MINERAL OWNERSHIP AND DEVELOPMENT ACTIVITY IN AND AROUND THE NATIONAL PARKS

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PREFACE

This report has been submitted to the National Park Service by Temple, Barker & Sloane, Inc., 33 Hayden Avenue, Lexington, Massachusetts, 02173, in partial fulfillment of Contract No. CX-0001-1-0109. While the report was prepared under the direction of the Energy, Mining, and Minerals Division of the National Park Service, the conclusions and recommendations drawn are those of Temple, Barker, & Sloane and do not necessarily reflect National Park Service policy.

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I. INTRODUCTION

This report was prepared to respond to the Congressional Appropriations Committee directive that the National Park Service (NPS) determine the threat posed by development of mineral resources in national parks. The report provides part of the information necessary to respond to the Committee directive, namely the extent of non-federal mineral rights within parks and the current and potential mineral development activity in and around parks. The specific threats posed by mineral development are addressed in a separate report.[1]

This introductory chapter describes the purpose and scope of the report, and provides an overview of the approach used to obtain and analyze the information it contains as well as a guide to the chapters that follow.

Throughout this report, the terms "park," "mineral development," and "non-federal mineral rights" are used frequently. The term "park" is used to refer to all Park Service areas, including national parks, preserves, monuments, memorials, historic sites, seashores, battlefield parks, rivers, wild and scenic riverways, and recreation areas. The term "mineral development" refers to all types of mineral development activities, including exploration, mining, excavation, processing, and abandonment. The term "non-federal mineral rights" refers to all acreage within park boundaries where the federal government does not own the mineral rights, the mineral rights are held under a mining claim, or the mineral rights have been leased from the federal government.

PURPOSE

The purpose of this report is fourfold.

- First, it provides an analysis of non-federal mineral rights within park boundaries on a national, regional, and individual park basis.
- Second, it provides an assessment of the current level of mineral development activity in and near the parks.

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[1] Environmental Management & Engineering, Inc., An Overview of Minerals and Mining Related Impacts on NPS Resource Systems, 1985.

- Third, it identifies and evaluates existing sources of information on mineral rights and development activity.

- Fourth, it provides recommendations for actions NPS could take to improve its knowledge of non-federal mineral rights and development activity in and around the parks.

SCOPE

The scope of this study was determined by the accuracy and accessibility of information currently available on mineral rights and development and by an assessment of the level of detail necessary to respond to the questions posed by the Committee.

- The type and acreage of non-federal mineral rights were examined for all parks.

- Mineral development activity was examined in and around most parks. Ten parks were not examined because of a lack of readily available information.

- Mineral occurrence in or near the parks was not examined, nor were the economics of developing and transporting minerals from those locations where they are known to exist.

APPROACH

The approach used in this study consisted of several discrete steps. Assessing the extent of non-federal mineral rights was addressed first. It involved the following activities:

- Identifying all sources of information on land and mineral ownership, mining claims, and mineral leases in the parks (these sources are described in the next chapter).

- Evaluating the accuracy and comprehensiveness of these information sources.

- Analyzing the mineral rights information obtained from these sources to determine the extent of non-federal rights in the parks.

Mineral development potential in and around the parks was addressed next. Because there is no comprehensive source of information on mineral development activity, the approach consisted of conducting original research and supplementing it with information from secondary sources. Administrators in each NPS region were asked to provide information on current and potential mineral development in every park in their region. The information in this survey was verified through follow-up telephone calls to all the respondents. In addition to the park survey, telephone interviews with state mineral development and geological survey officials were conducted, and mineral occurrence and development maps prepared by state agencies were reviewed. For most parks, the park administrator survey information was used as the primary data source, and the information from state officials was used to double check the survey. For the few parks that did not respond to the survey, the information provided by state officials was the primary data source for mineral development activity.

REPORT DESCRIPTION

The remainder of this report consists of four chapters and two appendices. Chapter II provides background information on the various types of mineral rights that can be developed in a park and the laws and regulations pertaining to the development of those rights.

Chapter III describes the extent of non-federal mineral ownership in the parks. It also describes the various sources of information on mineral rights and the accuracy, comprehensiveness, and usefulness of each source.

Chapter IV describes the extent of existing and potential development activity in and near the parks. It also describes the sources and usefulness of available information on mineral development.

Chapter V presents conclusions on the extent of non-federal mineral rights in the parks, existing and potential development activity, and the quality of information available on mineral rights and development currently available to NPS. It also contains several specific recommendations for improving NPS's knowledge of mineral rights and development activities.

The appendices contain a list of parks where all mineral rights are federally-owned and a list of parks where there is no indication of mineral development in or near the park.

II. MINERAL RIGHTS AND REGULATIONS

Although mineral development is not permitted on most land in the parks, minerals can be developed in the parks on land where the federal government has not acquired the mineral rights or has conveyed or leased the mineral rights to others. Many parks, such as Wrangell-St. Elias National Park and Preserve in Alaska, contain mining claims that were located prior to the park's creation. In other parks, the legislation that created the parks expressly allows for mineral development. In instances where mineral development does occur in a park, NPS may or may not exercise its authority to regulate such development, depending on the type of development.

This chapter provides an overview of the various types of mineral rights that exist in parks and the laws and regulations pertaining to mineral development.

TERMINOLOGY

There are several terms that are frequently used when discussing mineral ownership issues. The definitions given below explain how these terms are used in this report. Because of the complexity of the subject, these definitions are not intended to be all inclusive.

- Minerals, for the purposes of this report, include hardrock minerals (e.g., gold, silver, and copper), oil and gas (including tar sands), coal, geothermal steam, and mineral materials (e.g., sand and gravel, limestone, granite).

- Surface rights are rights to the surface of land only.

- Mineral rights are rights to explore for and develop minerals. Generally, mineral rights are considered to be subsurface rights and are usually held to be dominant to surface rights. The holder of mineral rights has the right to access minerals over, across, or through the surface in most states. As used in this report, mineral rights include mineral leases, claims, and ownership.

- Estate is the interest that anyone has in lands or in any other subject of property. Estate is generally used with or in place of the terms "right" and "interest."

- Fee simple ownership is where an individual or party owns the surface and mineral rights (estates), that is, owns the entire property.

- Split estate is where the property rights are divided among two or more individuals or parties. In this report, a split estate is where the federal government owns all or part of the surface rights, and the mineral rights are non-federally owned.

- Federal lands are lands that either have been acquired by the federal government or have never left the federal government's jurisdiction or ownership.

- Inholdings are non-federally owned lands within a park. The federal government generally owns neither the surface nor mineral rights to these lands, even though they are contained within park boundaries.[1]

- Scenic or conservation easements are where the government or other party acquires less than fee simple rights in land for a specific purpose, such as to preserve natural or historic resources or a scenic view. In most cases where scenic or conservation easements have been acquired by the federal government for NPS, incompatible mineral development is precluded.

- Encumbrances are liens or claims upon property. These outstanding interests may include any surface or subsurface estates that have been severed from a parcel of land, such as rights of way, scenic easements, or mineral rights.

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[1]For park funding and acquisition purposes, "inholdings" has a meaning different from the definition given above. It refers to parks established before July 1959 that contain non-federally owned lands (see Federal Register, Vol. 44, No. 82, April 26, 1979).

NON-FEDERAL MINERAL RIGHTS

Mineral development may occur in any park through the exercise of a non-federal mineral right. However, the existence of a non-federal mineral right is not necessarily indicative of the existence of minerals which can be developed economically. Non-federal mineral rights exist in parks for four reasons:

- Certain parcels of land within park boundaries were not acquired by the federal government. These are called inholdings.
- Mineral rights were not acquired at the time the land for the park was purchased by the federal government. These are called split estates.
- A mining claim was located prior to the creation of the park or its being closed to mineral entry.
- The federal mineral rights were leased prior to or after creation of the park.

The various types of mineral rights resulting from each of these four conditions are discussed below.

Inholdings

Inholdings result when the federal government does not acquire all the land within the boundaries of a park. In this situation, an individual or a party has a fee simple interest in the land and the NPS has chosen not to regulate mineral development activity on this property unless oil or gas is being developed and access to the development site is across federally owned land.

Split Estates

Split estates are most prevalent in newer parks created from privately owned land. For some of these parks (e.g., Padre Island National Seashore, Big Cypress National Preserve, and Big Thicket National Preserve), the enabling legislation specified that the mineral rights were not to be acquired unless mineral development would pose a threat to the park. In a few cases, the government intended to acquire fee simple ownership of parkland only to find out later through detailed title searches that it does not own the entire estate.

NPS's exercise of regulatory authority for pre-existing non-federal mineral rights on split estates is limited to oil and gas development in all parks where access to operations is on, across, or through federally owned land, except parks in Alaska. There are currently no regulations covering development of minerals other than oil and gas.

Mining Claims

Under the terms of the Mining Law of 1872, individuals may file claims for certain valuable minerals on all federal lands that are open to mineral entry (i.e., not specifically exempted from the terms of the Mining Law of 1872). Minerals that may be claimed include gold, silver, copper, lead, antimony, uranium, and molybdenum. Once a mining claim has been located and recorded, the claimant has rights to the minerals on the land claimed (usually 20 acres). At any time, the federal government can challenge the validity of a claim and investigate the claim site to determine if it contains valuable mineral deposits. If a claim is found to be valid, the claimant retains the right to the minerals. If found invalid, the claim interest ceases to exist.

There are two basic types of mining claims referred to in this report. Each confers different rights to the claimant. These two types of claims are:

- Unpatented mining claims. An unpatented mining claim permits the claimant to extract and remove minerals from the claim but does not give the claimant full ownership of the land. To retain these rights, the claimant must fulfill certain filing and assessment work requirements. An unpatented mining claim is a recognized property right and may be sold, transferred, mortgaged, and inherited.

- Patented mining claims. A patented mining claim is one where full title has passed from the federal government to the claimant, conveying with it exclusive title to the minerals and, in most cases, the surface and all resources. The validity of a mining claim is usually determined before the government issues a patent.

In 1976, the Mining in the Parks Act withdrew all parks from mineral entry under the Mining Law of 1872 that had not been withdrawn previously by their enabling legislation. Prior to passage of the Mining in the Parks Act, six parks had been open to mineral entry and location under the Mining Law of 1872. Mining claims currently exist in these parks and several others

where claims were staked on land prior to inclusion of those lands in the parks. Not only did the Mining in the Parks Act close all parks to mineral entry, it gave NPS the authority to regulate mineral development on all mining claims in the parks, including patented claims. The Act does not prevent the exercise of valid mining claims established prior to 1976. For parks in Alaska, the Alaska National Interest Lands Conservation Act (ANILCA) guarantees claimants access to their claims in the parks.

Federal Mineral Leases

In general, a federal mineral lease is any contract, joint venture, or other agreement issued or approved by the United States under a mineral leasing law that authorizes exploration for, extraction of, or removal of federally owned minerals, both fluid and solid. Examples of federally owned minerals that may be leased include oil, gas, oil shale, sodium, and phosphates. In some cases, hardrock minerals that would normally be subject to mining location and claim under the Mining Law of 1872 may also be leased. In the case of oil and gas, federal leases convey the right to explore and develop oil and gas, with appropriate lease stipulations and approved plans of operations, for a period of three, five, or ten years. If production occurs, the right continues as long as there is production in paying quantities.

In a number of statutes generally applicable to minerals on federally owned lands, Congress has excluded lands in the parks from mineral leasing. For example:

- The Mineral Leasing Act of 1920, as amended, prohibits federal mineral leasing in parks.
- The Mineral Leasing Act for Acquired Lands of 1947, as amended, is not applicable to parks.
- The Materials Act of 1947 is not applicable to parks.
- The Geothermal Steam Act of 1970 prohibits federal geothermal leasing in parks.
- The Federal Coal Leasing Amendments Act of 1976 prohibits leasing federal coal in the parks.

In addition, federal oil shale leasing is not permitted in the parks.

Mineral leases exist within park boundaries for three reasons. First, mineral leases existed on some lands prior to their inclusion in the parks. In these cases, there is no requirement for the Bureau of Land Management (BLM) to consult with or obtain NPS consent when renewing a lease or permitting mineral exploration and development activities.

Second, the enabling statutes for several newer parks specifically state that the federal government shall not acquire the pre-existing mineral leases and other mineral rights without the consent of the owner, unless mineral development will have significant adverse impacts on park resources. These parks include Big Cypress National Preserve, Padre Island National Seashore, Big Thicket National Preserve, and Jean Lafitte National Historical Park. Most often, these leases are for oil and gas exploration and drilling.

Third, Congress authorized mineral leasing in five parks: Glen Canyon National Recreation Area, Lake Mead National Recreation Area, Whiskeytown Unit of Whiskeytown-Shasta-Trinity National Recreation Area, Lake Chelan National Recreation Area, and Ross Lake National Recreation Area. In these parks, leasing and development must be allowed if it does not result in adverse effects to the parks. The Bureau of Land Management (BLM) must obtain NPS consent and concurrence prior to issuing or renewing any lease in these five parks. NPS consent is contingent upon a finding of no adverse effect, and NPS may require certain stipulations in the lease.

LAWS PERTAINING TO MINING IN THE PARKS

The authority to prohibit or regulate mineral development in the parks is derived from a number of laws. Laws that specifically prohibit or provide for regulation of mineral development activities include the Mining in the Parks Act of 1976, the Federal Coal Leasing Amendments Act of 1976, the Mineral Leasing Act of 1920, the Mineral Leasing Act for Acquired Lands of 1947, the Materials Act of 1947, and the enabling statutes of each of the parks. One law not previously mentioned is the Surface Mining Control and Reclamation Act, which prohibits surface coal mining in the parks subject to valid existing rights.

Laws that provide NPS with the general authority to protect the resources of the parks include the following:

- The Act of August 25, 1916 (commonly called the Organic Act), created the National Park Service and directed it to conserve and preserve the natural and historic resources of the parks in such a manner that they can be enjoyed by current and future visitors.

- The Act of Administration in 1970 clarified that all parks, whether natural, historical, or recreational in purpose, were part of the National Park System and subject to the conservation and protection mandates of the Organic Act and other applicable acts.

- The legislation that expanded Redwood National Park in 1978 amended the Act of Administration to state that activities that are not specifically authorized or directed by Congress are not permitted in the parks.

REGULATIONS GOVERNING MINERAL DEVELOPMENT IN THE PARKS

The Mining in the Parks Act is implemented by the NPS in regulations at 36 CFR 9, Subpart A. The primary method used by the NPS to ensure compliance with the regulations is to require a plan of operations for all activities proposed for patented and unpatented mining claims from exploration to development. The NPS also requires that a performance bond be posted to ensure reclamation will be undertaken. The regulations seek to permit claimants to exercise their rights while maintaining the integrity of the park.

In 36 CFR 9, Subpart B, the NPS regulations for controlling non-federally owned oil and gas apply in all parks where access to operations is on, across, or through federally owned or controlled lands or waters, except for parks in Alaska. A plan of operations and reclamation bond are required of operators and form the basis for the NPS's regulatory activities that control the exercise of these private rights.

In parks where federal mineral leasing and development are permitted by law, the regulations that control activities are those that apply to all federal leases on any federal lands--43 CFR 3100 for the leasing and development of federal oil and gas and 43 CFR 3500 for the leasing and development of federal solid minerals other than coal and oil shale. These regulations require NPS concurrence and approval before the BLM may take any

action respecting a lease or permit on lands under the jurisdiction of the NPS. In practice this means that the NPS is able to either preclude leasing or attach special stipulations and operating conditions to leases and permits in parks that make it possible to preserve and protect NPS resources to the maximum extent compatible with congressional direction to permit mineral leasing and development.

MINERAL DEVELOPMENT ACTIVITIES NOT REGULATED

There are several important areas of mineral development that are not currently regulated by the NPS, either because the NPS has concluded that there is a lack of clear congressional direction to control those activities or because, to date, no significant adverse effects to park resources have resulted from the exercise of outstanding mineral rights. In two cases, the NPS has declined to control certain mineral activities in Alaska because of controversial interpretations of existing statutes. The instances in which NPS does not exercise regulatory authority over mineral development in the parks are discussed below.

Non-Federal Minerals Other than Oil and Gas

Where the mineral rights in parks, other than oil and gas, have not been acquired by the federal government, there are no regulations in place to control mineral development on that land. This is the case whether the surface estate is owned by the holder of the mineral rights (an inholding) or the federal government holds the surface rights (a split estate). To date, the lack of regulatory authority has not posed major difficulties nor has it resulted in significant adverse effects to park resources.

Non-Federal Oil and Gas Where Access Is Not On, Through, or Across Federal Lands

The regulations that control activities associated with non-federal oil and gas rights within units of the NPS system are based on whether the potential operator must cross federally owned or controlled lands or water in order to exercise his privately held mineral rights. In at least two instances, the authorizing legislation for parks seems to imply that there is clear congressional intent that the NPS limit itself to regulating only

where access on federal lands is an issue; in the other enabling statutes consulted, there is no reference to access. The NPS regulations in 36 CFR 9B are based on direction from Congress that most restricts the reach of NPS jurisdiction rather than based on the statutes where Congress has conferred broad discretion on the NPS to control such activities.

Coal

In the Surface Mining Control and Reclamation Act, Congress states that surface coal mining operations (including the surface effects of underground mining) are prohibited in the parks, subject to valid existing rights. The definition of valid existing rights initially adopted by the Office of Surface Mining was a restrictive one that did not appear to pose any serious threats of coal development in the parks. In 1983, however, the Office of Surface Mining changed the definition such that there is a strong possibility that any non-federal coal rights in parks will be determined to be valid existing rights and, therefore, will be available for development.

Patented Mining Claims in Alaska

The NPS does not regulate patented mining claims in Alaska if access is not across federally owned parklands (see 36 CFR 13.15). Reasonable and feasible access to valid mining claims is guaranteed, subject to regulation by Section 1110(b) of the Alaska National Interest Conservation Lands Act (ANILCA) of 1980. The regulations in 36 CFR 13.15 state that claimants need not file for an access permit because the requirement for a plan of operations prior to issuance of an access permit was deemed to interfere with guaranteed access.

Non-Federal Oil and Gas in Alaska

NPS does not regulate development of non-federally owned oil and gas rights in any of the Alaskan parks. Section 1110(b) of ANILCA guarantees access to private property within the parks, and the regulations of 36 CFR 13.15 hold that NPS regulation of non-federal oil and gas rights would hinder such access.

III. NON-FEDERAL MINERAL OWNERSHIP IN THE PARKS

Non-federally owned mineral rights are a relatively common occurrence in the parks. About 68 percent of the parks administered by NPS contain some acreage where the mineral rights have not been acquired by the federal government or have been conveyed to other individuals or parties. As explained in the previous chapter, the holders of these mineral rights have the right to develop them, and in some cases the NPS does not have regulations in place for controlling mineral development. The only way NPS can prevent resource impacts associated with mineral development in these cases is to acquire the mineral rights.

The NPS and the BLM have extensive and detailed records of federal land ownership. These records were used in this study to determine the extent and distribution of non-federal mineral rights in the parks. In reviewing various information sources on mineral ownership, it became clear that while the sources contained valuable and useful information, none were designed to track mineral ownership and therefore do not provide NPS with all the information it needs to monitor, plan for, and respond to mineral development activities in the parks.

While this chapter focuses on the number of acres of non-federal mineral rights in each park, it is important to remember that the amount of non-federal mineral acreage is not necessarily proportional to the threat posed to a park. If there are not commercial quantities of valuable minerals located on that acreage, the non-federal mineral rights pose little threat to park resources. On the other hand, a single mining claim could pose a serious threat to a park depending on its location within the park. The acreage figures presented in this chapter are intended only to illustrate the extent of non-federal mineral ownership. The first section of this chapter presents the number of acres of non-federal mineral ownership by park, region, and type of mineral interest. The second section describes existing sources of information on mineral ownership and the utility of each source for this study and for NPS in its efforts to protect park resources from potential adverse effects associated with mineral development operations.

NON-FEDERAL MINERAL OWNERSHIP

There are about 5.8 million acres of non-federal mineral rights within the national parks, an area roughly the size of the state of Vermont (see Table III-1). Non-federal mineral rights acreage comprises about 7.4 percent of all NPS administered lands. Non-federal mineral rights exist in 223 of the 329 parks[1] and in all NPS regions (see Table III-2 and Figure III-1).

Table III-1

NON-FEDERAL MINERAL RIGHTS IN THE PARKS

NPS Region	Non-Federal Mineral Rights (acres)	Total Park Area[1] (acres)	Percentage of Total Area with Non-Federal Mineral Rights
Alaska	2,597,138	54,676,615	4.8%
Mid-Atlantic	240,548	589,405	40.8
Midwest	426,840	1,218,030	35.0
National Capital	12,637	78,674	16.1
North Atlantic	38,049	135,518	28.1
Pacific Northwest	30,163	2,190,181	1.4
Rocky Mountain	313,165	6,787,747	4.6
Southeast	1,113,482	3,426,401	32.5
Southwest	327,128	1,673,576	19.6
Western	750,727	8,637,482	8.7
Total United States	5,849,878	79,413,629	7.4%

[1]Does not include national cemeteries or affiliated areas.

Source: NPS Master Deed Listing and Land Status Maps, BLM Use Plats, NPS Claims Inventory.

The portion of parkland where the federal government does not own the mineral rights varies greatly by region. While the western regions have more acreage of non-federal mineral rights than the eastern regions, the eastern regions have a greater percentage of non-federally owned mineral rights.

[1]Total does not include national cemeteries or affiliated areas.

Figure III-1

NATIONAL PARK SERVICE REGIONS

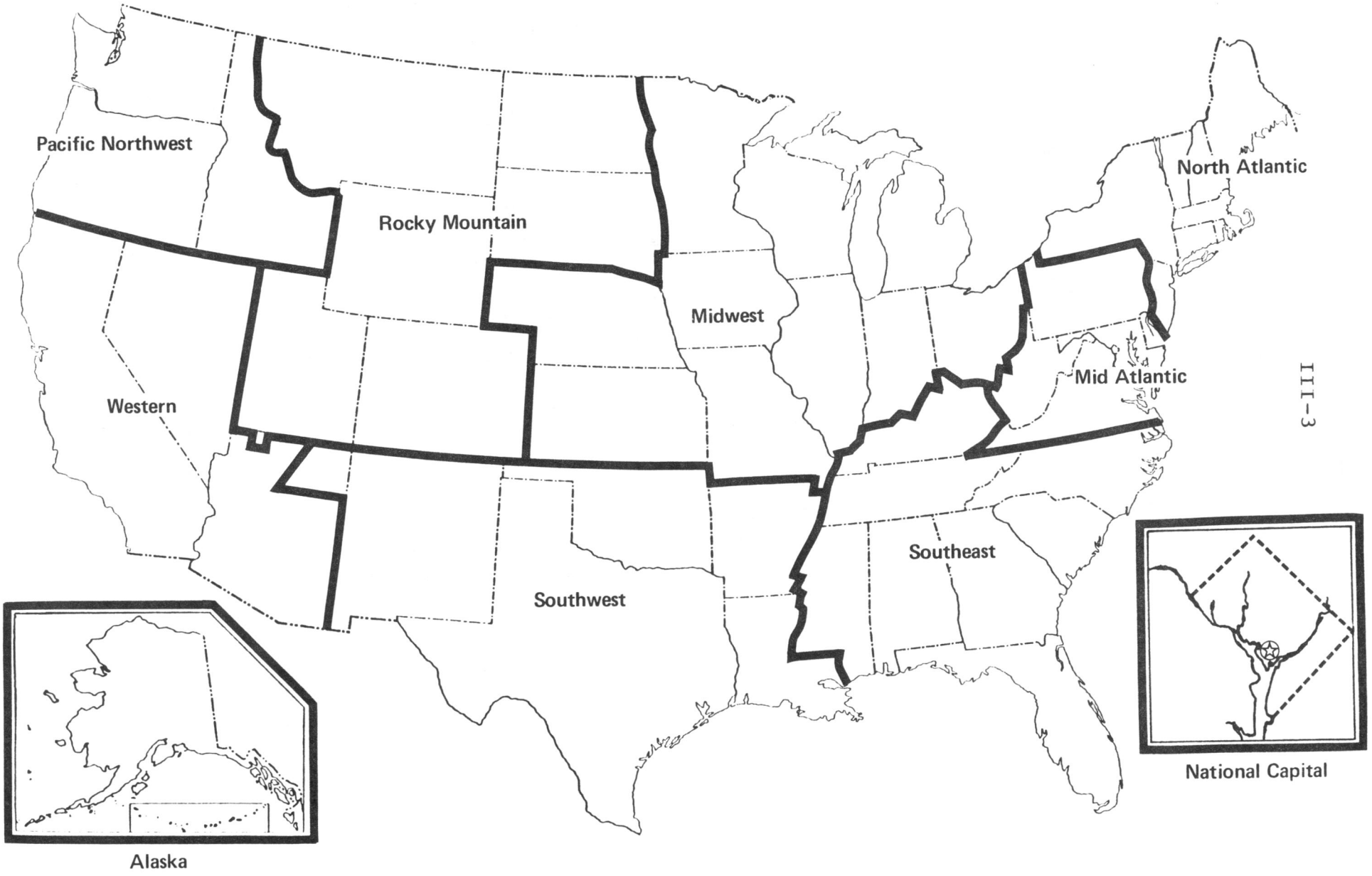


Table III-2

NUMBER OF PARKS WITH NON-FEDERAL MINERAL RIGHTS

NPS Region	Parks with Non-Federal Mineral Rights	Total Parks in Region[1]
Alaska	15	16
Mid-Atlantic	20	29
Midwest	24	30
National Capital	9	29
North Atlantic	18	34
Pacific Northwest	12	15
Rocky Mountain	31	42
Southeast	36	53
Southwest	24	37
Western	34	44
Total United States	223	329

[1]Does not include national cemeteries, or affiliated areas.

Source: NPS Master Deed Listing and Land Status Maps, BLM Use Plats, NPS Claims Inventory.

Almost one-half of the 5.8 million acres of non-federal mineral rights within the national parks are located in Alaska. Given the mineral resource potential of Alaska, the more than 4,000 square miles of non-federal mineral rights in Alaskan parks should be of special concern to NPS. (Details of non-federal mineral rights in each park are provided in Exhibit III-1 at the end of this chapter.)

The most common type of non-federal interests in parks are inholdings. Although they do represent non-federal mineral rights, they do not necessarily have mineral development potential. Inholdings occur in 63 percent of all parks and account for 77 percent of all non-federal mineral rights acreage (see Tables III-3 and III-4). There are about 4.5 million acres of inholdings in the parks, with more than one-half of this amount in Alaska.

Split estates account for 1.2 million acres, or 21 percent of all non-federal mineral acreage. The largest amount of split estate acreage occurs in the Southeast region, the only region where split estate acreage is larger than inholdings acreage. One park in the Southeast region, Big Cypress National Preserve, includes thousands of tracts of land where the mineral rights

Table III-3

TYPE OF NON-FEDERAL MINERAL RIGHTS

(acres)

NPS Region	Inholdings[1]	Split Estates	Unpatented Mining Claims	Federal Mineral Leases	Total
Alaska	2,561,250	409	35,480	0	2,597,138
Mid-Atlantic	235,731	4,817	0	0	240,548
Midwest	304,017	122,823	0	0	426,840
National Capital	12,452	185	0	0	12,637
North Atlantic	37,880	169	0	0	38,049
Pacific Northwest	28,071	1,933	120	40	30,163
Rocky Mountain	228,541	34,737	3,500	46,388	313,165
Southeast	337,488	773,873	0	2,121	1,113,482
Southwest	175,446	147,986	0	3,595	327,128
Western	601,622	133,427	6,440	9,238	750,727
Total United States	4,522,598	1,220,359	45,540	61,382	5,849,878

[1]Includes patented mining claims and non-federal mineral leases.

Source: NPS Master Deed Listing and Land Status Maps, BLM Use Plats, NPS Claims Inventory.

Table III-4

NUMBER OF PARKS WITH EACH TYPE
OF NON-FEDERAL MINERAL RIGHT

NPS Region	Parks with Inholdings	Parks with Split Estates	Parks with Unpatented Mining Claims	Parks with Federal Mineral Leases	Parks with Non-Federal Mineral Rights[1]
Alaska	15	1	9	0	15
Mid-Atlantic	20	11	0	0	20
Midwest	22	13	0	0	23
National Capital	9	1	0	0	9
North Atlantic	18	1	0	0	18
Pacific Northwest	11	4	1	1	12
Rocky Mountain	24	21	7	8	31
Southeast	36	11	0	1	36
Southwest	22	13	0	3	25
Western	31	20	7	2	34
Total United States	208	96	24	15	223

[1]Parks with more than one type of non-federal mineral right are only counted once.

Source: NPS Master Deed Listing and Land Status Maps, BLM Use Plats, NPS Claims Inventory.

have not been acquired by the federal government. Big Cypress accounts for 61 percent of the split estate acreage in the Southeast region.

Over 2,000 unpatented mining claims exist in 24 parks in four western regions (see Tables III-4 and III-5). Seventy-five percent of the claims are in Alaska, where 9 of the 16 parks have outstanding claims (the validity of most of the claims have not been determined). The bulk of the claim acreage in the Western region is located in one park, Death Valley National Monument. (Exhibit III-1 includes a park-by-park summary of mining claims.)

Table III-5

MINING CLAIMS IN THE PARKS

NPS Region	Number of Unpatented Claims	Number of Patented Claims	Total Claims
Alaska	1,774	585	2,359
Pacific Northwest	6	94	100
Rocky Mountain	175	0	175
Western	322	351	673
Total United States	2,277	1,030	3,307

Source: NPS mining claims inventory.

There are 93 federal mineral leases located in 15 parks in five regions (see Tables III-4 and III-6). All federal leases in parks are for oil and gas except for a potassium lease in Arches National Park and a uranium lease in Chaco Culture National Historical Park. No other federal mineral leases are known to exist in parks. There are federal oil and gas leases in two of the five parks where mineral leasing is currently permitted. Leases in those two parks, Glen Canyon and Lake Mead National Recreation Areas, account for almost one-half of the federal leases or 77 percent of the federal mineral lease acreage in parks. Leases in other parks, in most cases, existed on federal land prior to parks being established or prior to boundary adjustments.

Some leases, such as the lease in Chiricahua National Monument, were apparently made in error by BLM. Although federal mineral leasing is prohibited in all but five parks, BLM records indicate that there are 61 lease applications and 16 simultaneous lease filings (or portions thereof) within parks that are closed to mineral leasing. BLM records erroneously show about 226 square miles of parkland as being available for oil and gas leasing when in fact they are closed to entry under federal mineral leasing authorities.

Table III-6

FEDERAL MINERAL LEASES IN THE PARKS

NPS Region	Number of Leases	Acreage
Pacific Northwest	1	40
Rocky Mountain	60	46,388
Southeast	12	2,121
Southwest	12	3,595
Western	8	9,238
Total United States	93	61,382

Source: BLM Use Plats.

In summary, non-federal mineral rights exist in most parks and involve a considerable amount of acreage. While the extent of non-federal mineral rights varies by region, the development of non-federal mineral rights could occur in any region. When examining the types of non-federal mineral rights, one should not be misled by the relatively small amount of mining claim and mineral lease acreage. Mining claims and mineral leases may have a much higher potential for development than do mineral rights resulting from inholdings and split estates because most claims are made where there is some indication of mineral deposits. Further, the mining claim information shown in Tables III-3 and III-4 only includes unpatented mining claims. Patented mining claims, all of which have been found to be valid by the federal government, are included in the inholdings acreage, but are identified separately in Table III-5.

INFORMATION SOURCES

In conducting this study, several sources of information on property and mineral rights were identified and examined. Many of these sources contained useful information that was used in this study. These sources include:

- NPS records
- BLM records
- State and local records

While most of these information sources proved useful for this study and could be of use to NPS in the future, they do not individually or as a group provide NPS with all the information it needs in an easily accessible form to properly anticipate, plan for, and respond to mineral development threats to park resources. Some of these sources contain relevant information, but it is often incomplete or incorrect. Others contain accurate information but are very difficult to use.

This section discusses the usefulness of each of these information sources and how each source was used in this study. Before describing each source of information, it is necessary to describe in general terms the information needs of NPS in carrying out its minerals management responsibilities.

NPS Information Needs

The mineral ownership information NPS needs in dealing with mineral development issues have been divided into three levels. Each successive level represents increasing detail and increasing difficulty in gaining access to the data. These levels are described below.

Level I--General Information

Level I information allows NPS to categorize mineral rights by type of owner (e.g., federal, state, private), type of mineral (e.g., oil, gas, coal, hardrock), and type of right (e.g., mining claim, federal mineral lease, inholding). This level of information is useful for general planning purposes but is not sufficient for park-specific resource planning or in dealing with existing or imminent mineral development activities. This level of information is generally readily available through maps and computerized databases. This report is based on Level I information.

Level II--Detailed Government Records of Mineral Ownership

Level II information allows positive identification of federal or non-federal mineral ownership and the exact location of a particular mineral tract. It may or may not provide the name of the owner of mineral rights if they are not federally owned. This level of information is useful for developing park- specific mineral resource plans. Level II information is contained in the detailed records NPS and other federal and state agencies keep on

mineral ownership. This information is not currently available in summary form or on a computerized database.

Level III--Legal Mineral Ownership Information

Level III information is necessary to acquire, transfer, or take legal action on a mineral right. This information is usually in the form of certified mineral abstracts or mineral title reports that meet Department of Justice standards for preparation of title evidence. A mineral abstract is a chronological sequence of conveyance documents (deeds, leases, etc.) that follows a particular mineral right through each transfer of rights to the present time. A mineral title report is a summary of one or more mineral abstracts that presents current mineral ownership interests and estates relating to a particular tract of land. This level of information usually requires on-site use of local deed records filed in county and municipal jurisdictions throughout the nation.

The three levels of mineral ownership information described above are used as benchmarks in this report for analyzing the utility of the various mineral ownership information sources.

National Park Service Mineral Ownership Information

The NPS maintains several information sources on mineral rights in the parks. Only one of these sources, the mining claim inventory, is designed primarily to support NPS's mineral management efforts. The other information sources are all part of NPS's records on land acquisition, and their primary purpose is to help NPS track the property it administers. Each of these information sources is discussed below.

Mining Claim Inventory

The NPS maintains an inventory of mining claims in the parks based on information filed by the claimants in accordance with the Mining in the Parks Act and the Federal Land Policy and Management Act of 1976. The mining claim inventory includes the claimants name and address, the type of claim, and the location of the claim. The mining claim inventory was the major source of mining claim information used in this report.

While the mining claim inventory provides useful Level I information, it is not comprehensive enough to satisfy NPS's Level II information needs. It has two basic shortcomings. First, BLM is supposed to forward mining claim information to NPS that has been filed with BLM in accordance with the Federal Lands Management Act. However, BLM does not always do so in a timely fashion, resulting in an incomplete and inaccurate inventory. Second, many of the claims in Alaska have not been examined for validity, so there is no certainty that the information in the inventory is accurate with respect to location and existence of mineral deposits.

Deed Files

The NPS's most comprehensive source of information on land and mineral ownership is the deed files, which contain title reports, abstracts, and other documents related to the acquisition of each tract of land administered by NPS. These records contain information on exactly which surface and subsurface rights are owned by the federal government in the parks. While the deed files provide comprehensive Level II information, they were not used for this report because they are not easily accessible, and the type of Level I information needed for this report is contained in various reports that summarize the deed files.

For minerals management purposes, the deed files have several shortcomings.

- They are voluminous and difficult to access.
- NPS generally conducts title research only on tracts that it intends to acquire in the near future. If acquisition is not anticipated, ownership records are based on tax records or the last conveyance of record. This level of research may not reveal severed mineral rights.
- Mining claims and federal mineral leases are generally not part of the acquisitions process, and so they are not included in the deed files.
- NPS does not always have a complete set of title records when an area is acquired through a transfer of jurisdiction from another federal agency.
- In some park units, NPS has chosen not to acquire the mineral rights, and so the title research did not track mineral ownership.

- Even in the cases where the records contain information on ownership and location of non-federal mineral rights, this information is not always updated after the title research is completed. If the mineral rights have since been transferred to another individual or party, this information will not appear in the deed files unless acquisition occurs.

Master Deed Listing

The Master Deed Listing (MDL) is a computerized summary of the information in the deed files. It is a readily accessible source of Level I information and served as the primary source of information on mineral ownership for this study. It contains information on each tract of land in the parks, including:

- Owner (if non-federal, the owner at the time when acquisition was considered and title research was performed)
- Size of the tract
- Date, method, and cost of acquisition
- Known encumbrances

Mineral rights appear on the MDL as mineral encumbrances, inholdings, or separately identified mineral tracts.

While the MDL is useful for Level I information, it is not comprehensive or timely enough to provide Level II information. There are two major reasons for this:

- The MDL does not reflect all changes in the deed files as they occur. The MDL is updated only when NPS's land status maps (discussed below) are revised, and the land status maps are revised only when several tracts have changed status and workload permits.
- The MDL does not contain all the information on mineral ownership that is contained in the deed files. For example, the MDL has only four categories of mineral types for mineral encumbrances (coal, oil, gas, and other) and no such categories for mineral tracts. Also, the MDL does not specify whether a mineral encumbrance applies to an entire surface tract or just part of it.

A final problem with the MDL and associated land status maps is one of accuracy. While the accuracy of the MDL is good overall, recent mineral title searches at five parks where mineral development issues had arisen indicated that the MDL frequently misclassified split estate acreage (where the federal government does not own the mineral rights) as acreage where the federal government held fee simple title (ownership of surface and mineral rights). The title searches at four parks discovered from 26 to 1,657 more split estate acres than shown on the MDL. In Voyageurs National Park, the title search uncovered over 25,000 split estate acres not shown on the MDL (see Table III-7). While the errors uncovered in the MDL for each of the five parks are small when compared to the total acreage of each park, the errors are significant when one is attempting to assess the extent of non-federal mineral ownership in the parks. These parks may not be typical, and the title searches did not always cover all the acreage in the parks, but the MDL was incorrect in enough instances to limit confidence in its value as a source of Level II mineral ownership information.

Table III-7

SPLIT ESTATE ACREAGE INDICATED BY MASTER DEED LISTING AND MINERAL TITLE SEARCHES

Parks	Split Estate Acreage Shown in MDL	Additional Split Estate Acreage Found Through Title Searches
Dinosaur National Monument	961	689
Fort Laramie National Historic Site	211	26
Golden Spike National Historic Site	192	35
Theodore Roosevelt National Park	384	1,657
Voyageurs National Park	75,177	25,572

Source: NPS Energy, Mining, and Minerals Division; NPS Master Deed Listing.

Land Status Maps

Land Status Maps are maps of each park showing the location of each tract on the MDL and indicating the federal government's ownership interest in each tract, or interests proposed for acquisition. The Land Status Maps, used in conjunction with the MDL, indicate the geographic relationship between surface tracts and mineral tracts (which mineral tracts underlie which surface tracts). The Land Status Maps were used during this study to augment the information contained in the MDL.

Microfiche copies of the Land Status Maps are kept in a central Washington office, but these copies are not always up-to-date. The most recent versions of these maps are scattered among regional and field offices, as well as the Washington office.

Microfiche Records

Microfiche records of deeds and final title opinions provide more detailed information about non-federal mineral rights than the MDL, especially concerning the precise nature of the particular mineral interest. These microfiche records are readily accessible in NPS's Washington office.

BLM Mineral Ownership Information

The BLM is responsible for the surface management of millions of acres of federal land. The BLM is also responsible for leasing federal minerals and for administering the federal mineral leasing programs. In accordance with these responsibilities, the BLM maintains extensive public land records, which include some information concerning non-federal mineral rights in the national parks. The BLM information sources reviewed in preparing this report and described below include:

- Master Title Plats and Use Plats
- Surface Management Status--Mineral Management Status Maps
- Inventory of mining claims
- Automated Land and Minerals Record System

Master Title Plats and Use Plats

BLM's Master Title Plats are detailed maps of the western United States that indicate surface and subsurface title information. The Use Plats further refine the subsurface title information by showing type of mineral rights (e.g., oil, gas, geothermal, hardrock) and locations of federal mineral leases and mineral lease applications. While these maps are useful Level I information sources for locating some mineral tracts in the parks, particularly federal mineral leases, they do not always provide accurate information on mineral ownership. Specific problems include the following:

- The maps do not track changes in ownership of non-federal mineral rights. If NPS has acquired a non-federal mineral right it will only appear on the map if NPS informs the BLM. This information has seldom been communicated, because BLM has limited administrative use for such information.

- The park boundaries shown on the maps are sometimes in error. In 1985, NPS found boundary errors in four parks on Use Plats examined to identify federal mineral leases. Two of the four parks did not even appear on BLM records.

- The maps are not easily accessible by NPS personnel. There are thousands of plats, each showing a 36-square mile area, kept on file in BLM state offices. Several documents must be cross referenced (by serial number) to obtain complete information about specific mineral tracts.

- No maps exist for the 19 non-public land states (generally the eastern states). BLM surface and subsurface ownership information for eastern states is kept in tract books, which are more difficult to use than the plats.

Surface Management Status--
Mineral Management Status Maps

These maps provide a summary of the information on the Master Title Plats for an area 50 times as large. The scale of the Surface Management Status and Mineral Management Status maps is so small as to render them useful only for general ownership data. They are not as detailed as the Master Title Plats, nor updated as often, but they are readily accessible and are useful in providing general information concerning where the federal

government owns surface and mineral rights in and around the parks. They are a useful source of Level I information, particularly concerning mineral ownership outside of park units.

Inventory of Mining Claims

The BLM's automated mining claim inventory record system provides an accurate source of information on mining claims. The Federal Land Management and Policy Act of 1976 requires that every mining claim on federal land be recorded with the BLM. The BLM maintains a computerized (and microfiche) database of the approximately 1.8 million unpatented mining claims in the United States. Each record in the database contains information such as the claimant's name and address, the location of the claim, the type of claim, and annual assessment filings.

Each claimant can, but is not required to, indicate if a claim is in a national park. Thus, the only way to use this claims database to identify claims in the parks is to provide the BLM with the geographic location of each park. NPS does not presently have a listing of every park unit by geographic location, but an effort is underway to compile such a list to enable access to automated record systems such as this one.

A separate database covers mining claims in Alaska. Since only small portions of Alaska have been surveyed by the BLM, this means that claims locations are not very accurate in this database. The BLM is presently making substantial survey efforts in Alaska, so this situation can be expected to improve in the future.

Automated Land and Minerals Record System

Although it was not available nationwide as an information source when research for this report was being conducted, the BLM is developing and implementing the Automated Land and Minerals Record System (ALMRS), which will eventually make BLM records much more accessible to the NPS. ALMRS will replace the approximately 11 million public lands documents now held by the BLM with an automated database of federal land and mineral use authorizations, land survey records, and land and mineral status records related to the land survey and geographic coordinates. When fully implemented in 1991, ALMRS will be able to access all BLM descriptive and mappable data on federal land.

Although ALMRS will improve the accessibility of BLM information about mineral rights, it will still be dependent on other

federal agencies for information about their land status. Like the existing Master Title Plats, ALMRS will not provide the NPS with an up-to-date, accurate information source about state, Indian, or private mineral rights in the parks. Although ALMRS will not provide the NPS with complete information on mineral rights, it will greatly improve the accuracy (in terms of being up-to-date) and the accessibility of current BLM information.

Some parts of ALMRS are now or are about to be in existence. Federal oil and gas leases are now computerized, and the NPS can access these records by providing a geographic location of the park unit in question. All other federal minerals lease applications since 1982 have also been computerized, although not all the existing leases have been. A reclamation bond tracking program will be operational by the end of 1985, and mining claims data will be accessible through ALMRS by the end of 1986.

A parallel program for Alaska called the Alaska Automated Land Record System (AALRS) has been operational since 1978. The NPS is now exploring the possibility of establishing a direct computer link to ALMRS and AALRS.

State and Local Records

Local records provide the only up-to-date source of Level III information. State and local records were not used in this study because of their lack of uniformity and accessibility. County, parish, and borough deed records are the source of the detailed records necessary for title searches. Using these records can require visiting many county offices and manually examining hundreds or thousands of records. Performing complete title searches in a complex mineral ownership area, where detailed abstracts and title reports are required, can take as much as seven person-days per mineral tract.

Level II information on state-owned minerals in the parks and leases of those minerals is available from state agencies such as state lands offices or oil and gas commissions. Many of these agencies maintain non-automated mineral records, and the number and size of the documents can make on-site use of the records mandatory. The recordkeeping requirements of different state laws and regulations results in inconsistent information being available from state to state.

Some of this state and local information about mineral rights in the parks is collected by private organizations, which makes the information easier to access. Petroleum Information Corporation regularly produces maps of some areas in western states that show state and private oil and gas leases. Local title contractors often have automated title record systems based on county records, but few of these systems address mineral rights.

Exhibit III-1

NON-FEDERAL MINERAL RIGHTS
IN THE PARKS

(acres)

PARK NAME	TOTAL AREA	NON-FEDERAL MINERAL RIGHTS				
		INHOLDINGS	SPLIT ESTATES	UNPATENTED MINING CLAIMS	FEDERAL MINERAL LEASES	TOTAL
ALASKA REGION						
ANIAKCHAK NM & PRES	615000	5500	0	0	0	5500
BERING LAND BRDG NPRES	2770000	263000	0	1580	0	264580
CAPE KRUSENSTERN NM	660000	120000	0	0	0	120000
DENALI NP & PRES	6030000	30000	0	8800	0	38800
GATES OF ARCTIC NP & PRES	8440000	350000	0	5860	0	355860
GLACIER BAY NP & PRES	3289198	198	409	40	0	646
KATMAI NP & PRES	4090000	141000	0	60	0	141060
KENAI FJORDS NP	670000	90000	0	160	0	90160
KLONDIKE GOLD RUSH NHP	13272	10551	0	0	0	10551
KOBUK VALLEY NP	1750000	48000	0	0	0	48000
LAKE CLARK NP & PRES	4045000	384000	0	640	0	384640
NOATAK N PRESERVE	6560000	10000	0	0	0	10000
SITKA NHP	107	1	0	0	0	1
WRANGELL-ST. ELIAS NP & PRES	13200000	800000	0	13680	0	813680
YUKON-CHARLEY RIVERS N PRES	2520000	309000	0	4660	0	313660
MID-ATLANTIC REGION						
ALLEGHENY PRTGE RR NHS	1135	289	314	0	0	603
APPALACHIAN NS TRAIL	115969	58205	3187	0	0	61392
APPOMATTOX CRT HS NHP	1325	2	22	0	0	25
ASSATEAGUE ISLAND NS	39631	22251	0	0	0	22251
COLONIAL NHP	9316	74	0	0	0	74
DEL WATER GAP NRA	66697	13660	10	0	0	13671
DELAWARE NSR	1973	1973	0	0	0	1973
FREDS-SPOTS NMP	5909	646	33	0	0	678
FRIENDSHIP HILL NHS	675	13	659	0	0	672
FT. NECESSITY NB	903	8	392	0	0	400
GETTYSBURG NMP	3863	250	1	0	0	251
INDEPENDENCE NHP	45	3	0	0	0	3
JOHNSTOWN FLOOD NMEM	163	6	95	0	0	101
MAGGIE L. WALKER NHS	1	1	0	0	0	1
NEW RIVER GORGE N RVR	62024	61483	99	0	0	61583
PETERSBURG NB	2735	1212	0	0	0	1212
SHENANDOAH NP	195072	71	0	0	0	71
THOMAS STONE NHS	328	6	0	0	0	6
UPR DEL SCENIC & R RVR	75000	74997	0	0	0	74997
VALLEY FORGE NHP	3465	580	5	0	0	585

Exhibit III-1 (continued)

NON-FEDERAL MINERAL RIGHTS
IN THE PARKS

(acres)

PARK NAME	TOTAL AREA	NON-FEDERAL MINERAL RIGHTS				
		INHOLDINGS	SPLIT ESTATES	UNPATENTED MINING CLAIMS	FEDERAL MINERAL LEASES	TOTAL
MIDWEST REGION						
AGATE FOSSIL BEDS NM	3055	318	63	0	0	381
APOSTLE ISLANDS NL	67885	26031	3698	0	0	29730
CUYAHOGA VALLEY NRA	32460	18296	2023	0	0	20319
FT. LARNED NHS	718	43	103	0	0	146
GRAND PORTAGE NM	710	0	109	0	0	109
HARRY S. TRUMAN NHS	1	1	0	0	0	1
HERBERT HOOVER NHS	187	6	0	0	0	6
HOMESTEAD NM OF AMER	195	12	0	0	0	12
INDIANA DUNES NL	12868	3575	0	0	0	3575
ISLE ROYALE NP	571790	32508	0	0	0	32508
JAMES A. GARFIELD NHS	8	4	0	0	0	4
LINCOLN BOYHOOD NMEM	192	8	1	0	0	9
LINCOLN HOME NHS	12	0	0	0	0	1
LOWER SAINT CROIX NSR	9465	2440	56	0	0	2496
MOUND CITY GROUP NM	218	97	0	0	0	97
OZARK NS RIVERWAYS	80788	20146	1760	0	0	21906
PERRY'S PEACE MEM	25	*	0	0	0	*
PICTURED ROCKS NL	72899	37523	22998	0	0	60522
SAINT CROIX NSR	68793	45117	3357	0	0	48474
SCOTTS BLUFF NM	2997	61	60	0	0	121
SLEEPING BEAR DUNES NL	71020	30097	11658	0	0	41755
VOYAGEURS NP	217892	87730	76936	0	0	164666
WILLIAM H TAFT NHS	3	1	0	0	0	1
WILSONS CREEK NB	1750	1	0	0	0	1
NATIONAL CAPITAL REGION						
ANTIETAM NB	3246	1546	0	0	0	1546
C & O CANAL NHP	20781	6758	185	0	0	6943
GEORGE WASHINGTON MEM PKWY	7142	96	0	0	0	96
HARPERS FERRY NHP	2238	112	0	0	0	112
MANASSAS NBP	4513	1492	0	0	0	1492
MONOCACY NB	1659	1239	0	0	0	1239
PISCATAWAY PARK	4263	47	0	0	0	47
PRINCE WM FOREST PARK	18572	1161	0	0	0	1161
SEWALL-BELMONT HSE NHS	0	*	0	0	0	*

*Less than .5 acres.

Exhibit III-1 (continued)

NON-FEDERAL MINERAL RIGHTS
IN THE PARKS

(acres)

PARK NAME	TOTAL AREA	NON-FEDERAL MINERAL RIGHTS				
		INHOLDINGS	SPLIT ESTATES	UNPATENTED MINING CLAIMS	FEDERAL MINERAL LEASES	TOTAL
NORTH ATLANTIC REGION						
ACADIA NP	38915	1019	0	0	0	1019
ADAMS NHS	10	1	0	0	0	1
BOSTON NHP	41	6	0	0	0	6
CAPE COD NS	43526	16258	169	0	0	16427
FIRE ISLAND NS	19579	13486	0	0	0	13486
GATEWAY NRA	26311	5935	0	0	0	5935
HAMILTON GRANGE NMEM	1	1	0	0	0	1
HOME OF FDR NHS	290	26	0	0	0	26
LOWELL NHP	137	134	0	0	0	134
MARTIN VAN BUREN NHS	40	1	0	0	0	1
MINUTE MAN NHP	749	93	0	0	0	93
MORRISTOWN NHP	1676	2	0	0	0	2
SAINT CROIX ISLAND NM	35	13	0	0	0	13
SAINT-GAUDENS NHS	148	62	0	0	0	62
SALEM MARITIME NHS	9	*	0	0	0	*
SARATOGA NHP	3407	801	0	0	0	801
SPRINGFIELD ARMORY NHS	55	37	0	0	0	37
WOMEN'S RIGHTS NHP	5	4	0	0	0	4
PACIFIC NORTHWEST REGION						
COULEE DAM NRA	100390	0	0	0	40	40
CRATER LAKE NP	183227	*	0	0	0	*
FT. CLATSOP NMEM	125	*	0	0	0	*
FT. VANCOUVER NHS	209	7	0	0	0	7
JOHN DAY FOS BEDS NM	14012	3273	0	0	0	3273
LAKE CHELAN NRA	61890	755	0	0	0	755
NEZ PERCE NHP	2109	276	0	0	0	276
NORTH CASCADES NP	504781	226	5	0	0	231
OLYMPIC NP	914576	11061	1196	120	0	12377
OREGON CAVES NM	488	4	0	0	0	4
ROSS LAKE NRA	117574	12442	727	0	0	13169
SAN JUAN ISLAND NHP	1752	27	5	0	0	31

*Less than .5 acres.

Exhibit III-1 (continued)

NON-FEDERAL MINERAL RIGHTS
IN THE PARKS

(acres)

PARK NAME	TOTAL AREA	NON-FEDERAL MINERAL RIGHTS				
		INHOLDINGS	SPLIT ESTATES	UNPATENTED MINING CLAIMS	FEDERAL MINERAL LEASES	TOTAL
ROCKY MOUNTAIN REGION						
ARCHES NP	73379	6902	640	80	40	7662
BADLANDS NP	243302	90453	9418	0	0	99871
BENT'S OLD FORT NHS	800	86	709	0	0	795
BIG HOLE NB	656	0	296	0	0	296
BIGHORN CANYON NRA	120278	51706	16304	1640	0	69650
BLACK CANYON NM	13672	309	0	0	0	309
BRYCE CANYON NP	35835	3	0	0	0	3
CANYONLANDS NP	337570	0	80	0	0	80
CAPITOL REEF NP	241904	19151	899	920	661	21631
COLORADO NM	20454	0	158	0	0	158
DINOSAUR NM	211142	3360	1650	0	76	5085
FLORISSANT F BDS NM	5998	6	0	0	0	6
FOSSIL BUTTE NM	8198	0	400	120	5784	6304
FT. LARAMIE NHS	832	68	237	0	0	305
FT. UNION T P NHS	434	42	82	0	0	123
GLACIER NP	1013595	872	188	0	0	1059
GLEN CANYON NRA	1236880	43209	0	620	38433	82262
GOLDEN SPIKE NHS	2735	506	226	0	10	742
GRAND TETON NP	310521	3656	60	0	0	3716
GRANT-KOHRS RANCH NHS	1499	127	0	0	0	127
GREAT SAND DUNES NM	38662	2236	0	0	0	2236
JOHN D ROCKEFELLER MEM PKWY	23777	0	0	80	0	80
KNIFE RIVER I V NHS	1293	0	1066	0	0	1066
MESA VERDE NP	52085	194	420	0	0	615
MT. RUSHMORE NMEM	1278	40	0	0	0	40
NATURAL BRIDGES NM	7791	0	0	0	75	75
ROCKY MT NP	265193	1026	876	0	0	1902
THEODORE ROOSEVELT NP	70416	741	384	0	1309	2433
WIND CAVE NP	28292	232	640	0	0	872
YELLOWSTONE NP	2219823	19	0	0	0	19
ZION NP	146551	3597	4	40	0	3642

Exhibit III-1 (continued)

NON-FEDERAL MINERAL RIGHTS
IN THE PARKS

(acres)

PARK NAME	TOTAL AREA	NON-FEDERAL MINERAL RIGHTS				
		INHOLDINGS	SPLIT ESTATES	UNPATENTED MINING CLAIMS	FEDERAL MINERAL LEASES	TOTAL
SOUTHEAST REGION						
ANDERSONVILLE NHS	476	22	0	0	0	22
BIG CYPRESS N PRESERVE	570000	53654	475408	0	0	529063
BIG SOUTH FORK NR & NRA	122960	106100	0	0	0	106100
BISCAYNE NP	172845	77834	290	0	0	78124
BLUE RIDGE PKWY	82117	3974	247	0	0	4220
CANAVERAL NS	57627	15782	0	0	0	15782
CAPE HATTERAS NS	30319	1	0	0	0	1
CAPE LOOKOUT NS	28415	5144	0	0	0	5144
CARL SANDBURG HOME NHS	264	17	0	0	0	17
CASTILLO NM	20	1	0	0	0	1
CHATTAHOOCHEE RVR NRA	8699	5071	52	0	0	5123
CHICK & CHATT NMP	8103	17	0	0	0	17
COWPENS NB	842	53	0	0	0	53
CUMBERLAND GAP NHP	20351	80	40	0	0	120
CUMBERLAND ISLAND NS	36410	17733	25	0	0	17758
DE SOTO NMEM	27	2	0	0	0	2
EVERGLADES NP	1398939	287	229326	0	0	229612
FT. CAROLINE NMEM	138	6	0	0	0	6
FT. DONELSON NMP	537	12	0	0	0	12
FT. FREDERICA NM	214	3	0	0	0	3
FT. JEFFERSON NM	64700	3220	0	0	0	3220
FT. PULASKI NM	5623	258	0	0	0	258
FT. RALEIGH NHS	157	4	0	0	0	4
FT. SUMTER NM	67	3	0	0	0	3
GREAT SMOKY MTS NP	520269	266	0	0	0	266
GULF ISLANDS NS	139775	40862	66677	0	0	107539
KENNESAW MT NBP	2884	2	0	0	0	2
MAMMOTH CAVE NP	52370	827	425	0	0	1252
MARTIN L. KING JR NHS	23	20	0	0	0	20
NATCHEZ TRACE PKWY	50189	57	1380	0	2121	3558
OBED WILD & SCENIC RVR	5100	3987	0	0	0	3987
SAN JUAN NHS	75	22	0	0	0	22
SHILOH NMP	3838	55	0	0	0	55
TUSKEGEE INSTITUTE NHS	74	50	3	0	0	54
VICKSBURG NMP	1741	128	0	0	0	128
VIRGIN ISLANDS NP	14696	1936	0	0	0	1936

Exhibit III-1 (continued)

NON-FEDERAL MINERAL RIGHTS
IN THE PARKS

(acres)

PARK NAME	TOTAL AREA	NON-FEDERAL MINERAL RIGHTS				
		INHOLDINGS	SPLIT ESTATES	UNPATENTED MINING CLAIMS	FEDERAL MINERAL LEASES	TOTAL
SOUTHWEST REGION						
ALIBATES FLINT QURS NM	1371	292	93	0	0	384
BANDELIER NM	36917	4234	3076	0	0	7310
BIG BEND NP	741118	33000	1383	0	0	34383
BIG THICKET N PRESERVE	85839	9852	66900	0	0	76752
BUFFALO N RVR	94221	5059	9924	0	0	14983
CANYON DE CHELLY NM	83840	83840	0	0	0	83840
CARLSBAD CAVERNS NP	46755	320	0	0	12	332
CHACO CULTURE NHP	33978	10965	3517	0	3503	17984
CHICKASAW NRA	9522	371	1043	0	80	1494
EL MORRO NM	1279	239	0	0	0	239
FT. SMITH NHS	73	54	0	0	0	54
GUADALUPE MTS NP	76293	1	53306	0	0	53307
HOT SPRINGS NP	5824	1037	372	0	0	1409
JEAN LAFITTE NHP & PRES	20000	13874	5040	0	0	18914
LYNDON B. JOHNSON NHP	1478	1242	0	0	0	1242
PADRE ISLAND NS	130697	341	0	0	0	341
PALO ALTO BTLFLD NHS	50	50	0	0	0	50
PEA RIDGE NMP	4300	22	0	0	0	22
PECOS NM	365	0	20	0	0	20
RIO GRANDE NSR	9600	9600	0	0	0	9600
SALINAS NM	1077	430	0	0	0	430
SAN ANTONIO NHP	477	343	0	0	0	343
WHITE SANDS NM	144458	383	440	0	0	823
WUPATKI NM	35253	0	2872	0	0	2872

Exhibit III-1 (continued)

NON-FEDERAL MINERAL RIGHTS
IN THE PARKS

(acres)

PARK NAME	TOTAL AREA	NON-FEDERAL MINERAL RIGHTS				
		INHOLDINGS	SPLIT ESTATES	UNPATENTED MINING CLAIMS	FEDERAL MINERAL LEASES	TOTAL
WESTERN REGION						
CHANNEL ISLANDS NP	249354	238463	3	0	0	238466
CHIRACAHUA NM	11135	2	120	20	280	422
CORONADO NMEM	4977	178	0	100	0	278
DEATH VALLEY NM	2067628	18873	4621	4480	0	27974
EUGENE O'NEILL NHS	14	1	0	0	0	1
FT. BOWIE NHS	1000	0	360	0	0	360
GOLDEN GATE NRA	72814	46757	2604	0	0	49361
GRAND CANYON NP	1218375	41147	6897	120	0	48163
HALEAKALA NP	28655	1199	6281	0	0	7479
HAWAII VOLCANOES NP	229177	11879	41106	0	0	52985
HOHOKAM PIMA NM	1690	1690	0	0	0	1690
JOSHUA TREE NM	559955	10260	566	0	0	10827
KALAUPAPA NHP	10902	10879	0	0	0	10879
KALOKO-HONOKOHAU NHP	1161	1161	0	0	0	1161
KINGS CANYON NP	460136	56	1	0	0	57
LAKE MEAD NRA	1496601	28212	46119	1460	8958	84749
LASSEN VOLCANIC NP	106372	6	0	0	0	6
MONTEZUMA CASTLE NM	858	17	2	0	0	19
MUIR WOODS NM	554	31	0	0	0	31
ORGAN PIPE CACTUS NM	330689	1490	3200	0	0	4690
PETRIFIED FOREST NP	93493	0	0	20	0	20
PINNACLES NM	16222	0	608	0	0	608
POINT REYES NS	71048	6883	17716	0	0	24599
PUUKOHOLA HEIAU NHS	77	42	0	0	0	42
REDWOOD NP	110127	34186	114	0	0	34300
SAGUARO NM	83574	1379	315	0	0	1693
SANTA MONICA MTS NRA	150000	142217	2582	0	0	144799
SEQUOIA NP	402488	718	1	0	0	719
TUMACACORI NM	17	1	0	0	0	1
TUZIGOOT NM	809	752	0	0	0	752
WALNUT CANYON NM	2249	238	0	0	0	238
WAR IN THE PACIFIC NHP	1958	1114	0	0	0	1114
WHISKEYTOWN-S-T NRA	42503	75	212	240	0	527
YOSEMITE NP	760917	1717	0	0	0	1717

IV. MINERAL DEVELOPMENT ACTIVITY IN AND AROUND THE PARKS

The existence of non-federally owned mineral rights in a park is of concern if development of those rights is likely to occur and would adversely affect park resources. This chapter identifies parks with current and potential mineral development activity within or near their boundaries. NPS is concerned with mineral development outside the parks because such activity can affect park resources and can be an indicator of the likelihood of development of mineral deposits inside the parks.

This report does not assess mineral development potential on the basis of mineral occurrence, mineral quality, and extraction and transportation costs. While this type of geological and economic analysis would provide a more accurate assessment of mineral development potential, such an analysis is very costly and time-consuming, and is impractical given the scope and objectives of this study.

The information on mineral development used in this study came from three sources. The primary source was a detailed survey of park administrators concerning ongoing and potential mineral development in and around their parks. The second source was state geological and mineral development agencies, who provided maps and reports detailing ongoing mineral development activities near the parks. The third source was NPS and BLM information on mining claims and federal mineral leases and applications in and around the parks.

This chapter is presented in two sections. The first section describes the extent of mineral development activity in and around the parks. The second section describes and evaluates the available information sources on mineral development and occurrence in terms of their usefulness to the NPS.

MINERAL DEVELOPMENT ACTIVITY

The examination of existing and potential mineral development activity was limited to a 15-mile range around each park. The impact of mineral development activity outside a park depends not only on its distance from the park, but also on such factors as the size and type of mining operation and the physical features of the land between the operation and the park. In some

cases, activity beyond a 15-mile range may have significant impacts on a park, while in others, activity within that range may not. NPS personnel consulted on this issue were in general agreement that 15 miles was a reasonable, if somewhat arbitrary, limit for the purposes of this study.

The mineral development activities identified fall into five categories: coal, oil and gas (includes tar sands), geothermal, hardrock, and mineral materials. As used in this report, hardrock minerals are valuable, deep-mined minerals such as gold, silver, lead, and copper. Mineral materials include less valuable minerals, which are generally quarried. Sand and gravel, limestone, granite, and pumice are examples of mineral materials.

When determining the potential for mineral development activities in and around the parks, the following criteria were used:

- Identification by park administrators of potential mineral development activities.
- Active, inactive, or recently terminated mineral development operations.
- Existing mining claims and federal mineral leases.

In examining the mineral development activities in and around the parks, six parks were not examined: War in the Pacific National Historic Park, San Juan National Historic Site, Buck Island Reef National Monument, Christiansted National Historic Site, Virgin Islands National Park, and Appalachian National Scenic Trail. These parks were excluded because information on mineral development activity was difficult to obtain. NPS personnel consulted on this study were not aware of any mineral development activity around these parks. The three parks showing no acreage on the Master Deed Listing[1] were also excluded from this analysis.

Information provided by park administrators and state geological agencies indicates that there are 33 parks in which mineral development activities are presently occurring and 151 parks that have mineral development activities occurring within 15 miles of the park boundary (see Table IV-1).

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[1]Fort Benton, Potomac National Scenic Trail, and USS Arizona Memorial.

Table IV-1

CURRENT MINERAL DEVELOPMENT ACTIVITY IN AND AROUND THE PARKS

NPS Region	Number of Parks in Region	Parks with Internal Development Activity	Parks with External Development Activity
Alaska	16	8	8
Mid-Atlantic	29	2	16
Midwest	30	1	17
National Capital	29	1	3
North Atlantic	34	0	9
Pacific Northwest	15	0	1
Rocky Mountain	42	8	27
Southeast	53	3	24
Southwest	37	6	22
Western	44	4	24
Total United States	329	33	151

Source: NPS Mineral Interest/Activity questionnaire, State geological and mineral agencies, BLM Use Plats, NPS mining claims inventory.

Parks with internal mineral development activities can be found in every NPS region except the North Atlantic and Pacific Northwest regions, but are concentrated in the Alaska, Rocky Mountain, and Southwest regions. Mineral development activity outside park boundaries can be found at 46 percent of all parks and in all regions. About 67 percent of the parks with activity occurring inside their boundaries also have activity occurring outside. Exhibit IV-1, at the end of this chapter, lists all identified mineral development activities at each park.

Within the parks examined, mineral development activities generally involved oil and gas, hardrock, and mineral materials (see Table IV-2). There are no parks with active geothermal operations, and only two parks (New River Gorge National River and Big South Fork National River and Recreation Area) have coal activity. Oil and gas activity is found in parks in six of the ten regions, while hardrock activity is concentrated in Alaska. More than half of the parks with mineral materials operations are located in the Rocky Mountain region.

The most prevalent mineral development activities outside park boundaries involve mineral materials, which are being developed outside 77 parks (see Table IV-3). Oil and gas operations

Table IV-2

PARKS WITH CURRENT INTERNAL MINERAL DEVELOPMENT

NPS Region	Coal	Oil and Gas	Geothermal	Hardrock	Mineral Materials
Alaska	0	0	0	8	0
Mid-Atlantic	1	1	0	0	0
Midwest	0	1	0	0	1
National Capital	0	1	0	0	0
North Atlantic	0	0	0	0	0
Pacific Northwest	0	0	0	0	0
Rocky Mountain	0	2	0	0	6
Southeast	1	2	0	0	1
Southwest	0	4	0	1	1
Western	0	0	0	3	1
Total United States	2	11	0	12	10

Source: NPS Mineral Interest/Activity questionnaire, State geological and mineral agencies, BLM Use Plats, NPS mining claims inventory.

Table IV-3

PARKS WITH CURRENT EXTERNAL MINERAL DEVELOPMENT

NPS Region	Coal	Oil and Gas	Geothermal	Hardrock	Mineral Materials
Alaska	0	0	0	8	0
Mid-Atlantic	4	2	0	1	12
Midwest	2	6	0	1	14
National Capital	0	0	0	0	3
North Atlantic	0	0	0	2	8
Pacific Northwest	0	0	1	0	0
Rocky Mountain	8	14	0	14	7
Southeast	3	5	0	1	18
Southwest	2	14	1	3	6
Western	0	4	4	11	9
Total United States	19	45	6	41	77

Source: NPS Mineral Interest/Activity questionnaire, State geological and mineral agencies, BLM Use Plats, NPS mining claims inventory.

exist outside of 45 parks, primarily in the Rocky Mountain and Southwest regions. Hardrock operations occur outside of park boundaries in every region except the National Capital and the Pacific Northwest.

In the future, 83 parks could have internal mineral development activities and 210 parks could have external mineral development activities (see Table IV-4). While these parks are in all regions, parks in the Alaska, Rocky Mountain, Southwest, and Western regions have the greatest potential for internal and external mineral development. Over 90 percent of all parks with potential internal activity also have potential external activity. Exhibit IV-1, at the end of this chapter, provides a listing of potential mineral development activity in each park.

Table IV-4

POTENTIAL MINERAL DEVELOPMENT ACTIVITY IN AND AROUND THE PARKS

NPS Region	Number of Parks in Region	Parks with Potential Internal Development Activity	Parks with Potential External Development Activity
Alaska	16	10	14
Mid-Atlantic	29	4	16
Midwest	30	6	20
National Capital	29	2	3
North Atlantic	34	3	15
Pacific Northwest	15	4	10
Rocky Mountain	42	20	37
Southeast	53	7	31
Southwest	37	14	29
Western	44	13	35
Total United States	329	83	210

Source: NPS Mineral Interest/Activity questionnaire, State geological and mineral agencies, BLM Use Plats, NPS mining claims inventory.

Oil and gas and hardrock are the most prevalent mineral types among parks with potential mineral development activity within their boundaries (see Table IV-5). Only 3 parks have potential geothermal operations, while 12 were identified as having potential coal activity and 16 had potential mineral materials activity.

Oil and gas is also the most prevalent mineral type outside the parks (see Table IV-6). The largest number of parks with potential oil and gas activity are located in the Rocky Mountain,

Table IV-5

PARKS WITH POTENTIAL INTERNAL MINERAL DEVELOPMENT

NPS Region	Coal	Oil and Gas	Geothermal	Hardrock	Mineral Materials
Alaska	0	3	2	10	0
Mid-Atlantic	3	2	0	1	1
Midwest	0	4	0	3	2
National Capital	0	2	0	1	0
North Atlantic	0	2	0	0	1
Pacific Northwest	0	2	0	3	1
Rocky Mountain	5	14	1	12	6
Southeast	2	6	0	0	1
Southwest	2	9	0	7	2
Western	0	4	0	9	2
Total United States	12	48	3	46	16

Source: NPS Mineral Interest/Activity questionnaire, State geological and mineral agencies, BLM Use Plats, NPS mining claims inventory.

Table IV-6

PARKS WITH POTENTIAL EXTERNAL MINERAL DEVELOPMENT

NPS Region	Coal	Oil and Gas	Geothermal	Hardrock	Mineral Materials
Alaska	4	8	1	13	0
Mid-Atlantic	4	4	0	3	13
Midwest	2	9	0	3	15
National Capital	0	1	0	0	3
North Atlantic	0	4	0	2	11
Pacific Northwest	0	8	1	2	0
Rocky Mountain	13	34	2	18	11
Southeast	4	10	0	2	21
Southwest	2	26	1	6	8
Western	0	25	7	12	9
Total United States	29	129	12	61	91

Source: NPS Mineral Interest/Activity questionnaire, State geological and mineral agencies, BLM Use Plats, NPS mining claims inventory.

Southwest, and Western regions. There are 91 parks with potential future mineral materials development outside their boundaries, with the largest number of these located in the Southeast. Seven of the 12 parks with potential geothermal development outside their boundaries are located in the Western region.

INFORMATION SOURCES

Information concerning mineral development activity in the United States is available from federal agencies, state agencies, and private organizations. As with mineral ownership, there is no single, readily accessible, comprehensive source of information about mineral activity in and around the parks. Federal agencies such as the Bureau of Mines or the U.S. Geological Survey maintain records of mining operations and mineral occurrence, but these records can be difficult to use. For example, different record systems must be accessed to find out about different commodities, location data are not always specific enough to identify how close a particular mineral deposit is to a national park, and the quality of information within a given record system (often compiled from state records) varies considerably. State agencies such as state geological surveys, oil and gas commissions, and bureaus of mines and mineral resources keep records of mineral development activities within their states, but records are inconsistent from state to state, and the need to deal with 50 or more different agencies makes the information difficult to access.

Private organizations such as the Energy Resources Institute and the Petroleum Information Corporation also maintain records of mineral activity and occurrence in the United States, but these records are expensive to access when information is desired about more than a few small areas of the country.

For this study, individual park units and state agencies were considered to be the most accurate means of determining the extent of mineral development activity in and near the parks. These information sources are described below.

NPS Mineral Interest/Activity Survey

Responses by park administrators to this survey provided the primary source of information about mineral development activity in and around the parks. The survey, conducted by the Energy, Mining and Minerals Division of NPS in the spring of 1984, sought information about existing and potential mineral development

inside and in the area surrounding park boundaries and the possible environmental impacts of that development. As with any survey instrument, responses varied in quality, depending on the respondent's knowledge of mineral development issues. NPS improved the quality and accuracy of the responses by verifying each completed questionnaire with the respondent.

State Agencies

State agencies such as state geological surveys, oil and gas commissions, and bureaus of mines and mineral resources produce maps and reports showing the location and extent of mineral development activity of specific commodities in their states. The information available generally varies with the level of development activity in the state, and the level of detail of the information varies quite a bit from state to state. Access to this information is somewhat difficult because, in most states, several agencies must be contacted to obtain information on all mineral types.

Using information from state agencies to monitor mineral development activity in and around the parks is time-consuming, but it can provide useful and relatively accurate information. In some cases, the most recently published maps and reports are somewhat out of date, but the timeliness of the information can be greatly improved by talking directly to the personnel responsible for creating the maps and reports.

Other Sources

Other sources of information about mineral development activity and mineral occurrence were identified but were not investigated for accuracy and completeness, since they were not used for this study. These sources, described below, may be useful to future NPS research efforts on mineral development and deserve further investigation by NPS.

The Bureau of Mines maintains a mappable database of mines in the United States called the Mineral Industry Location System (MILS). The system contains proprietary information used for supply analyses, but information on the location, status, and geology of each mining site is available to the public. Over 90 percent of the mines in the United States are included, but each commodity is updated only every four or five years. Fuel minerals and sand and gravel were put into MILS when it was first created, but these commodities are no longer updated.

The U.S. Geological Survey has two mappable databases and three programs in development which may be of use to the NPS in determining the likelihood of future mineral development activity in and around park units:

- The Mineral Resources Data System (MRDS), also known as the Computer Resource Information Bank (CRIB), is a mappable database containing over half of the known hardrock mineral occurrences in the United States. MRDS is compiled from individual federal and state geological survey reports and investigations, causing the level of detail of each record to vary considerably. Records can include information such as the deposit location, its annual and cumulative production, or descriptions of the geology and mineralogy of the deposit.

- The National Coal Resource Data System is a mappable database of coal deposits in the United States. Like MRDS, the quality and detail of this database varies considerably. Information in the database includes the location of each deposit and analyses of the physical and geologic characteristics of each mineral seam.

- The Coterminous U.S. Mineral Assessment Program (CUSMAP) and the Alaska Mineral Resource Assessment Program are programs under development that will eventually map the non-fuel mineral resource potential of approximately one-fourth of the United States. Parts of two parks (Yosemite National Park and Organ Pipe Cactus National Monument) have been included in the areas mapped to date.

- The Federal Lands Appraisal of Onshore Oil and Gas Resources is a project in which the U.S. Geological Survey plans to assess the oil and gas potential of federal lands by administering agency.

- The Federal Mineral Lands Information System will be a mappable database combining land and mineral ownership information from the BLM's ALMRS program (see Chapter III) with mineral occurrence and mineral potential data from the MRDS and CUSMAP programs. The program is now in its early planning stages, with development likely early in the 1990s.

The Energy Resources Institute, affiliated with the University of Oklahoma, maintains a set of oil and gas databases used regularly by the U.S. Geological Survey and the Department of

Energy. The largest database contains records of all the oil and gas reservoirs in the United States, while other databases track oil and gas wells. Information in these databases is compiled from several sources, so the level of detail available varies from record to record.

The Petroleum Information Corporation keeps up-to-date records on every oil and gas well drilled in the United States. Information is collected from BLM offices, state oil and gas commissions, and well operators. Petroleum Information Corporation also has information on oil and gas leases and mineral ownership in certain areas of the country. The cost of accessing this information depends on the specific information desired, but this may be an expensive information source for NPS needs.

Exhibit IV-1

MINERAL DEVELOPMENT ACTIVITY
IN THE PARKS

PARK NAME	COAL ACT	COAL POT	OIL/GAS ACT	OIL/GAS POT	GEOTHERMAL ACT	GEOTHERMAL POT	HARDROCK ACT	HARDROCK POT	MINERAL MATERIALS ACT	MINERAL MATERIALS POT
ALASKA REGION										
ALAGNAK WILD RVR	–	–	–	O	–	–	–	–	–	–
ANIAKCHAK NM & PRES	–	–	–	B	–	–	–	B	–	–
BERING LAND BRDG & PRES	–	–	–	–	–	–	O	B	–	–
CAPE KRUSENSTERN NM	–	–	–	–	–	–	–	O	–	–
DENALI NP & PRES	–	O	–	O	–	–	B	B	–	–
GATES OF ARCTIC NP & PRES	–	–	–	O	–	–	B	B	–	–
GLACIER BAY NP & PRES	–	–	–	–	–	–	I	B	–	–
KATMAI NP & PRES	–	O	–	O	–	–	I	B	–	–
KENAI FJORDS NP	–	–	–	–	–	–	B	B	–	–
KOBUK VALLEY NP	–	–	–	–	–	–	O	O	–	–
LAKE CLARK NP & PRES	–	–	–	O	–	B	B	B	–	–
NOATAK N PRESERVE	–	–	–	–	–	–	–	O	–	–
WRANGELL-ST. ELIAS NP & PRES	–	O	–	B	–	I	B	B	–	–
YUKON-CHARLEY RIVERS N PRES	–	O	–	B	–	–	B	B	–	–
MID-ATLANTIC REGION										
ALLEGHENY PRTGE RR NHS	O	O	–	–	–	–	–	–	–	–
BOOKER T WASHINGTON NM	–	–	–	–	–	–	–	–	O	O
COLONIAL NHP	–	–	–	–	–	–	–	–	O	O
DEL WATER GAP NRA	–	–	–	–	–	–	–	I	O	B
DELAWARE NSR	–	–	–	–	–	–	–	–	O	O
EISENHOWER NHS	–	–	–	–	–	–	–	–	O	O
FREDS-SPOTS NMP	–	–	–	–	–	–	–	O	O	O
FRIENDSHIP HILL NHS	O	B	B	B	–	–	–	–	–	O
FT. NECESSITY NB	O	B	O	B	–	–	–	–	–	–
GETTYSBURG NMP	–	–	–	–	–	–	–	–	O	O
JOHNSTOWN FLOOD NMEM	–	–	–	–	–	–	–	–	O	O
NEW RIVER GORGE N RVR	B	B	–	–	–	–	–	–	–	–
PETERSBURG NB	–	–	–	–	–	–	–	–	O	O
SHENANDOAH NP	–	–	–	O	–	–	–	O	O	O
UPR DEL SCENIC & R RVR	–	–	–	O	–	–	O	O	O	O
VALLEY FORGE NHP	–	–	–	–	–	–	–	–	O	O

Note: ACT = Current mineral development activity.
POT = Potential mineral development activity.
I = Activity inside a park.
O = Activity outside a park.
B = Activity both inside and outside a park.

Exhibit IV-1 (continued)

MINERAL DEVELOPMENT ACTIVITY
IN THE PARKS

PARK NAME	COAL ACT	COAL POT	OIL/GAS ACT	OIL/GAS POT	GEOTHERMAL ACT	GEOTHERMAL POT	HARDROCK ACT	HARDROCK POT	MINERAL MATERIALS ACT	MINERAL MATERIALS POT
MIDWEST REGION										
AGATE FOSSIL BEDS NM	–	–	–	B	–	–	–	O	–	–
APOSTLE ISLANDS NL	–	–	–	–	–	–	–	–	O	O
CUYAHOGA VALLEY NRA	–	–	B	B	–	–	–	–	B	B
EFFIGY MOUNDS NM	–	–	–	–	–	–	–	–	–	O
FT. LARNED NHS	–	–	O	O	–	–	–	–	–	–
FT. SCOTT NHS	O	O	–	O	–	–	–	–	O	O
GEORGE R CLARK NHP	–	–	O	O	–	–	–	–	–	–
GEORGE W CARVER NM	–	–	–	–	–	–	–	O	–	–
HOMESTEAD NM OF AMER	–	–	–	–	–	–	–	–	O	O
INDIANA DUNES NL	–	–	–	–	–	–	–	–	O	O
JAMES A. GARFIELD NHS	–	–	–	–	–	–	–	–	O	O
LINCOLN BOYHOOD NMEM	O	O	O	O	–	–	–	–	–	–
LOWER SAINT CROIX NSR	–	–	–	–	–	–	–	–	O	O
MOUND CITY GROUP NM	–	–	–	–	–	–	–	–	O	O
OZARK NS RIVERWAYS	–	–	–	–	–	–	–	I	O	O
PICTURED ROCKS NL	–	–	–	–	–	–	–	I	O	B
SAINT CROIX NSR	–	–	–	B	–	–	–	–	O	O
SCOTTS BLUFF NM	–	–	O	O	–	–	–	–	O	O
SLEEPING BEAR DUNES NL	–	–	O	O	–	–	–	–	O	O
VOYAGEURS NP	–	–	–	I	–	–	O	B	O	O
NATIONAL CAPITAL REGION										
C & O CANAL NHP	–	–	–	B	–	–	–	I	O	O
HARPERS FERRY NHP	–	–	–	–	–	–	–	–	O	O
MANASSAS NBP	–	–	–	–	–	–	–	–	O	O
NATIONAL CAPITAL PARKS	–	–	I	I	–	–	–	–	–	–
NORTH ATLANTIC REGION										
ACADIA NP	–	–	–	–	–	–	–	–	O	B
ADAMS NHS	–	–	–	–	–	–	–	–	O	O
CAPE COD NS	–	–	–	–	–	–	–	–	O	O
EDISON NHS	–	–	–	–	–	–	–	–	O	O
FIRE ISLAND NS	–	–	–	O	–	–	–	–	–	–
FT. STANWIX NM	–	–	–	O	–	–	–	–	–	–
GATEWAY NRA	–	–	–	I	–	–	–	–	O	O
LOWELL NHP	–	–	–	–	–	–	–	–	O	O
MARTIN VAN BUREN NHS	–	–	–	–	–	–	–	–	–	O
MORRISTOWN NHP	–	–	–	–	–	–	–	–	O	O
SAINT CROIX ISLAND NM	–	–	–	–	–	–	O	O	–	–
SALEM MARITIME NHS	–	–	–	–	–	–	–	–	–	O
SARATOGA NHP	–	–	–	B	–	–	–	–	–	O
SAUGUS IRON WORKS NHS	–	–	–	–	–	–	O	O	O	O
THEODORE ROOSEVELT INAUG NHS	–	–	–	O	–	–	–	–	–	–

Exhibit IV-1 (continued)

MINERAL DEVELOPMENT ACTIVITY
IN THE PARKS

PARK NAME	COAL ACT	COAL POT	OIL/GAS ACT	OIL/GAS POT	GEOTHERMAL ACT	GEOTHERMAL POT	HARDROCK ACT	HARDROCK POT	MINERAL MATERIALS ACT	MINERAL MATERIALS POT
PACIFIC NORTHWEST REGION										
COULEE DAM NRA	-	-	-	B	-	-	-	-	-	-
CRATER LAKE NP	-	-	-	-	O	O	-	-	-	-
FT. CLATSOP NMEM	-	-	-	O	-	-	-	-	-	-
JOHN DAY FOS BEDS NM	-	-	-	O	-	-	-	-	-	-
LAKE CHELAN NRA	-	-	-	O	-	-	-	-	-	-
MT. RAINIER NP	-	-	-	O	-	-	-	-	-	-
NEZ PERCE NHP	-	-	-	O	-	-	-	O	-	-
NORTH CASCADES NP	-	-	-	O	-	-	-	I	-	-
OLYMPIC NP	-	-	-	B	-	-	-	I	-	-
OREGON CAVES NM	-	-	-	-	-	-	-	O	-	-
ROSS LAKE NRA	-	-	-	-	-	-	-	I	-	I
ROCKY MOUNTAIN REGION										
ARCHES NP	-	-	O	B	-	-	-	B	-	-
BADLANDS NP	-	-	-	O	-	-	-	B	I	I
BENT'S OLD FORT NHS	-	-	O	O	-	-	-	-	-	O
BIG HOLE NB	-	-	-	O	-	-	-	-	-	-
BIGHORN CANYON NRA	-	-	-	O	-	-	O	B	I	I
BLACK CANYON NM	-	-	-	-	-	-	-	O	-	-
BRYCE CANYON NP	-	O	O	B	-	-	-	-	-	-
CANYONLANDS NP	-	B	O	O	-	-	-	I	O	O
CAPITOL REEF NP	O	B	-	B	-	-	-	I	-	-
CEDAR BREAKS NM	-	-	-	O	-	-	-	-	-	-
COLORADO NM	-	-	-	O	-	-	-	O	O	O
CURECANTI NRA	-	-	-	-	-	-	O	B	I	I
DEVILS TOWER NM	-	-	-	O	-	-	-	-	-	-
DINOSAUR NM	O	O	O	B	-	-	O	O	-	O
FOSSIL BUTTE NM	O	B	O	B	-	-	-	I	-	-
FT. LARAMIE NHS	-	-	O	B	-	-	-	-	B	B
FT. UNION T P NHS	-	-	O	B	-	-	-	-	-	-
GLACIER NP	-	O	O	B	-	-	-	I	I	I
GLEN CANYON NRA	-	O	I	B	-	-	O	B	-	-
GOLDEN SPIKE NHS	-	-	-	B	-	-	-	-	-	-
GRAND TETON NP	-	-	-	B	-	-	O	O	-	-
GRANT-KOHRS RANCH NHS	-	-	-	O	-	-	-	-	-	-
HOVENWEEP NM	O	O	O	O	-	-	-	-	-	-
JEWEL CAVE NM	-	-	-	O	-	-	-	-	-	-
JOHN D ROCKEFELLER MEM PKWY	-	-	-	O	-	B	-	I	I	I
KNIFE RIVER I V NHS	O	O	-	O	-	-	-	-	-	-
MESA VERDE NP	O	B	O	O	-	-	O	B	O	O
MT. RUSHMORE NMEM	-	-	-	-	-	-	O	O	-	-
NATURAL BRIDGES NM	-	-	-	B	-	-	O	O	-	O
PIPE SPRING NM	-	-	-	O	-	-	O	O	-	-
ROCKY MT NP	-	-	-	O	-	-	-	-	-	-
THEODORE ROOSEVELT NP	O	B	B	B	-	-	-	-	O	O
TIMPANOGOS CAVE NM	-	-	-	O	-	-	O	O	O	O
WIND CAVE NP	-	-	-	O	-	-	O	O	-	O
YELLOWSTONE NP	-	-	-	O	-	O	O	O	-	-
YUCCA HOUSE NM	-	O	O	O	-	-	O	O	O	O
ZION NP	O	O	O	B	-	-	O	B	-	-

Exhibit IV-1 (continued)

MINERAL DEVELOPMENT ACTIVITY
IN THE PARKS

PARK NAME	COAL ACT	COAL POT	OIL/GAS ACT	OIL/GAS POT	GEOTHERMAL ACT	GEOTHERMAL POT	HARDROCK ACT	HARDROCK POT	MINERAL MATERIALS ACT	MINERAL MATERIALS POT
SOUTHEAST REGION										
ANDERSONVILLE NHS	–	–	–	–	–	–	O	O	–	–
BIG CYPRESS N PRESERVE	–	–	B	B	–	–	–	–	O	O
BIG SOUTH FORK NR & NRA	B	B	B	B	–	–	–	–	–	–
BISCAYNE NP	–	–	–	–	–	–	–	–	O	O
BLUE RIDGE PKWY	–	–	–	–	–	–	–	–	O	O
CANAVERAL NS	–	–	–	O	–	–	–	–	–	–
CAPE HATTERAS NS	–	–	–	–	–	–	–	–	O	O
CAPE LOOKOUT NS	–	–	–	O	–	–	–	–	O	O
CHATTAHOOCHEE RVR NRA	–	–	–	–	–	–	–	–	B	B
CHICK & CHATT NMP	–	–	–	–	–	–	–	–	O	O
CUMBERLAND GAP NHP	–	O	–	–	–	–	–	–	O	O
CUMBERLAND ISLAND NS	–	–	–	–	–	–	–	–	–	O
EVERGLADES NP	–	–	–	O	–	–	–	–	–	O
FT. DONELSON NMP	–	–	–	–	–	–	–	–	–	O
FT. PULASKI NM	–	–	–	–	–	–	–	O	–	–
FT. RALEIGH NHS	–	–	–	–	–	–	–	–	O	O
GUILFORD CRTHSE NMP	–	–	–	–	–	–	–	–	O	O
GULF ISLANDS NS	–	–	–	B	–	–	–	–	–	–
KENNESAW MT NBP	–	–	–	–	–	–	–	–	O	O
KINGS MT NMP	–	–	–	–	–	–	–	–	O	O
MAMMOTH CAVE NP	–	–	O	O	–	–	–	–	–	–
MOORES CREEK NB	–	–	–	–	–	–	–	–	O	O
NATCHEZ TRACE PKWY	–	–	O	B	–	–	–	–	–	–
NINETY SIX NHS	–	–	–	–	–	–	–	–	O	O
OBED WILD & SCENIC RVR	O	B	O	B	–	–	–	–	–	–
OCMULGEE NM	–	–	–	–	–	–	–	–	O	O
RUSSELL CAVE NM	O	O	–	–	–	–	–	–	–	–
SHILOH NMP	–	–	–	–	–	–	–	–	O	O
STONES RIVER NB	–	–	–	–	–	–	–	–	O	O
VICKSBURG NMP	–	–	–	B	–	–	–	–	–	–
WRIGHT BROTHERS NMEM	–	–	–	–	–	–	–	–	O	O

Exhibit IV-1 (continued)

MINERAL DEVELOPMENT ACTIVITY
IN THE PARKS

PARK NAME	COAL ACT	COAL POT	OIL/GAS ACT	OIL/GAS POT	GEOTHERMAL ACT	GEOTHERMAL POT	HARDROCK ACT	HARDROCK POT	MINERAL MATERIALS ACT	MINERAL MATERIALS POT
SOUTHWEST REGION										
ALIBATES FLINT QURS NM	–	–	B	B	–	–	–	I	–	O
ARKANSAS POST NM	–	–	–	O	–	–	–	–	–	–
AZTEC RUINS NM	–	–	O	O	–	–	O	O	–	–
BANDELIER NM	–	–	–	O	O	O	–	–	–	–
BIG BEND NP	I	–	–	–	–	–	–	B	–	I
BIG THICKET N PRESERVE	–	–	B	B	–	–	–	–	–	–
BUFFALO N RVR	–	–	–	–	–	–	–	I	–	–
CAPULIN MT NM	–	–	–	O	–	–	–	–	O	O
CARLSBAD CAVERNS NP	–	–	O	B	–	–	–	–	–	–
CHACO CULTURE NHP	O	B	O	B	–	–	I	B	–	–
CHAMIZAL NMEM	–	–	–	–	–	–	–	–	O	O
CHICKASAW NRA	–	–	O	B	–	–	–	–	–	–
EL MORRO NM	–	–	–	O	–	–	–	–	–	–
FT. DAVIS NHS	–	–	O	O	–	–	–	–	–	–
FT. SMITH NHS	–	–	O	O	–	–	–	–	–	–
FT. UNION NM	–	–	O	B	–	–	–	–	–	–
GILA CLIFF DWELNGS NM	–	–	–	O	–	–	–	–	–	–
GUADALUPE MTS NP	–	–	O	O	–	–	–	I	–	–
HOT SPRINGS NP	–	–	–	O	–	–	O	B	B	B
JEAN LAFITTE NHP & PRES	–	–	O	B	–	–	–	–	–	–
LAKE MEREDITH RA	–	–	B	B	–	–	–	–	–	O
NAVAJO NM	O	O	–	–	–	–	–	–	–	–
PADRE ISLAND NS	–	–	B	B	–	–	–	–	O	O
PALO ALTO BTLFLD NHS	–	–	–	O	–	–	–	–	–	–
PECOS NM	–	–	–	O	–	–	–	–	–	–
SALINAS NM	–	–	–	O	–	–	O	B	–	–
SAN ANTONIO NHP	–	–	O	O	–	–	–	–	–	–
SUNSET CRATER NM	–	–	–	O	–	–	–	–	O	O
WHITE SANDS NM	–	–	–	O	–	–	–	–	–	–
WUPATKI NM	–	–	–	O	–	–	–	O	O	O

Exhibit IV-1 (continued)

MINERAL DEVELOPMENT ACTIVITY
IN THE PARKS

PARK NAME	COAL ACT	COAL POT	OIL/GAS ACT	OIL/GAS POT	GEOTHERMAL ACT	GEOTHERMAL POT	HARDROCK ACT	HARDROCK POT	MINERAL MATERIALS ACT	MINERAL MATERIALS POT
WESTERN REGION										
CABRILLO NM	–	–	O	B	–	–	–	–	O	O
CASA GRANDE NM	–	–	–	O	O	O	–	–	–	–
CHANNEL ISLANDS NP	–	–	–	B	–	–	–	–	–	–
CHIRACAHUA NM	–	–	–	B	–	–	O	B	–	–
CORONADO NMEM	–	–	–	O	–	–	O	B	–	–
DEATH VALLEY NM	–	–	–	–	–	–	B	B	–	–
EUGENE O'NEILL NHS	–	–	O	O	–	–	–	–	–	–
FT. BOWIE NHS	–	–	–	O	–	–	–	–	–	–
GOLDEN GATE NRA	–	–	–	O	–	–	–	–	–	–
GRAND CANYON NP	–	–	–	O	–	–	O	B	–	–
HALEAKALA NP	–	–	–	–	O	O	–	–	–	–
HAWAII VOLCANOES NP	–	–	–	–	O	O	–	–	–	–
JOHN MUIR NHS	–	–	O	O	–	–	–	–	–	–
JOSHUA TREE NM	–	–	–	O	–	–	O	B	–	–
KINGS CANYON NP	–	–	–	–	–	–	–	–	O	O
LAKE MEAD NRA	–	–	–	I	–	–	B	B	–	–
LASSEN VOLCANIC NP	–	–	–	O	–	O	–	–	–	–
LAVA BEDS NM	–	–	–	O	–	O	–	–	–	–
LEHMAN CAVES NM	–	–	–	–	–	–	O	O	–	–
MONTEZUMA CASTLE NM	–	–	–	O	–	–	–	O	–	–
MUIR WOODS NM	–	–	–	–	–	–	–	–	O	O
ORGAN PIPE CACTUS NM	–	–	–	O	–	–	O	O	–	–
PETRIFIED FOREST NP	–	–	–	O	–	–	–	I	–	–
PINNACLES NM	–	–	–	O	–	–	–	–	–	–
POINT REYES NS	–	–	–	O	–	–	–	–	B	B
REDWOOD NP	–	–	–	O	–	–	O	O	O	O
SAGUARO NM	–	–	–	O	–	–	O	B	–	–
SANTA MONICA MTS NRA	–	–	O	O	–	–	–	–	O	O
SEQUOIA NP	–	–	–	–	–	–	–	–	O	O
TONTO NM	–	–	–	O	–	–	–	–	–	–
TUMACACORI NM	–	–	–	O	–	–	–	–	–	–
TUZIGOOT NM	–	–	–	O	–	–	–	–	O	B
WALNUT CANYON NM	–	–	–	O	–	O	–	–	–	–
WHISKEYTOWN-S-T NRA	–	–	–	–	–	–	I	I	O	O
YOSEMITE NP	–	–	–	–	O	O	O	O	–	–

V. CONCLUSIONS AND RECOMMENDATIONS

In addition to identifying non-federal mineral rights in the parks and mineral development activity in and around the parks, a major purpose of this study is to recommend actions NPS may take to improve its knowledge of mineral ownership and development activity, and to be more effective in anticipating and resolving mineral development issues. This chapter summarizes the key findings and conclusions of this study and presents several specific recommendations for NPS action.

CONCLUSIONS

The analysis and research conducted in this study support three general conclusions.

1. The potential for mineral development in the parks is sufficiently high to warrant NPS concern and attention. By any measure the almost six million acres of non-federally owned mineral rights is a large amount of land. Even if only a small percentage of this acreage has the potential for mineral development, it still represents a potentially large problem for NPS. When one considers that mineral development activity is currently underway inside 31 and outside 120 of the 223 parks with non-federal mineral right acreage, the need for NPS attention and concern becomes even more obvious.

2. Lack of regulatory controls over certain types of mineral development activity in the parks may limit NPS's ability to protect park resources. NPS does not regulate:

- Development of non-federal minerals other than oil and gas
- Non-federal oil and gas if access is not on or across federal land
- Patented mining claims in Alaska where there is no access on or across federal parklands
- Non-federal oil and gas in Alaska

The major problem with NPS's limited regulatory controls is a lack of flexibility. If NPS cannot regulate mineral development

to ensure it will not adversely affect park resources, its only alternative is to acquire the mineral rights before they are developed. Not only is this alternative costly, it may be an inefficient solution to a problem that could have been resolved at less cost by modifying the mineral development operations plan to provide greater protection for park resources.

3. The information currently available to NPS on mineral ownership and activity is insufficient for its needs. While this study identified many sources of useful information on mineral ownership or mineral activity, much of this information is not readily usable and is in many cases incomplete or inaccurate. The fact that many of these sources are not ideal for NPS purposes is not surprising--none were created for the purpose of monitoring mineral development in the parks. The detailed deed files maintained by NPS are not intended to provide up-to-date information on surface and mineral rights in the parks which NPS has not purchased. For NPS's minerals management needs, existing mineral ownership information sources have several problems:

- There is no information on current owners of non-federal minerals other than county records.
- Many of the sources are difficult and time-consuming to use (e.g., NPS deed file, county deed records, BLM Master Title Plats)
- There is a lack of uniformity among various federal records, as well as among state and local records.

NPS's recent efforts to identify and satisfy its information needs by augmenting existing sources through its own original research are necessary if NPS is to be able to respond to mineral development issues in a timely and well-informed manner.

RECOMMENDATIONS

The following seven recommendations describe how NPS could improve its knowledge of mineral ownership and development activity and respond more quickly to minerals issues.

1. NPS should continue to develop and maintain a database of information on mineral rights in all parks. From the data sources identified in this study and other appropriate sources, the Energy, Mining and Minerals Division (EMM) of NPS should continue its present efforts to create a comprehensive database of non-federal mineral rights in the parks, including: ownership

status, locations, type of mineral rights, and any other data useful for planning and management purposes. As part of its data collection efforts:

- EMM should obtain the BLM 1:100,000 scale Surface Management Status-Mineral Management Status series of maps as they are published. These maps presently represent the most comprehensive source of mineral ownership information in the areas around national parks. Obtaining these maps as they are produced for areas with national parks in them will provide EMM with a quick reference source for information on surface and subsurface ownership adjacent to the parks.

- EMM should obtain a copy of the NPS Land Resources Division's microfiche records of mineral ownership within the parks. Much of Land Resource's information on mineral ownership (such as the type of minerals involved, or whether the minerals are owned by one party or several) is available on the microfiche records of titles and deeds, but is not incorporated in the Master Deed Listing. EMM should obtain a copy of these records so as to have them readily available for reference when questions arise concerning mineral ownership within the parks.

- EMM should collect any information it obtains on mineral ownership and mineral development activity in a consistent manner. This type of information will be collected over a period of time from numerous sources. Careful planning should be done on how the information will be utilized and therefore as to how it should be organized. For example, NPS should develop standards for mapping mineral ownership and development activities compatible with existing standards for land acquisition mapping.

2. NPS should continue its efforts to gather up-to-date information on mineral development activities in and around the parks. This activity would allow NPS to identify potential mineral development projects at the earliest possible moment, providing more time to study and resolve any potential problems. To gather this information, NPS should:

- Regularly (semiannually or annually) survey park administrators about on-going and potential mineral development activities in and around their parks. On-site observations of mineral development activity and its impacts are probably the single best data source for

this type of information. The surveys should be well focused and respondents should be carefully instructed as to the sorts of activities the survey is designed to report on. The survey should be conducted in a manner that results in complete coverage of all parks.

- Designate one or more individuals at each region or park as a minerals management coordinator, responsible for regular contact with EMM and for tracking mineral development activities in and around each park. To ensure that these people are knowledgeable about minerals development and its potential effects on park resources, NPS should provide training and educational materials as necessary.

- Make regular contact with appropriate agencies in each state to monitor mining and exploration activity around parks. Because most mining and exploration activity requires some sort of state license or permit, state mining bureaus, land offices, geological surveys, and oil and gas commissions are knowledgeable about most ongoing and planned mineral exploration and development activities. Obtaining this information on a quarterly or semiannual basis would help NPS stay abreast of new mining activities that could affect parks.

3. NPS should look for ways to improve the usefulness of its existing records for dealing with minerals development issues. Several improvements should be made to current recordkeeping and data reporting procedures:

- NPS should research subsurface ownership at the time of land acquisition, regardless of whether subsurface interests are being acquired. In the past, NPS has generally only determined subsurface ownership if acquisition of that subsurface was being considered. Other subsurface interests which became known through the title searching process were recorded, but no concerted effort was made to determine the nature or extent of these subsurface interests if NPS was not interested in obtaining them. Future title work performed during the course of the Land Resources Division's acquisition process should include complete research of subsurface ownership on split estates and surface and subsurface ownership on inholdings. This information would be very useful and could save valuable time if NPS needed to acquire subsurface rights at a later date.

- NPS should continue in its efforts to compile a listing of the location of each park unit (on surveyed land) by township, range, and section to facilitate the use of land records maintained by other federal and state agencies. NPS's land records are organized by tract numbers based on acquisition history. BLM and other agencies' land records are organized by township, range, and section. Compilation of a list of park unit locations would eliminate the tedious task of determining park location from Land Status Maps each time BLM land records are used.

- NPS's Energy, Mining, and Minerals Division (EMM) and Land Resources Division should work together to make their record systems more compatible with each other's needs while avoiding duplication of effort. For instance, the Master Deed Listing and Land Status Maps would be more useful to EMM if there were better cross-referencing of surface tracts with underlying mineral tracts, while title work performed by EMM may be useful to Land Resources when considering future acquisitions.

4. NPS should work more closely with BLM, the National Forest Service, and other agencies responsible for administering federal lands to improve interagency understanding of NPS's need for mineral ownership and development information in the parks.

- NPS should explore more effective ways to ensure that other agencies account for NPS concerns when promulgating regulations governing mining and mineral development and when making adjoining land use decisions that could affect park resources.

- NPS should make sure it gets all the title information it needs when property is transferred to NPS and that changes in park boundaries on subsurface ownership status are accurately recorded by BLM. NPS should also look for ways to increase the consistency and compatibility of its land and mineral records with those of BLM.

- NPS should continue to play an active role in the development and implementation of BLM's ALMRS program so that the resulting database will be responsive to NPS as well as BLM mineral resource management needs.

- NPS should also play an active role in the development of other land and mineral databases, such as the Federal Lands Appraisal of Onshore Oil and Gas Reserves, the Federal Mineral Lands Information System, and the Continental U.S. Mineral Assessment Program.

5. NPS should continue its recent efforts to set priorities for its minerals management efforts. So many parks have non-federal mineral rights and internal and external mineral development activities that NPS needs to determine which parks are most likely threatened by mineral development and focus its resources on those parks. To accomplish this:

- NPS should continue its efforts to develop criteria for assessing the circumstances under which non-federal mineral interests within a park and/or ongoing mineral development activity in or around a park pose a threat to park resources. The existence of non-federal mineral interests in a park or of mineral development activity in or around a park does not necessarily indicate a threat to park resources. NPS should identify the environmental impacts of mineral development activity and determine the circumstances under which such activity is likely to have adverse effects on park resources. This would enable NPS to focus its resources on park units where such adverse effects are found to be most likely.

- NPS should collect information on the economics of mineral development in and around selected parks so as to be better able to assess the likelihood of mineral development activity in or around park units. Whether mineral reserves located in and around parks are in fact economically recoverable should be determined for some parks. This sort of analysis is probably not worthwhile to do for all parks, but NPS should conduct some analysis using data on transportation and mining costs and the quantity and quality of the mineral reserves for parks which have a high risk of being adversely affected by mineral development. This would result in more accurate assessments of the likelihood of mineral development.

6. NPS should maintain the capability to perform title searches of subsurfaces ownership within park boundaries, and may want to do such work in advance for selected parks. Although time-consuming, conducting title searches with county deed records is the only means available to NPS for determining who owns subsurface mineral rights in a park. Other data sources are

too incomplete, inaccurate, or out-of-date for determining non-federal mineral ownership. NPS needs to know the identity of holders of non-federal mineral rights if it is considering acquiring the mineral rights (usually to stop planned mineral development) or it wants to make a detailed assessment of the potential for mineral development in a park (for example, NPS could determine if someone developing minerals outside or inside the park was acquiring additional mineral rights). NPS should continue to be able to perform title search work as the need arises. Given the extensive time and effort required to complete title searches, NPS may want to perform title search work in advance for parks deemed most threatened.

7. NPS should examine whether or not existing regulatory controls are sufficient in all cases to protect park resources from adverse impacts associated with mineral development activity. This examination should determine:

- If additional regulations might have helped avoid actual circumstances of adverse impacts on park resources from mineral development activities.
- If additional regulations might create more flexibility for NPS by providing less costly alternatives to those currently available.
- The additional costs and benefits of potential additional regulations on the operators of mineral development activities.

APPENDIX A

PARKS WHERE ALL MINERAL RIGHTS ARE FEDERALLY OWNED

ALASKA REGION

ALAGNAK WILD RVR

MID-ATLANTIC REGION

BOOKER T WASHINGTON NM
EDGAR ALLEN POE NHS
EISENHOWER NHS
FT. MCHENRY NM & H SHRINE
GEORGE WASHINGTON BPLACE NM
HAMPTON NHS
HOPEWELL VILLAGE NHS
RICHMOND NBP
THADDEUS KOSCIUSZKO NMEM

MIDWEST REGION

EFFIGY MOUNDS NM
FT. SCOTT NHS
GEORGE R CLARK NHP
GEORGE W CARVER NM
JEFFERSON NE MEM NHS
PIPESTONE NM

NATIONAL CAPITAL REGION

ARL. HSE, R E LEE MEM
CATOCTIN MT PARK
CLARA BARTON NHS
FORD'S THEATRE NHS
FREDERICK DOUGLASS HOME
FT. WASHINGTON PARK
GREENBELT PARK
JOHN F KENNEDY CENTER
LINCOLN MEM
LYNDON B. JOHNSON MEM GROVE
NATIONAL CAPITAL PARKS
NATIONAL MALL
POTOMAC NS TRAIL
ROCK CREEK PARK
THEODORE ROOSEVELT ISLAND
THOMAS JEFFERSON MEM
VIETNAM VETERANS MEM
WASHINGTON MONUMENT
WHITE HOUSE
WOLF TRAP FARM

NORTH ATLANTIC REGION

CASTLE CLINTON NM
EDISON NHS
ELEANOR ROOSEVELT NHS
FEDERAL HALL NMEM
FREDERICK LAW OLMSTED NHS
FT. STANWIX NM
GENERAL GRANT NMEM
JOHN F KENNEDY NHS
LONGFELLOW NHS
ROGER WILLIAMS NMEM
SAGAMORE HILL NHS
SAUGUS IRON WORKS NHS
STATUE OF LIBERTY NM
THEODORE ROOSEVELT INAUG NHS
THOEDORE ROOSEVELT BPLACE NHS
VANDERBILT MANSION NHS

PACIFIC NORTHWEST REGION

CRATERS OF MOON NM
MT. RAINIER NP
WHITMAN MISSION NHS

ROCKY MOUNTAIN REGION

CEDAR BREAKS NM
CURECANTI NRA
CUSTER BTLFLD NM
DEVILS TOWER NM
FT. BENTON
HOVENWEEP NM
JEWEL CAVE NM
PIPE SPRING NM
RAINBOW BRIDGE NM
TIMPANOGOS CAVE NM
YUCCA HOUSE NM

SOUTHEAST REGION

ABRAHAM LINCOLN BIRTHPL NHS
ANDREW JOHNSON NHS
BRICES CROSS RDS NBS
BUCK ISLAND REEF NM
CHRISTIANSTED NHS
CONGAREE SWAMP NM
FT. MATANZAS NM
GUILFORD CRTHSE NMP
HORSEHOE BEND NMP
KINGS MT NMP
MOORES CREEK NB
NINETY SIX NHS
OCMULGEE NM
RUSSELL CAVE NM
STONES RIVER NB
TUPELO NB
WRIGHT BROTHERS NMEM

SOUTHWEST REGION

AMISTAD NRA
ARKANSAS POST NM
AZTEC RUINS NM
CAPULIN MT NM
CHAMIZAL NMEM
FT. DAVIS NHS
FT. UNION NM
GILA CLIFF DWELNGS NM
HUBBELL T P NHS
LAKE MEREDITH RA
NAVAJO NM
SUNSET CRATER NM

WESTERN REGION

CABRILLO NM
CASA GRANDE NM
DEVILS POSTPILE NM
FT. POINT NHS
JOHN MUIR NHS
LAVA BEDS NM
LEHMAN CAVES NM.
PU'UHONUA O HONAUHAU NHP
TONTO NM
USS ARIZONA

APPENDIX B

PARKS WITH NO MINERAL DEVELOPMENT IN OR NEAR THE PARK

ALASKA REGION

KLONDIKE GOLD RUSH NHP
SITKA NHP

MID-ATLANTIC REGION

APPOMATTOX CRT HS NHP
ASSATEAGUE ISLAND NS
EDGAR ALLEN POE NHS
FT. MCHENRY NM & H SHRINE
GEORGE WASHINGTON BPLACE NM
HAMPTON NHS
HOPEWELL VILLAGE NHS
INDEPENDENCE NHP
MAGGIE L. WALKER NHS
RICHMOND NBP
THADDEUS KOSCIUSZKO NMEM
THOMAS STONE NHS

MIDWEST REGION

GRAND PORTAGE NM
HARRY S. TRUMAN NHS
HERBERT HOOVER NHS
ISLE ROYALE NP
JEFFERSON NE MEM NHS
LINCOLN HOME NHS
PERRY'S PEACE MEM
PIPESTONE NM
WILLIAM H TAFT NHS
WILSONS CREEK NB

NATIONAL CAPITAL REGION

ANTIETAM NB
ARL HSE, R E LEE MEM
CATOCTIN MT PARK
CLARA BARTON NHS
FORD'S THEATRE NHS
FREDERICK DOUGLASS HOME
FT. WASHINGTON PARK
GEORGE WASHINGTON MEM PKWY
GREENBELT PARK
JOHN F KENNEDY CENTER
LINCOLN MEM
LYNDON B. JOHNSON MEM GROVE
MONOCACY NB
NATIONAL MALL
PISCATAWAY PARK
PRINCE WM FOREST PARK
ROCK CREEK PARK
SEWALL-BELMONT HSE NHS
THEODORE ROOSEVELT ISLAND
THOMAS JEFFERSON MEM
VIETNAM VETERANS MEM
WASHINGTON MONUMENT
WHITE HOUSE
WOLF TRAP FARM PARK

NORTH ATLANTIC REGION

BOSTON NHP
CASTLE CLINTON NM
ELEANOR ROOSEVELT NHS
FEDERAL HALL NMEM
FREDERICK LAW OLMSTED NHS
GENERAL GRANT NMEM
HAMILTON GRANGE NMEM
HOME OF FDR NHS
JOHN F KENNEDY NHS
LONGFELLOW NHS
MINUTE MAN NHP
ROGER WILLIAMS NMEM
SAGAMORE HILL NHS
SAINT-GAUDENS NHS
SPRINGFIELD ARMORY NHS
STATUE OF LIBERTY NM
THOEDORE ROOSEVELT BPLACE NHS
VANDERBILT MANSION NHS
WOMEN'S RIGHTS NHP

PACIFIC NORTHWEST REGION

CRATERS OF MOON NM
FT. VANCOUVER NHS
SAN JUAN ISLAND NHP
WHITMAN MISSION NHS

ROCKY MOUNTAIN REGION

CUSTER BTLFLD NM
FLORISSAND F BDS NM
GREAT SAND DUNES NM
RAINBOW BRIDGE NM

SOUTHEAST REGION

ABRAHAM LINCOLN BIRTHPL NHS
ANDREW JOHNSON NHS
BRICES CROSS RDS NBS
CARL SANDBURG HOME NHS
CASTILLO NM
CONGAREE SWAMP NM
COWPENS NB
DE SOTO NMEM
FT. CAROLINE NMEM
FT. FREDERICA NM
FT. JEFFERSON NM
FT. MATANZAS NM
FT. SUMTER NM
GREAT SMOKY MTS NP
HORSEHOE BEND NMP
MARTIN L. KING JR NHS
TUPELO NB
TUSKEGEE INSTITUTE NHS

SOUTHWEST REGION

AMISTAD NRA
CANYON DE CHELLY NM
HUBBELL T P NHS
LYNDON B. JOHNSON NHP
PEA RIDGE NMP
RIO GRANDE NSR

WESTERN REGION

DEVILS POSTPILE NM
FT. POINT NHS
HOHOKAM PIMA NM
KALAUPAPA NHP
KALOKO-HONOKOHAU NHP
PU'UHONUA O HONAUHAU NHP
PUUKOHOLA HEIAU NHS