sincerely,

(insert name)
(insert title)

Enclosure

REQUEST FOR TEMPORARY ACESS PERMIT

SAMPLE LETTER

(insert date)

Regional Director **(insert name)**
(insert name of region)
(insert address)

Attn: (**insert name of park's oil and gas program administrator)**

Dear **(insert name of Regional Director)**:

(Insert company name) is requesting a 60-day temporary access permit for the purpose of **(select one)**:

- ☐ collecting basic information necessary to prepare a plan of operations, pursuant to 36 C.F.R. § 9.38(a)(1);
- ☐ continuing existing operations, pursuant to 36 C.F.R. § 9.38(a)(2); or
- ☐ conducting new operations, pursuant to 36 C.F.R. § 9.38(b).

(Insert company name) proposes to **(insert a brief description of the proposed activity and location)**. A map of the area is enclosed, showing access routes and boundary of survey(s).

NOTE TO OPERATOR: If requesting a 60-day data collection permit to gather information to prepare a plan of operations pursuant to 36 C.F.R. § 9.38(a)(1), include the following information:

1. Describe the type of survey(s) to be conducted;
2. Give the proposed date to start survey(s) (a minimum 2-week advance is recommended). If applicable, specify if a timeframe is important; *i.e.* to perform a biological survey when a species is likely to be documented);
3. Describe the type of equipment and methodology proposed to conduct the survey(s), including a description of the type of equipment/method proposed to access the survey area (on foot, by vehicle, ATV, etc.);
4. Include the statement: (Insert company name) will notify the park nonfederal oil and gas program coordinator at least 72 hours in advance of beginning work in the park; and
5. Include the statement: (Insert company name) representatives and its contractors and subcontractors will carry a copy of the temporary operating permit on them whenever performing work in the park.

NOTE TO OPERATOR: If requesting a 60-day permit to continue existing operations pursuant to 36 C.F.R. § 9.38(a)(2), include the following information:

(**Insert company name**) requests the temporary operating permit with the following disclosure and stipulations:

1. The suspension of existing operations would result in an unreasonable economic burden or injury to the **(insert company name)**;
2. The continuation of existing operations will be conducted in accordance with all applicable laws, and in a manner prescribed by the regional director designed to minimize or prevent significant environmental damage;
3. The Superintendent or his/her designated representative would be allowed access into the operations area at any time to perform routine inspections and monitor compliance with the temporary operating permit;
4. **(Insert company name)** commits that its representatives, contractors and subcontractors will carry a copy of the temporary operating permit on them whenever performing work in the park, and;
5. Within 60 days of the granting of the temporary operating permit, (insert company name) shall submit an initial substantially complete plan of operations.

NOTE TO OPERATOR: If requesting a 60-day permit to conduct new operations pursuant to 36 C.F.R. § 9.38(b), include the following information:

(**Insert company name**) requests the temporary operating permit with the following disclosure and stipulations:

1. **(Insert company name)** can demonstrate a compelling reason for the failure to have had timely approval of a proposed plan of operations. (Describe compelling reason for not having had timely approval of a proposed plan of operations.)
2. **(Insert company name)** can demonstrate that failure to grant such approval will result in an unreasonable economic burden or injury to the (insert company name). (Describe how failure to receive a temporary operating permit would result in an unreasonable economic burden or injury to the company.);
3. The Superintendent or his/her designated representative is allowed access into the operations area at any time to inspect operations and monitor for compliance with the approved temporary operating permit;
4. **(Insert company name)** will notifying the park nonfederal oil and gas program coordinator at least 72 hours in advance of beginning work in the park;
5. **(Insert company name)** representatives, contractors and subcontractors will carry a copy of the temporary operating permit on them whenever performing work in the park, and;
6. Within 60 days of the granting of the temporary operating permit, **(insert company name)** shall submit an initial substantially complete plan of operations.

NOTE TO OPERATOR: If you are requesting a temporary access permit for a park that is located in the Intermountain Region, then the letter should be addressed to the park Superintendent since this authority has been delegated from the Regional Director to the park Superintendent in this region.

If you have questions, I can be reached at **(insert telephone number)**.

Sincerely,
(insert name)
(insert title)

Enclosure

PLAN OF OPERATIONS AMMENDMENT

SAMPLE LETTER

(insert date)

Superintendent **(insert name)**
(insert park name)
(insert address)

Attn: **(insert name of park's oil and gas program administrator)**

Dear Superintendent **(insert name)**:

(Insert company name) proposes to amend its approved plan of operations for **(insert title of approved plan of operations)** dated **(insert date plan of operations was approved – this is typically the date the NEPA Finding of No Significant Impact that was signed by the Regional Director)**. The amendment we propose is to **(insert brief description)**. Enclosed is the amendment to the approved plan of operations. We would like to implement the amendment in **(insert projected timeline)**.

Please review the proposed amendment to the plan of operations for technical adequacy and advise us of any additional information requirements. If you have questions, I can be reached at **(insert telephone number)**.

Sincerely,

(insert name)
(insert title)

Enclosure

REQUEST TEMPORARY APPROVAL TO CONTINUE OPERATIONS

SAMPLE LETTER

(Date)

Superintendent **(insert name)**
(insert park name)
(insert address)

Dear Superintendent **(insert name)**:

Pursuant to 36 C.F.R. § 9.34(b), I am notifying you that **(insert company name)**, has assumed ownership of the **(insert name of operation and location)**, from **(insert name of previous operator)**, effective **(enter date of transfer)**. Enclosed is a copy of the **(insert title of the legal instrument; *i.e.* Assignment and Bill of Sale, Lease Agreement, etc.)**.

As specified in the legal instrument transferring ownership of the operations, **(insert company name)**, has assumed all responsibilities for the operations – past and present.

(Insert company name), is requesting a 60-day temporary approval permit to activate and continue operation of the **(insert type of operation)** under the following conditions:

- The suspension of operations would result in an unreasonable economic burden or injury to **(insert company name)**, because **(explain)**.
- The operations will be conducted in accordance with all applicable laws.
- Operations will be conducted in a manner to minimize or prevent significant environmental damage by **(explain what measures you will be using to minimize resource impacts and public safety concerns)**; and
- Within sixty (60) days of the granting of such temporary approval, **insert company name)**, will submit an initial substantially complete plan of operations.

If you have any questions, please contact me at **(enter phone number)**.

Sincerely,

(enter name)
(enter title)

Enclosure:
Documentation of right to operate

CHANGE OF OPERATOR NOTIFICATION (FROM TRANSFERRING OWNER)

SAMPLE LETTER

(insert date)

Superintendent **(insert name)**
(insert park name)
(insert address)

Attn: **(insert name of park's oil and gas program administrator)**

Dear Superintendent **(insert name)**:

(Insert company name) has been operating **(insert description or title of operations)** under a plan of operations approved on **(insert date)**. Pursuant to the notification requirements of 36 C.F.R. § 9.34(a), I am notifying you that **(insert company name)** has **(insert one: sold, assigned, bequeathed, or conveyed)** ownership of the operations to **(insert name of Company operations have been transferred to)** on **(insert date)**. Enclosed is a copy of the **(insert title of the legal instrument; *i.e.* Assignment and Bill of Sale, Lease Agreement, etc.)**.

As specified in the legal instrument transferring ownership of the operations, **(insert name of Company that operations have been transferred to)** has assumed all responsibilities for the operations – past and present. Please send us a letter, returning the **(select: performance bond, letter of credit or other type of security tendered)** and documenting that the term of liability under the approved plan of operations has ended for **(insert company name)**.

If you have questions, I can be reached at **(insert telephone number)**.

Sincerely,

(**insert name and title – must be signed by the operator, his agent, executor, or representative)**

Enclosure

CHANGE OF OPERATOR NOTIFICATION (FROM NEW OWNER)

SAMPLE LETTER

(insert date)

Superintendent **(insert name)**
(insert park name)
(insert address)

Attn: **(insert name of park's oil and gas program administrator)**

Dear Superintendent **(insert name)**:

Pursuant to the notification requirements of 36 C.F.R. § 9.34(b), I am notifying you that **(insert company name)** has assumed ownership of the **(insert description or title of operations)**, from **(insert name of transferred Company)**, effective **(insert date)**. These operations were conducted under a plan of operations titled **(insert title)**, approved on **(insert date plan of operations was approved – typically this is the date the NEPA Finding of No Significant Impact that was signed by the regional director of the NPS)**.

(Insert company name) is ratifying the approved plan of operations of **(insert date)**, and will be bound by the terms and conditions specified in the plan. **(Insert company name)** will continue operations as described in the plan of operations; and will make no changes unless approved by the National Park Service through an amendment to the approved plan of operations. To ratify the approved plan of operations, we are enclosing:

- ☐ A list of the names and legal addresses of the following persons: The operator, and the owner(s) or lessee(s) if rights are State-owned) other than the operator (36 C.F.R. § 9.36(a)(1);
- ☐ Copy of the lease, deed, designation of operator, or assignment of rights upon which the operator's right to conduct operations is based (36 C.F.R. § 9.36(a)(2); and
- ☐ An affidavit stating that the operations planned are in compliance with all applicable Federal, State and local laws and regulations (36 C.F.R. § 9.36(a)(15).
- ☐ A (insert performance bond, letter of credit, or other acceptable type of security) in the amount of (insert dollar amount).

Please advise us of the continuing adequacy of the plan of operations, or of any specific amendments that may be needed.

NOTE TO OPERATOR: If the Company proposes to make changes to the operations or to conduct operations differently than described in the approved plan of operations, include a statement here to describe the Company's intent to prepare an amendment to the approve plan of operations and describe the nature of the changes to be addressed; or state that the Company intends to prepare a new plan of operations.)

If you have questions, I can be reached at **(insert telephone number)**.

Sincerely,

(insert name and title – must be signed by the operator, his agent, executor, or representative)

OPERATOR AFFIDAVIT OF COMPLIANCE

SAMPLE LETTER

(insert date)

Superintendent **(insert name)**
(insert park name)
(insert address)

Attn: **(insert name of park's oil and gas program administrator)**

Re**:** Affidavit of Compliance for **(insert name of operation)**

Dear Superintendent **(insert name)**:

(Insert name of operator) proposed plan of operations for **(insert description of operation)** in **(insert name of park)** is, and will continue to be in compliance with all applicable federal, state, and local laws and regulations.

Sincerely,

(insert signature)

Company Management Approval
Name: _(Insert name of approving official authorized to legally bind the company)_
Title: _(Insert title of official)_
Date: _(Insert date)_

APPENDIX D

GUIDELINE FOR THE DETECTION AND QUANTIFICATION OF CONTAMINATION AT OIL AND GAS OPERATIONS

Prepared by
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CSU Research Associate/Contaminants Specialist
Water Resources Division
National Park Service
Fort Collins, Colorado
November 1999
(updated October 2006)

WHAT IS THE PURPOSE OF THIS DOCUMENT?

This document is to be used as a guideline for collecting samples at sites within National Park Service (NPS) units where there are oil or gas operations. Samples will indicate whether or not contamination exists at the site as a result of an operation.

Operators must test for specific contaminants at an operation's site. It is important that operators employ uniform procedures when collecting samples so that results taken at different times by different people at the same site can be reliably compared. This guideline presents methodology for analyzing soil, sediment, groundwater, and surface water.

Specifically, these guidelines explain: 1) when owner/operators must collect samples, 2) what contaminants to test for, 3) how to collect samples, 4) quality assurance/quality control, 5) how to analyze samples in the laboratory, 6) required detection limits and choosing environmental benchmarks, and 7) sample plan and reporting requirements.

Note that in this guideline "superintendent" refers to the superintendent and/or members of his/her staff who will represent him/her on these issues. In many cases, the superintendent's actual involvement may be only that of approving the recommendations of the staff member(s).

WHEN AND WHERE TO COLLECT SAMPLES

The superintendent can require sampling by an operator at a site if it has recently experienced a release, has a history of releases, or the facility is operated in a manner that poses a risk of releasing crude oil, natural gas condensates, produced water, or any other "contaminating substance" associated with an oil or gas operation.

Sampling can occur at any time during or after an operation. ("After" refers to when an owner/operator sells the operation, transfers its leasing rights, or closes the operation and abandons the site.) In most instances, sampling by the operator should be conducted under the direction of a Sampling and Analysis Plan that has been approved by the superintendent to ensure all work will be performed in a professional manner, meets the resource protection needs of the park, and with the knowledge of the appropriate park staff.

Sampling will be biased, not random, focusing on areas where contamination is obvious (visible) or suspected (such as near production or storage facilities). The exact sample locations and number of samples collected are site-specific and will be determined by the superintendent, or proposed by the site operator in a Sampling and Analysis Plan or Work Plan submitted to the superintendent for review and approval. Owner/operators are responsible for sample collection, sample analyses, and reporting of results, not NPS.

Sample data from a nearby (but off-site) "clean" location is necessary for determining "background" concentrations at the site for the contaminants of concern. A comparison of the contaminated site data with "background" data will allow resource managers to determine how contaminated the site is. If the site has been remediated, comparisons of sample data with "background" data can indicate if the clean-up met the superintendent's remediation goals for the site.

Note that incoming owner/operators at new or existing oil or gas operations may wish to test the site for contamination before they begin operations. If they choose to do so, it is strongly suggested they test for the contaminants and use the methodology given in this guideline so that if samples are required during or after the operation for any reason, all data can be reliably compared.

WHAT CONTAMINANTS TO TEST FOR

Contaminating substances that can be found at oil and gas sites are primarily crude oil, natural gas condensate, produced water, drilling mud, lube (motor) oil, and solvents. The individual contaminants found in these substances are listed in Table D-1. Though other contaminants also are found in these substances, those in Table D-1 were chosen because of their greater environmental toxicity and because they are good indicators of the presence of the contaminating substance(s) of interest.

During the investigation of a contaminated site, sampling and analyses for some or all of the individual contaminants found in that contaminating substance should occur. Two lists of contaminants were compiled and are designated as "Tier I" (the smaller group, indicated by "xx" in Table D-1) and "Tier II" (the more comprehensive group, indicated by both "xx" and "x"). Having two tiers to choose from allows the superintendent flexibility in what contaminants he/she requires that the operator test for. The Tier I contaminants are included in the Tier II contaminants and therefore will always be tested for.

Tier I sampling should be conducted when basic information is needed. For instance, if contamination at a site is suspected but not known, testing for Tier I contaminants will confirm this and will also provide an indication as to the severity of contamination. Tier I sampling might also be conducted where park natural resources *(e.g.*, groundwater, vegetation, or surface water) are at low/no risk.

Table D-1. Contaminants to Test for When Investigating Various Types of Contamination at Oil and Gas Sites.

Contaminants that should be tested for during Tier I sampling are indicated by "xx", while those with either an "x" or "xx" should be tested for during Tier II sampling.

	where found:	Contaminating substances individual contaminants are associated with:					
contaminant	soil/sediment = S groundwater/ surface water = W	crude oil	condensate [j]	produced water	drilling mud	lube (motor) oil	solvents [k]
PAHs [a]	S, W	x	x	x	x	x	x
TPH [b]	S, W	xx	xx	x	x	xx	xx
BTEX [c]	S, W	x	xx	x	x	x	xx
metals [d]							
arsenic	S, W	x		x	x	x	
barium	S, W	x		xx	xx	x	
cadmium	S, W	x		x	x		
chromium	S, W	x		x	xx	x	
copper	S, W	x		x	x	x	
iron	S, W		x				
lead	S, W	x		x	x	xx	
magnesium	S, W	x		x	x	x	
mercury [e]	S, W	x		x	x		
nickel	S, W	xx		x		x	
selenium	S, W	x			x		
strontium	S, W	x		xx			
vanadium	S, W	xx		x	x		
zinc	S, W	x		xx	x	xx	
ammonia [f]	W	x		x			
calcium	W			x	x	x	
chloride	S, W			xx			
potassium	W	x		x	x		
sodium	S, W			xx	xx	xx	
sulfates	W			x			
gross alpha emissions [g]	W			x			
radium-226 [g]	S			xx			
pentachlorophenol	S, W				x		
surfactants	S, W				x		
pH	S, W	x	x	x	x		
conductivity/salinity [h]	S, W		x	xx	xx		
TDS	W			x	x		
grain size	S	x	x	x	xx	x	
total organic carbon	S	x	x	x	x	x	x
percent moisture [i]	S	xx	xx	xx	xx	xx	xx
static water level [j]	W	xx	xx	xx	xx	xx	xx
temperature	W	xx	xx	xx	xx	xx	xx

Notes for Table D-1:

a = Polycyclic Aromatic Hydrocarbons (PAHs). The lab analysis required in this guideline detects approximately 38 individual compounds including the priority pollutant “parent” compounds and their alkylated homologs. See Table D-2 for a full list of these. Note that these 38 compounds are measured with a single analytical test (*i.e.* there is not a separate test for each compound). Only test the groundwater for PAHs if ongoing surface water contamination from adjacent contaminated soil, sediment, or aquifer is suspected.

b = Total Petroleum Hydrocarbons. Certain "ranges" of hydrocarbons should be analyzed for, depending on the contaminating substance. For crude oil, a “full range” or “wide range” TPH scan should be conducted; for natural gas condensate a “lighter end” TPH scan, like for “gasoline range organics” (GRO) or total volatile petroleum hydrocarbons (TVPH) C_6-C_{10} should be conducted; and for diesel fuel a TPH scan for “diesel range organics” (DRO) or total extractable petroleum hydrocarbons (TEPH) C_{11}-C_{34} should be conducted. See section VI.A for details.

c = Benzene, Toluene, Ethylbenzene, Xylene. Only test for these in soil, sediment, or surface water if contamination is very recent and sampling is for initial (preliminary) assessment purposes.

d = analyze all metals for the “total recoverable” fraction

e = analyze soil (or sediment) for mercury only if there is a suspicion or it is known that mercury manometers were used on-site in the past (natural gas operations only)

f = report both the “total” and “unionized” fractions

g = note that if gross alpha in water exceeds a certain level, further testing for radioactive elements may be required. Radium-226 analyses must use gamma spectroscopy; this test takes approx. 30 days. At sites where produced water contamination may be more recent (in the last 10 yrs), gamma ray emissions in the soil can be preliminarily measured in the field (*e.g.* with a MicroRmeter) to determine if the radium-226 soil analyses are necessary.

h = salinity can be calculated from conductivity measurements

i = percent moisture is necessary to calculate the required dry weight and wet weight units

j = for groundwater only

k = can be from a gas production facility or a gas pipeline

l = various solvents can be used on-site (*e.g.* benzene, toluene, ethylbenzene, xylene, various petroleum products, etc.). Analyte tested for depends on the particular solvent used on-site.

Table D-2. Polycyclic Aromatic Hydrocarbons (PAHs) Detected by the Recommended "Expanded Scan" Analysis for PAHs

These compounds include the so-called priority pollutant "parent" compounds plus their alkylated homologs. Note that the 38 compounds below are measured with a single analytical test (that is, there is not a separate analytical test for each compound).

Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(g,h,i)perylene
Benzo(e)pyrene
Benzo(a)pyrene
Biphenyl
Chrysene
Chrysene, C1-
Chrysene, C2-
Chrysene, C3-
Chrysene, C4-
Dibenzo(a,h)anthracene
Dibenzothiophene
Dibenzothiophene, C1-
Dibenzothiophene, C2-
Dibenzothiophene, C3-
Fluoranthene
Fluoranthenes/Pyrenes, C1-
Fluorene
Fluorene, C1-
Fluorene, C2-
Fluorene, C3-
Ideno(1,2,3,c,d)pyrene
Naphthalene
Naphthalene, C1-
Naphthalene, C2-
Naphthalene, C3-
Naphthalene, C4-
Perylene
Phenanthrene
Phenanthrenes/Anthracenes, C1-
Phenanthrenes/Anthracenes, C2-
Phenanthrenes/Anthracenes, C3-
Phenanthrenes/Anthracenes, C4-

Tier II sampling should be conducted when more detailed information is needed. For instance, if clean-up activities at a site have been completed, testing for Tier II contaminants will confirm whether all (or nearly all) of the contaminants have, in fact, been removed. Tier II sampling might also be conducted at sites where important park natural resources are at a higher risk of being exposed to contaminants and where more stringent cleanup standards than those promulgated by a state regulatory body may be appropriate.

The superintendent will determine whether Tier I or II is necessary. Some combination of the two may also be used. He/she may also choose to omit or add contaminants to the Tier I or II lists should the situation warrant it.

Note that Table D-1 does not include all possible contaminants associated with oil or gas operations. Other contaminating substances involved are: caustic solutions used in natural gas sweetening (these can contain sodium, pH, amines, and EDTA contaminants); glycols used in natural gas dehydration; and surfactants, acidizing agents, corrosion inhibitors, solvents, biocides, etc. used in oil or gas well workover and completion. The superintendent may require testing for contaminants associated with these substances if he/she suspects they were released on-site.

HOW TO COLLECT SAMPLES

A. Sample Locations

1. **Soil** - Background samples should be collected from an area as close to the site as possible where it is certain no contaminating substances from the site could have reached (from surface runoff, off-site dumping, migration from wind, etc.).

   For soils that are known to be contaminated, samples should be collected from the spot and depth where contamination appears to be highest. For sites containing suspected soil contamination, seek out areas near production facilities, storage tanks, valves, etc., and adjacent low points in the topography where contaminated runoff may have passed over or "puddled up" and concentrated. Collect sample at a depth where contamination would be highest: in most cases probably the top one to two inches. Note that releases in very porous (*e.g.* sandy) soil may percolate down and pool immediately above deeper, less porous soil layers (*e.g.* clay or silt strata, particularly if saturated), pool at the water table, or concentrate in highly organic layers.

   For sites where contaminated soils have already been removed, a sample should be collected in the top inch or so of the newly exposed soil to insure that all the contaminants that percolated down into the soil were, in fact, removed. (Note: At hydrocarbon release sites, screening of soils at the base of the excavation for volatile organic compounds/VOCs with a photo-ionization detector could improve the confidence that Tier II sample selection is sufficient to confirm a site is clean).

   All samples will be grab samples. (As a rule, composite samples should not be collected). Where contamination is suspected but not known, an auger or tube type sampling device should be used to capture equal amounts of soil over the depth of the profile; depending on the properties of the soil (*e.g.* hardness or porosity). However, other devices (such as a trowel) may work better in some situations. Sample collectors may have to communicate with the laboratory to ensure that enough soil is collected for the various analyses.

   For BTEX samples, see section B.1. below.

   The total number of samples to be collected will be site-specific and determined by the superintendent. Enough samples should be collected and analyzed to meet the Tier I or Tier II sampling objective (see section III).

2. **Sediment** - Background samples should be collected from sediment adjacent to the sediments in question, but where it is reasonably certain no contaminating substances from the site (or other sites in the area) could have reached (from surface runoff, off-site dumping, etc.).

   As with soils, sediments known to be contaminated should be sampled from the spot and depth where contamination appears to be the highest. For suspected sediment contamination, seek out areas near production facilities, storage tanks, valves, etc., and

adjacent areas where potentially contaminated sediment in runoff could have settled out. Sample the sediment that has accumulated since the spill/release began. In some cases this may be the top ¼ inch, in others it may be the top several inches.

For sites where contaminated sediments have already been removed, samples should be collected in the newly exposed sediment to insure that all contaminants were, in fact, removed.

All samples will be grab samples. (As a rule, composite samples should not be collected.) Where contamination is suspected but not known, or the layer of contaminated sediment is more than a few inches thick, an auger or tube type sampling device should be used to capture equal amounts of sediment over the depth of the profile; depending on the properties of the sediment (*e.g.* hardness or porosity) and the depth of the water. However, other devices may work better. Sample collectors may have to communicate with the laboratory to ensure that enough sediment is collected for the various analyses.

The total number of samples to be collected will be site-specific and determined by the superintendent. Enough samples should be collected and analyzed to meet the Tier I or Tier II sampling objective (see section III).

3. **Groundwater** - Groundwater samples should be collected if the superintendent determines that hydrogeological conditions at the site are such that groundwater resources under or near the site are reasonably at risk. Samples can be collected either via established monitoring wells or with “push” technology (such as Geoprobe®).

   It is critical that: a) sampling occurs in the right areas (for example, one location must be upgradient of the potential point of impact and at least two must be downgradient); and b) wells are screened at the appropriate depths to intercept any contaminant plume(s). (This will require knowledge of the local hydrogeology and the contaminants involved and their environmental fate characteristics). If “push” technology is used to collect soil samples for lab analysis or for on-site screening of various media (soil, groundwater) for contaminants and samples are collected on more than one occasion, care must be taken to sample the exact same locations and at the same depths in the aquifer. Typically, once contamination is found in groundwater using screening methodologies, monitoring wells are required by state regulatory agencies to ensure sample quality and integrity is sufficient to base regulatory decisions.

   “Low-flow” sample collection methods should be used as per the EPA guidance document in IV.B.3 below.

   Groundwater samples should not be filtered.

   For BTEX samples, see section B.3. below.

All samples will be grab samples. (As a rule, composite samples should not be collected.) Sample collectors may have to communicate with the laboratory to ensure that a large enough sample is collected for the various analyses.

The total number of samples to be collected will be site-specific and determined by the superintendent or through his/her approval of the owner/operator's Sampling and Analysis Plan after consultation with park resource staff. Enough samples should be collected and analyzed to meet the Tier I or Tier II sampling objective (see section III).

4. **Surface Water** - Background samples should be collected upstream of any possible inputs of contaminated water (*e.g.* surface runoff or shallow groundwater) from the site.

   Where contamination is obvious, such as in a surface sheen, collect samples right at the surface, avoiding any scum, algae, or other detritus on the water surface if possible (and note in fieldbook if present). Where a contaminating substance such as chlorinated solvents (dense nonaqueous phase liquids, or DNAPLs) was released or is suspected at the bottom of an aquifer (*e.g.* above a clay layer or aquitard), then collect samples at a depth immediately above the base of the aquifer, the depth of the first fine-grained layer below the water table, or both. If surface water contamination is suspected, but it is unknown whether the contaminants are "floaters" or "sinkers," collect samples at a depth of 3-12 inches.

   For BTEX samples, see section B.4. below.

   Again, all samples will be grab samples. (As a rule, composite samples should not be collected). Sample collectors may have to communicate with the laboratory to ensure that a large enough sample is collected for the various analyses.

   The total number of samples to be collected will be site-specific and determined by the superintendent. Factors such as flow, depth, and the size of the water body are important here. Enough samples should be collected and analyzed to meet the Tier I or Tier II sampling objective (see section III).

B. Sample Collection Methodologies

Acceptable sampling methodology must be used so that results are as representative as possible. Sample collection can be complex and should be conducted by experienced professionals (typically a contractor). This can also help if the values or methods are challenged by one of the interested parties involved (state regulatory agency, park, owner/operator etc.). Furthermore, experienced professionals are also trained in the appropriate precautions to protect the health and safety of the sample collector(s) from exposure to potentially harmful contaminants or hazardous situations that could develop.

Methodologies that should be used are typically those accepted/sanctioned by the appropriate state regulatory agency or are found in publications of widely recognized organizations (*e.g.* EPA, NOAA) that conduct environmental research. Acceptable methodologies are listed below for each environmental media (soil, sediment, etc.). In

general, the state is authorized as the lead regulatory agency and should be the initial contact for appropriate sampling methodologies to employ when various environmental media are believed contaminated. In site-specific situations where a sensitive park resource is threatened and more stringent cleanup than that required by a state agency may be appropriate, park staff should consult WASO support offices as needed for appropriate criteria prior to discussion of more stringent cleanup levels with the owner/operator. If sample collection methodologies other than the above are used, they must contain the following to be acceptable: 1) applicability of the procedure, 2) equipment required, 3) detailed description of procedures to be followed in collecting the samples, 4) common problems encountered and corrective actions to be followed, and 5) precautions to be taken. The methodology to be used must be cited in the sample plan. A basic description of collection methodology should be included in the report to the superintendent (section VIII).

1. **Soil** - Methods from source documents published by the following organizations are acceptable:
   - State Governing Regulatory Agency
   - U.S. EPA
   - American Society for Testing and Materials
   - U.S. Department of the Interior
   - American Petroleum Institute

   Note that when collecting soil samples for BTEX analysis, specialized equipment and collection methods are necessary. Use a coring device such as the EnCore™ sampler or disposable plastic syringes. For detailed guidance, see section 4.1 and method 5035 in Chapter 4 of EPA's SW-846, Update III (full reference in section VI.A. below).

2. **Sediment** - Methods from source documents published by the following organizations are acceptable:
   - State Governing Regulatory Agency
   - U.S. EPA
   - American Society for Testing and Materials
   - U.S. Department of the Interior
   - American Petroleum Institute

3. **Groundwater** - Use: Environmental Protection Agency, RCRA Ground-Water Monitoring: Draft Technical Guidance, EPA/530/R-93-001, EPA: Office of Solid Waste, Washington, D.C. (1992); or Publications of State Governing Regulatory Agency (DEQ, DEM, State EPA etc.).

   "Low-flow" sampling should be conducted; for guidance, see:

   Puls, R.W. and M.J. Barcelona, Ground Water Issue: Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures. EPA/540/S-95/504, EPA: Office of Solid Waste and Emergency Response, Washington, D.C. (1996).

Note that when collecting water samples for BTEX analysis, specialized equipment and collection methods are necessary. For detailed guidance, see section 4.1 and method 5030B in Chapter 4 of EPA's SW-846, Update III (full reference in section VI.A. below).

4. **Surface Water** - Methods from source documents published by the following organizations are acceptable:
   - - State Governing Regulatory Agency
   - - U.S. EPA
   - - American Society for Testing and Materials
   - - U.S. Department of the Interior
   - - American Petroleum Institute

   Also recommended is this NPS guidance: Stednick, J.D. and D.M. Gilbert, Water Quality Inventory Protocol: Riverine Environments. National Park Service, Water Resources Division, Technical Report no. NPS/NRWRD/NRTR-98/177. Fort Collins, CO, p.103 (1998).

   Note that when collecting water samples for BTEX analysis, specialized equipment and collection methods are necessary. For detailed guidance, see section 4.1 and method 5030B in Chapter 4 of EPA's SW-846, Update III (full reference in section VI.A. below).

C. Sample Containers, Preservation, Storage

Refer to documents listed in sections VI.A. below and IV.B. above for specific guidance, including 40 C.F.R. Part 136, if necessary. EPA's SW-846, Update III is especially helpful.

Note that sediment samples should not be acidified for metals and that neither groundwater nor surface water samples should be filtered. Remember special conditions when sampling for BTEX (see section 4.1 and methods 5030 and 5035 in Chapter Four of SW-846, Update III) and for any metals requiring unusually low detection limits.

D. Chain of Custody

Proper chain-of-custody procedures must be used in sample handling (collection, shipping, storage, analysis). For examples, see Standard Methods for the Examination of Water and Wastewater for general guidance, and SW-846, Update III, Chapter 9, section 9.2.2.7 for detailed guidance.

QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance/quality control (QA/QC) plans or Quality Assurance Project Plans (QAPPs) ensure that the data generated are scientifically valid, defensible, and of known precision and accuracy. Some of the basic elements of QA/QC or QAPP plans are:

- data quality objectives (DQO)

- field operating procedures (such as sample management, decontamination, equipment calibration, etc.)
- field QA/QC requirements (such as data handling, collection of control samples like blanks, spikes and duplicates, etc.)
- lab operating procedures (such as sample management, equipment calibration, etc.)
- lab QA/QC procedures (such as data handling, control samples, etc.).

A QA/QC plan should be in place before any sampling begins. Basic QA/QC procedures to be followed should be described briefly in the sample plan (section VIII). If a certain QA/QC guidance document is used, it should be cited in the sample plan. Many guidance documents are available—several through EPA—including the following, recommended here:

Environmental Protection Agency, Test Methods For Evaluating Solid Waste, Physical/Chemical Methods (SW-846), 3rd edition, Update III, Chapter One. EPA: Office of Solid Waste and Emergency Response, EPA, Washington, D.C. (1997).

Adherence to the QA/QC plan should be documented throughout the project and demonstrated in the final report to the superintendent.

Aspects of quality assurance that may be helpful can be found in:

Environmental Protection Agency, The Volunteer Monitor's Guide to Quality Assurance Project Plans, EPA: Office of Wetlands, Ocean and Watersheds 4503F. EPA publication number: EPA 841-B-96-003 (1996). Also available at: http://www.epa.gov/owow/monitoring/volunteer/qappcover.htm

HOW TO ANALYZE SAMPLES IN THE LABORATORY

A. Analytical Methods

Metals analyses must use the methods in EPA's SW-846, Update III (or more recent). This applies to soil, sediment, groundwater, and surface water samples. Groundwater and surface water methods can also include EPA's 200 series for metals, or the 1600 series where extremely low (state-of-the-art) detection limits are desired. The full reference for the SW-846 document is:

Environmental Protection Agency, Test Methods For Evaluating Solid Waste, Physical/Chemical Methods (SW-846), 3rd edition, Update III. EPA: Office of Solid Waste and Emergency Response, Washington, D.C, (1997).

Polycyclic aromatic hydrocarbon (PAH) analyses must use a modification of method 8270 in EPA's SW-846, Update III. Developed by the National Oceanic and Atmospheric Administration (NOAA), this method is referred to as "GC/MS method 8270 in selective ion mode (SIM)", and is informally referred to as the "expanded scan" for PAHs. Consult the following for a detailed explanation of methodology:

Lauenstein, G.G., and A.Y. Cantillo, Sampling and Analytical Methods of the National Status and Trends Program Mussel Watch Project: 1993-1996 Update, NOAA Technical Memorandum NOS ORCA 130. p.233, (1998).

Total petroleum hydrocarbons (TPH) analyses will be for certain "ranges" of hydrocarbons, depending on the contaminating substance present. For crude oil, a **"wide range" or "full range" TPH scan** should be conducted to measure the heavier fractions. For natural gas condensate a "lighter end" TPH scan, such as for **"gasoline range organics" (GRO)**, should be conducted. For diesel fuel, a TPH scan for **"diesel range organics" (DRO)** should be conducted to measure the mid-range fractions. Although many analytical methods are available for TPH, samples should be analyzed using only GC/FID (gas chromatograph/flame ionization detection) methodology. Method 8015B in EPA's SW-846, Update III is highly recommended.

Benzene, toluene, ethylbenzene, and xylene (BTEX) analyses should use method 8260B in EPA's SW-846, Update III. Analysis for BTEX compounds is typically done in place of a TPH analysis when a refined product is released as opposed to crude oil.

Ammonia analyses should use EPA method 350.1 (or equivalent APHA method 4500-NH3 H, or USGS method 4523-85). Samples should not be filtered.

For all other contaminants in Table D-1, use methods approved in 40 C.F.R. Part 136 (EPA, Standard Methods for the Examination of Water and Wastewater (latest edition), ASTM, or USGS). Methods in the NPS, Water Resources Division "Water quality inventory protocol" (section IV.B.4 above) can also be used.

B. Laboratories

Samples must be sent to an experienced lab that can: 1) perform the above analytical methods; 2) achieve the required detection limits (section VII below); 3) perform the required QA/QC procedures (section V above); and 4) provide the information required in the sample plan and the final report to the superintendent (section VIII below).

Note that in regards to the PAH analytical method (as specified in VI.A. above), only a few labs nationwide (perhaps a dozen) currently can perform this analysis. Many of these same labs can also "fingerprint" samples; that is, by analyzing hydrocarbon-contaminated samples, they can identify the type and source of the petroleum product at the site. A partial list of these labs follows (no government endorsement implied):

Arthur D. Little, Inc.
25 Acorn Park
Cambridge, MA. 02140
(617) 498-5000

Battell Marine Science Lab
1529 West Sequim Bay Rd.
Sequim, WA 98382
(360) 683-4151

Geochemical and Environmental
Research Group
Texas A&M University
833 Graham Rd.
College Station, TX. 77845
(409) 862-2323 ext. 115

Woods Hole Group, Environmental Labs
375 Paramount Drive, Suite B
Raynham, MA 02767-5154
(508) 822-9300 or 563-5030

DETECTION LIMITS

Note: The term "detection limit" used herein refers to what is commonly called the "reporting limit" and occasionally called the "quantitation limit." A detection limit is what a lab (using a particular instrument in some combination with analytical method and skill level of operator) can quantify low levels of a contaminant substance with acceptable confidence. It does not refer to the sometimes much lower "instrument detection limit" or "method detection limit" where how well the value obtained represents the true value may be of low confidence. Also note that detection limits should not be confused with cleanup standards or cleanup criteria. Required cleanup levels/criteria are usually set by state regulatory authorities as the acceptable contaminant residue (usually well above detection limits) that may remain in some environmental media after a remedial effort has occurred. NPS is authorized to require more stringent cleanup criteria on a case-by-case basis, particularly in site-specific situations where sensitive ecological resources could be threatened. Widely accepted, peer-reviewed research may then be used to support the NPS position that state criteria are not sufficiently protective and lower cleanup criteria are warranted.

Labs should achieve the detection limits (DLs) provided in Table D-3 below. These DLs are below federal (and presumably state) standards and most other criteria currently in the literature. Therefore, analytical methods that achieve these DLs will be able to indicate if most standards and criteria are being met. Note, however, that the DLs for two contaminants—PAHs and mercury—are above some of the more strict standards or criteria that exist. This is because many labs cannot achieve DLs this low, and the DLs in the table were chosen so that most experienced and well-equipped labs could achieve them. Lower DLs are achievable for PAHs and mercury at some labs that have the expertise and special instrumentation (see section VI.B. above for examples).

If the natural resources at or near the site are particularly sensitive, pristine, or important to the park, the superintendent may wish to choose the strictest available standard or criteria as the remediation goal. He/she would then have to request some lower DLs (lower than those in Table D-3) from the lab for PAHs and mercury.

For the contaminants in Table D-1 that are not listed in Table D-3, commonly reported DLs are acceptable.

Table D-3. Maximum Acceptable Detection Limits ("Reporting Limits") for Surface Water, Groundwater, Soil, and Sediment Samples.

Lower detection limits are also acceptable.

Contaminant	Detection limit for surface water and groundwater samples	Detection limit for soil and sediment samples (dry weight)
PAHs	10 ppt [a]	1 ppb [c]
TPH	50 ppb	0.1 ppm
benzene	1 ppb	25 ppb
toluene	5 ppb	25 ppb
ethylbenzene	5 ppb	25 ppb
xylene	5 ppb	25 ppb
ammonia	0.05 ppm	--
arsenic	5 ppb	0.5 ppm
barium	1 ppb	1 ppm
cadmium	0.5 ppb	0.2 ppm
chromium	3 ppb	1 ppm
copper	5 ppb	1 ppm
iron	0.1 ppm	10 ppm
lead	1 ppb	5 ppm
mercury	0.2 ppb [b]	0.2 ppm [d]
nickel	5 ppb	5 ppm
selenium	1 ppb	1 ppm
strontium	10 ppb	5 ppm
vanadium	10 ppb	1 ppm
zinc	10 ppb	5 ppm

water units:

ppm = parts per million = milligrams per liter = mg/L

ppb = parts per billion = micrograms per liter = ug/L

ppt = parts per trillion = nanograms per liter = ng/L

soil/sediment units:

ppm = parts per million = milligrams per kilogram = mg/kg = micrograms per gram = ug/g

ppb = parts per billion = micrograms per kilogram = ug/kg = nanograms per gram = ng/g

a - DLs as low as 1 ppt may be achievable

b - DLs as low as 0.1 ppb, or even 10 ppt, may be achievable

c - DLs as low as 0.25 ppb may be achievable

d - DLs as low as 25 ppb, or even 1 ppb, may be achievable

For an extensive list of federal standards and other published environmental criteria for most of the contaminants in Table D-1, consult NPS Water Resources Divisions' "Environmental Contaminants Encyclopedia" at the website http://www.aqd.nps.gov/toxic. Note that there may be state standards, other criteria, or in some cases, updated federal standards that are not listed in this Encyclopedia.

SAMPLE PLAN AND REPORTING REQUIREMENTS

A. Sample Plan

The owner/operator should submit a Sampling and Analysis Plan to the superintendent for approval before samples are collected. The plan must include:

- sampling objectives (such as, “identify contaminants and concentrations involved,” “determine spatial extent of spill,” “determine if remediation is complete,” etc.)
- the contaminating substances being investigated (such as crude oil, natural gas condensate, produced water, etc.)
- list of individual contaminants that will be tested for (see Table D-1)
- analytical methods to be used (see section VI. A.)
- type of samples to be collected (such as soil, sediment, groundwater, or surface water)
- citation and brief description of sample collection methodology to be used (see section IV. B.)
- specific sample locations and number of samples at each (superintendent will walk the site and choose exact locations; this information may not be available until the time when samples are actually collected)
- total number of samples (this information may not be available until the time when samples are actually collected)
- acknowledgment that detection limits (that is, “reporting limits”) specified herein (section VII) will be achieved
- brief description of QA/QC procedures to be followed and citation of any guidance document used (see section V)
- acknowledgment that proper chain-of-custody procedures will be initiated and followed

B. Reporting Requirements

Upon completing sample collection and analyses, the owner/operator shall submit a report to the superintendent. This report shall include:

- sample ID number/name
- description of sample locations (include maps, sketches, or photos)
- sample depth
- brief description of spill area (apparent extent of spill, topography, vegetation, surface water features, apparent soil conditions, etc.)
- date and time of sampling
- name of sample collector
- information pertinent to the sample collection methodology used (sampling devices used, how samples were collected, etc.)
- sample containers used, any preservation methods, and storage conditions of samples
- date and time of analyses
- name of chemist/technician performing analyses

- type of sample (soil, sediment, groundwater, or surface water)
- sample fraction measured (such as “total”, “total recoverable”, etc.)
- analytical results and units (mg/kg, µg/L, etc.)
- percent moisture (for soil/sediment samples)
- wet weight *and* dry weight units (for soil/sediment samples)
- analytical methods used
- detection limits (that is, “reporting limits”) achieved
- method detection limits (MDL) for the analytical methods used
- indication of analyses done in the field (such as pH, conductivity, etc.)
- field observations made while collecting samples
- lab and field QA/QC results and procedures followed
- name of analytic equipment used
- appropriate chain-of-custody forms

APPENDIX E

NATIONAL PARK SERVICE NONFEDERAL OIL AND GAS PROGRAM CONTACTS

WASHINGTON OFFICE, GEOLOGIC RESOURCES DIVISION

(staff are duty stationed in Lakewood, CO)

Dave Shaver, Chief, Geologic Resources Division, telephone 303-969-2094
Carol McCoy, Branch Chief, Planning, Evaluation, and Permits Branch, telephone 303-969-2096
Ed Kassman, Environmental Protection Specialist, telephone 303-969-2146
Lisa Norby, Petroleum Geologist, telephone 303-969-2318
Pat O'Dell, Petroleum Engineer, telephone 303-969-2013

REGIONAL MINERALS COORDINATORS

Intermountain Region (covers AZ, CO, MT, NM, OK, TX, UT, and WY)
Linda Dansby, telephone 505-988-6095

Midwest Region (covers AR, IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, and WI)
John Sowl, telephone 402-661-1872

Northeast Region (covers CT, DE, KY, MA, ME, NH, NY, PA, RI, VA, VT, and WV)
Dave Reynolds, telephone 215-597-5372

Southeast Region (covers AL, FL, GA, LA, MS, NC, SC, and TN)
Don Hargrove, telephone 239-695-1150 (collateral duty with BICY oil and gas management)

NPS CONTACTS IN PARKS WITH NONFEDERAL OIL AND GAS OPERATIONS

Alibates Flint Quarries National Monument / Lake Meredith National Recreation Area (TX)
Superintendent, Karren Brown, telephone 806-857-3151
Chief of Resource Management, Paul Eubank, telephone 806-857-0309
Environmental Protection Specialist, Arlene Wimer 806-865-2874 (ext. 35)

Aztec Ruins National Monument (NM)
Superintendent, Dennis Caruth, telephone 505-334-6174 (ext. 22)
Chief of Resource Management Terry Nichols, telephone 505-334-6174 (ext. 23)

Big Cypress National Preserve (FL)
Superintendent, Karen Gustin, telephone 239-695-1101
Chief of Resource Management, Ron Clark, telephone 239-695-1106
Natural Resource Specialist, Don Hargrove, telephone 239-695-1150

Big South Fork National Recreation Area (TN)
Superintendent, Reed Detring, telephone 423-569-9778
Chief of Resource Management, Tom Blount, telephone 423-569-2404 (ext. 252)
Biological Science Technician, Etta Spradlin, telephone 423-569-2404 (ext. 254)

Big Thicket National Preserve (TX)
Superintendent, Todd Brindle, telephone 409-951-6801
Chief of Resource Management, Curtis Hoagland, telephone 409-951-6820
Biologist, Natural Resource Program Manager, Dusty Pate, telephone 409-951-6822

Cuyahoga Valley National Park (OH)
Superintendent, John Debo, telephone 440-546-5903
Chief of Resource Management & Visitor Protection, Lisa Petit, telephone 330-650-5071 (ext. 1)
Biologist, Meg Plona, telephone 330-342-0764 (ext. 2)

Gauley River National Recreation Area (WV) / New River Gorge National River (WV)
Superintendent, Calvin Hite, telephone 304-465-6511
Chief of Resource Management, Ken Stephens, telephone 304-465-6531
Natural Resource Specialist, Gene Clare, telephone 304-465-6544

Jean Lafitte National Historical Park (LA)
Superintendent, David Luchsinger, telephone 504-589-3882 (ext. 137)
Chief of Resource Management, David Muth, telephone 504-589-3882 (ext. 128)
Natural Resource Management Specialist, Nancy Walters, telephone 504-589-3882 (ext. 119)

Obed Wild and Scenic River (TN)
Unit Manager, Philip Campbell, telephone 423-346-6294
Chief of Resource Management, Rebecca Schapansky, telephone 423-346-6294 (ext. 27)
Biological Science Technician, Etta Spradlin, telephone 423-569-2404 (ext. 254)

Padre Island National Seashore (TX)
Superintendent, Colin Campbell, telephone 361-949-8173 (ext. 222)
Chief of Resource Management & Science, Darrell Echols, telephone 361-949-8173 (ext. 223)
Environmental Protection Specialist Mark Biel, telephone 361-949-8173 (ext. 234)

Tallgrass Prairie National Preserve (KS)
Superintendent, Steve Miller, telephone 620-273-6034
Natural Resource Program Manager, Kristin Hase, telephone 620-273-6034
Natural Resource Specialist, Vacant

GLOSSARY

abandonment – the termination of oil and gas production operations, removal of facilities, plugging of the well bore, and reclamation of surface disturbances.

access – any way, means, or method of entering or traversing on, across, or through federally owned or controlled lands or waters (36 C.F.R. § 9.30(a)), including but not limited to: vehicle, watercraft, fixed-wing aircraft, helicopter, offroad vehicle, mobile heavy equipment, snowmobile, pack animal, and foot.

action – any federal activity including (but not limited to) acquiring, managing, and disposing of federal lands and facilities; facilitating human occupation or visitation; providing federally undertaken, financed, or assisted construction and improvements; and conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, and regulating and licensing activities.

affected environment – term used in the National Environmental Policy Act (NEPA) to denote surface or subsurface resources (including social and economic elements) within or adjacent to a geographic area that could potentially be affected by a proposed action; the environment of the area to be affected or created by the alternatives under consideration. (40 C.F.R. § 1502.15)

alternative – combination of management prescriptions applied in specific amounts and locations to achieve desired management goals and objectives.

alternative, no-action – an alternative that maintains established trends or management direction. For an oil and gas operation it typically means that the action as proposed would not occur.

aquifer – a water-bearing rock, rock formation, or group of formations. Aquifers can be either unconfined or confined.

assignment of rights – the transfer by a party of all of its right to real property, or of any estate or right therein, such as rights in a lease.

base flood – a flood which has a one percent chance of occurring in any given year (also known as the 100-year flood). This term is used by the National Flood Insurance Program to indicate the minimum level of flooding to be used by a community in its floodplain management regulations.

base floodplain – 100-year floodplain.

blowout – an uncontrolled explosion of gas, oil, or other fluids from a drilling well. A blowout occurs when formation pressure exceeds the pressure applied to it by the column of drilling fluid and when blowout prevention equipment is absent or fails.

blowout preventer (BOP) – one of several valves installed at the wellhead to prevent the escape of pressure either in the annular space between the casing and drill pipe or in open hole (*i.e.*, hole with no drill pipe) during drilling or completion operations.

brine – water containing relatively large concentrations of dissolved salts, particularly sodium chloride. Brine has higher salt concentrations than ocean water.

cementing casing – to fill the annulus between the casing and hole with cement to support the casing and prevent fluid migration between permeable zones.

Christmas tree – the control valves, pressure gauges, and chokes assembled at the top of a well to control the flow of oil and gas after the well has been completed.

closed loop containerized mud system – a fully containerized, closed-loop drilling fluid system that holds water, drilling mud and well cuttings. Inside a NPS unit an operator must use a closed loop containerized mud system in place of an earthen reserve pit system.

Code of Federal Regulations (C.F.R.) – a publication that codifies the general and permanent rules and regulations published in the Federal Register by the Executive Branch departments and agencies of the federal government, and which carry the force of law.

completion – the activities and methods to prepare a well for production. Includes installation of equipment for production from an oil or gas well.

conditions of approval (COAs) – provisions or requirements under which a Plan of Operations is approved.

contaminating substance – those substances, including but not limited to, saltwater or any other injurious or toxic chemical; waste oil or waste emulsified oil; basic sediment; mud with injurious or toxic substances produced or used in the drilling, development, production, transportation, or on-site storage, refining, and processing of oil and gas.

critical habitat – the specific areas within the geographical area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of the Endangered Species Act, on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and specific areas outside the geographical area occupied by the species at the time it is listed…upon a determination by the Secretary that such areas are essential for the conservation of the species.

cultural landscape – a geographic area, including both cultural and natural resources and the wildlife and domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes.

cultural resource – cultural resources include archeological sites; historic sites, buildings, and districts; cultural landscapes; and traditional cultural properties.

deed – a conveyance of realty; a writing signed by a grantor, whereby title to realty is transferred from one to another.

Department of the Interior manual (DM) – the compilation of policies, procedures, and guidelines governing operations of the various bureaus of the Department of the Interior.

designation of operator – appointment or assignment denoting person or entity responsible for an oil and gas operation.

Director – the Director of the National Park Service.

drilling fluid ("mud") – circulating fluid, one function of which is to lift cuttings out of the wellbore and to the surface. While a mixture of clay, water, and other chemical additives is the most common drilling fluid, wells can also be drilled using oil-based muds, air, or water as the drilling fluid.

directional drilling – intentional deviation of a wellbore from the vertical (90 degrees). Although wellbores are normally drilled vertically, it is sometimes necessary or advantageous to drill at an angle from the vertical.

dry hole – any well incapable of producing oil or gas in commercial quantities. A dry hole may produce water, gas, or even oil, but not enough to justify production.

effects – see “impacts”

endangered species – any species which is in danger of extinction throughout all or a significant portion of its range.

environmental assessment (EA) – a concise public document prepared to provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact. An EA includes a brief discussion of the need for a proposal, the alternatives considered, the environmental impacts of the proposed action and alternatives, and a list of agencies and individuals consulted.

environmental impact statement (EIS) – a document prepared to analyze the impacts on the environment of a proposed project or action and released to the public for comment and review. EISs are prepared when there is the potential for major impacts on natural, cultural or socioeconomic resources. An EIS must meet the requirements of NEPA, CEQ, and the directives of the agency responsible for the proposed project or action.

Executive Orders, memoranda, or proclamations – regulations having the force of law issued by the President of the United States to the Executive branch of the federal government.

Federal Register – daily publication of the National Archives and Records Administration that updates the Code of Federal Regulations, in which the public may review the regulations and legal notices issued by federal agencies.

federally owned and controlled lands – land that the United States possesses fee title through purchase, donation, public domain, or condemnation. It also includes land that the United States holds any interest, such as a lease, easement, rights-of-way, or cooperative agreement.

federally owned and controlled waters – all surface waters in the boundaries of a National Park System unit without regard to whether the title to the submerged lands lies with the United States or another party.

floodplain – the lowland and relatively flat areas adjoining inland and coastal waters including floodprone areas of offshore islands, and including at a minimum, that area subject to temporary inundation by a regulatory flood.

flowlines and gathering lines – lines or pipelines that transport produced fluids (*e.g.*, oil, gas, brine) from the wellhead to storage, treatment or transportation facilities.

gas – any fluid, either combustible or noncombustible, which is produced in a natural state from the earth, and which maintains a gaseous or rarefied state at ordinary temperature and pressures (36 C.F.R. § 9.31(m)).

geophysical exploration – geophysical exploration consists primarily of 3-D seismic operations and typically involves selective cutting of vegetation along source and receiver lines, drilling shotholes along source lines, placing explosives at the bottom of each shothole, placing cables and other recording equipment along receiver lines, detonating explosives, and recording the date generated from the soundwaves.

hydrocarbons – organic compounds consisting of hydrogen and carbon, such as petroleum, crude oil or natural gas, whose densities, boiling points, and freezing points increase as their molecular weights increase. The smallest molecules of hydrocarbons are gaseous; the largest are solids. Petroleum is a mixture of many different hydrocarbons.

impacts – the likely effects of an action upon specific natural, cultural, or socioeconomic resources. Impacts may be beneficial, or adverse and direct, indirect, and / or cumulative.

lease – a legal document executed between a landowner, as lessor, and a company or individual, as lessee, that grants the right to develop the premises for minerals or other products.

lessor – one who leases real property. Typically, in park units the lessor is the mineral owner.

management policies – the *National Park Service Management Policies* set the basic service-wide policy of the National Park Service. They provide the overall foundation, set the framework, and provide direction for management decisions within the NPS. The management of the National Park System and NPS programs is guided by the U.S. Constitution, public laws, proclamations, executive orders, rules and regulations, and directives of the Secretary of the Interior and the Assistant Secretary for Fish and Wildlife and Parks. Other laws, regulations, and policies related to the administration of federal programs, although not cited, may also apply.

mitigation – "Mitigation" as defined in the National Environmental Policy Act (NEPA) (40 C.F.R. 1508.20), includes:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the impact of repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. Compensating for the impact by replacing or providing substitute resources or environments.

National Park system – the total sum of the land and water now and hereafter administered by the Secretary of the Interior through the National Park Service for park, monument, historic, parkway, recreational, or other purposes.

natural floodplain values – attributes of floodplains which contribute to ecosystem quality, including soils, vegetation, wildlife habitat, dissipation of flood energy, sedimentation processes, ground water (including riparian ground water) recharge, etc.

natural gas – highly compressible, highly expandable mixture of hydrocarbons having a low specific gravity and occurring naturally in a gaseous form. Besides hydrocarbon gases, natural gas may contain appreciable quantities of nitrogen, helium, carbon dioxide, and contaminants.

oil – any viscous, combustible liquid hydrocarbon or solid hydrocarbon substance easily liquefiable on warming, which occurs naturally in the earth, including drip gasoline or other natural condensates recovered from gas without resort to manufacturing processes.

operations – "all functions, work and activities within a unit in connection with exploration for and development of oil and gas resources." (36 C.F.R. § 9.31(c)). Operations include, but are not limited to:

- reconnaissance to gather natural and cultural resources information;
- line-of-sight surveying and staking;
- geophysical exploration;
- exploratory drilling;
- production, gathering, storage, processing, and transport of petroleum products;
- inspection, monitoring, and maintenance of equipment;
- well "work-over" activity;
- construction, maintenance, and use of pipelines;
- well plugging and abandonment;
- reclamation of the surface; and
- construction or use of roads, or other means of access or transportation, on, across, or through federally owned or controlled lands or waters.

operator – person(s) who may have rights to explore and develop nonfederally owned oil and gas in NPS units, including:

- owners: individuals, corporations, local and state governments, Indian tribes (when the tribe owns the oil and gas in fee)., etc.;
- lessees: individuals or corporations that lease oil and gas from the owner; and
- contractors: individuals or corporations under contract with the owner, lessee, or operator.

Organic Act – The law that established the National Park Service in 1916.

permeability – the capacity to transmit fluids or gases through soil or rock materials; the degree of permeability depends upon the size and shape of the pore spaces and interconnections, and the extent of the interconnections.

plan of operations – information submitted by an operator describing how proposed oil and gas operations would be conducted in a unit of the National Park System pursuant to the NPS's Nonfederal Oil and Gas Rights Regulations, 36 C.F.R. 9B, and containing information requirements pertinent to the type of operations being proposed (36 C.F.R. § 9.36(a) through (d)).

practicable – capable of being done within existing constraints. The test of what is practicable depends upon the situation and includes consideration of the pertinent factors such as environment, cost, or technology.

production – phase of mineral extraction where minerals are made available for treatment and use.

Public Law – law or statute of the United States.

reclamation – the process of returning disturbed land to a condition that will be approximately equivalent to the pre-disturbance condition terms of sustained support of functional physical processes, biological productivity, biological organisms, and land uses.

recovery plan – plan required for each listed threatened/endangered species and generated by a task force under the leadership of the U.S. Fish and Wildlife Service. The plan describes the specific management actions necessary to restore the threatened or endangered species to recovery status, including the estimated cost and time involved. The FWS coordinator oversees implementation of the plan.

Regional Director – chief decision-maker in each of the seven regions of the NPS.

regulations – rules or orders prescribed by federal agencies to regulate conduct, and published in the C.F.R..

regulatory floodplain – specific floodplain which is subject to regulation by Executive Order 11988, “Floodplain Management,” and the NPS’s Floodplain Management Guideline (#93-4). For Class I Actions, the Base Floodplain (100-year) is the regulatory floodplain; for Class II Actions, the 500-year return period floodplain is the regulatory floodplain; for Class III Actions, the Extreme floodplain is the regulatory floodplain.

revegetation – reestablishment and development of self-sustaining plant cover. On disturbed sites, this normally requires human assistance, such as seedbed preparation, reseeding, and mulching.

scoping – scoping is done during the initial phase of project planning to seek input from a variety of sources. This input is used to identify issues, areas requiring additional study, alternative methods and locations, and topics to be analyzed in the National Environmental Policy Act (NEPA) document. Scoping is done internally with NPS staff and the operator, and externally with the interested public, other agencies, and stakeholders.

seismic hole or shothole – any hole drilled for the purpose of obtaining geophysical information to be used in the exploration or development of oil, gas, or other mineral resources. Explosives are placed in the shothole, are covered with soil, and are detonated to generate a seismic wave. This information is processed by a computer to generate a image of the subsurface geologic conditions.

shut-in well – an oil and gas well in which the inlet and outlet valves have been shut off so that it is capable of production but is temporarily not producing.

split estate – situation where the mineral estate is owned or controlled by a different party than the owner of the land surface in the same area.

Superintendent – senior on-site NPS official in a park. The superintendent works closely with his/her staff to ensure protection of park resources and values during development of nonfederal oil and gas in units of the park.

taking – to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

threatened species – any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

unit agreement – an agreement combining leased tracts on a fieldwide or reservoir wide scale so that many tracts may be treated as one to facilitate operations such as enhanced recovery projects.

United States Code (USC) – the systematic collection of the existing laws of the United States, organized under 50 separate titles. The citation 16 USC refers to section 1 of title 16.

vertical drilling – drilling of a well vertically (90 degrees) to reach a target zone straight underneath the surface location.

wetlands – lands that are transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: 1) at least periodically, the land supports predominantly hydrophytes; 2) the substrate is predominantly undrained hydric soil; and 3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year. (Classification of Wetlands and Deepwater Habitats of the United States by Cowardin *et al*. 1979)

workover – work performed on an existing well to improve, maintain, or restore a well's production. A workover is done using a truck-mounted rig and typically lasts one to several weeks.

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